ANVIL RANGE MINING CORPORATION

1996 ANNUAL REPORT FOR WATER LICENSE IN89-001 - FARO

APRIL 1997

SUMMARY

Water quality monitoring was performed during 1996 in accordance with Water License IN89-001. This report is the required annual report. The required biological and geotechnical monitoring programs were carried out and the full consultant reports are included or attached.

During 1996, the concentrator plant processed ores mined from the Grum and Vangorda Open Pits. Tailings and process water were deposited in the mined out Faro Main Pit with the exception of infrequent and short duration upset conditions when tailings were deposited in the Down Valley Intermediate Pond. The backfilled Faro Zone II Pit was dewatered into the Faro Main Pit in order to prevent metal rich groundwater seepage from entering the North Fork of Rose Creek.

Work on the Water Recycle System from the Faro Main pit to the mill was started in 1996 and is scheduled for completion during 1997.

Water quality at the two effluent discharge locations (Cross Valley Pond outflow and Cross Valley Dam seepage) was in compliance with the exception of infrequent minor and isolated exceedances. There was no evidence of surface water contamination in the area of the Zone II Pit and seepage from the rock dumps remained in the neutral pH range.

No influences on the water quality in Anvil Creek (approximately 26 km downstream) resulting from 1996 mining activities were observed during 1996.

Seepage and groundwater monitoring programs per the existing Schedule 'D' were performed during 1996. The application for license amendment currently under review includes an updated and revised Schedule 'D'.

A piezometer installation program was completed which accomplished several goals: previously destroyed sampling wells in the Down Valley aquifer were replaced, new piezometers were installed in the Intermediate Dam embankment for geotechnical monitoring (static water levels), and new sampling wells were installed around the perimeter of the Faro rock dumps to improve the information collected relating to closure planning and seepage monitoring.

An update to the previously filed (June 1995) application for licence amendment was filed in July 1996 which included a number of 'housekeeping' amendments. The application was screened, interventions and responses were filed and a Water Board hearing was held in November 1996. An amended licence (#5) was received from the Water Board which extends the term of the Licence to the end of May 1997. This is intended to provide the Water Board with adequate time to review the complete amendment package.

The Integrated Comprehensive Abandonment Plan and the Faro Environmental Management Plan for Temporary Closure were filed with the Water Board on November 29, 1996 as per the proposed licence amendments. The Tailings Reprocessing Feasibility Study was filed with the Water Board on January 3, 1997 as per the proposed licence amendments.

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2. 1996 MONTHLY DATA REPORTS CONTAINING EXTRA WATER QUALITY DATA

3. 1996 BIOASSAY RESULTS

4. BIOLOGICAL MONITORING PROGRAM AT ROSE AND ANVIL CREEKS, FARO, YT, 1996, Laberge Environmental Services

5. 1996 SEEP SURVEY RESULTS

ATTACHED DOCUMENTS

1996 ANNUAL GEOTECHNICAL PERFORMANCE EVALUATION AND INSTRUMENTATION DATA REPORT, FARO MINE, YUKON, VOLUMES 1 AND 2, Golder Associates Ltd.

ANVIL RANGE MINING COMPLEX, 1996 DRILLING AND PIEZOMETER INSTALLATION PROGRAM, Robertson Geoconsultants Inc.

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1. INTRODUCTION

Pursuant to section 15 of the regulations and Part A, Section 8 of license IN 89-001, Anvil Range Mining Corporation has prepared this annual report detailing water quantities used during the year and an interpretation of trends and variations in the water quality data.

This report presents results of water quality monitoring per Schedule A. A report prepared by Laberge Environmental Services on the biological studies required under Schedule B is included. A report prepared by Golder Associates on the geotechnical investigations required under Schedule C is attached under its' own cover. Schedule D of license IN89-001 is out of date and much of the work originally contemplated has been completed. A proposed revision to schedule D has been submitted to the Water Board but no decision has been made on it's inclusion in the license.

During 1996, open pit mining operations were carried out on the Vangorda Plateau in the Grum and Vangorda pits but there was no mining on the Faro site. The ore from the Vangorda Plateau was passed through the Faro concentrator plant where two mineral concentrates were produced.

Water for processing and domestic uses was drawn from Rose Creek as has been the established operating practice. Tailings from mill operations were deposited in the mined out Faro Pit. Tailings were discharged to the Down Valley impoundment only during rare upset conditions in the mill as allowed by license IN89-001.

The water recycle system from the Faro Pit to the mill for processing water supply was approximately 50% installed at year end. The water level in the pit is projected to reach the required pumping elevation in 1997.

The pumping well in the backfilled Zone II pit was operated during 1996 to maintain the water level in the backfilled Zone II pit within the acceptable range. Water from the Zone II pit was pumped into the Main pit.

Surface drainage from the Faro mine site and some seepage from the Main and Intermediate rock dumps reported to the Down Valley tailings impoundments (now unused for tailings deposition) where water, prior to discharge, was treated by addition of lime slurry in the Intermediate Dam spillway followed by settling in the Cross Valley Pond.

The overall site configuration and a listing of water monitoring locations are given in Figure 1.1 and Table 1.1.

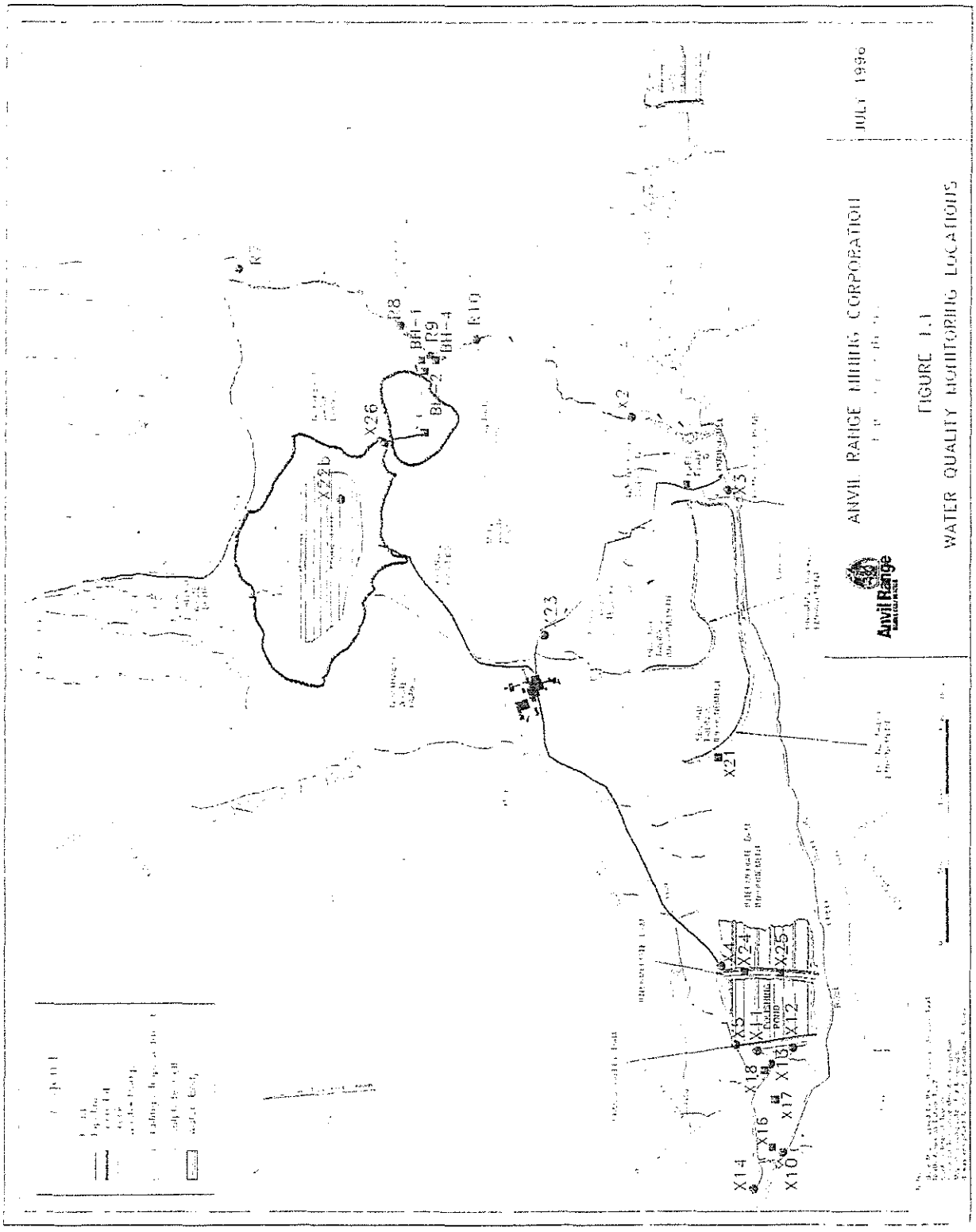

ANVIL RANGE MINING CORPORATION
FIGURE 1.1
WATER QUALITY MONITORING LOCATIONS
JULY 1996
Anvil Range
X1
X2
X3
X4
X5
X10
X11
X12
X13
X14
X16
X17
X18
X21
X22
X23
X24
X25
X26
R8
R9
R10
BH-1
BH-2
BH-4

TABLE 1.1
WATER QUALITY MONITORING LOCATIONS

#	SAMPLING STATION
X2	North Fork of Rose Creek at road bridge.
X3	Rose Creek at freshwater pumphouse.
X4	Intermediate dam decant.
X5	Cross Valley dam decant.
X9	Tailings Line to Tailings Pond.
X10	Rose Creek diversion canal below weirs.
X11	Seepage from north toe of the Cross Valley dam.
X12	Seepage from south toe of the Cross Valley dam.
X13	Combined seepage flows downstream from the culvert and upstream of confluence with the decant.
X14	Rose Creek after mixing downstream of the diversion canal confluence.
X16a	Groundwater monitor well - K1 at depth of 5m.
X16b	Groundwater monitor well - K1 at depth of 30m.
X17a	Groundwater monitor well - K2 at depth of 5m.
X17b	Groundwater monitor well - K2 at depth of 20m.
X18a	Groundwater monitor well - K3 at depth of 10m.
X18b	Groundwater monitor well - K3 at depth of 20m.
X19a	Groundwater monitor well - K4 at depth of 12m.
X19b	Groundwater monitor well - K4 at depth of 27m.
X20	Groundwater monitor well - K5.
X21a	Groundwater monitor well - K6 at depth of 10m.
X21b	Groundwater monitor well - K6 at depth of 27m.
X22	Discharge from Faro #1 pumps. May be discontinued upon commencement of main pit discharge.
X22b	Main Pit water. This station shall be added upon commencement of tailings deposition into the main pit and may be discontinued upon commencement of discharge from the main pit.
X22c	Main Pit at point of discharge. This sampling station shall be added upon commencement of Main Pit discharge.
X23	Pit drainage at toe of waste dumps.
X24a	Groundwater monitor well Intermediate Dam, North Abutment - shallow.
X24b	Groundwater monitor well Intermediate Dam, North Abutment - deep sample.
X25a	Groundwater monitor well Intermediate Dam, South Abutment - shallow.
X25b	Groundwater monitor well Intermediate Dam, South Abutment - deep sample.
X26	Zone II pit water.
BH-1, BH-2, BH-3, BH-4	Boreholes southeast of Zone II pit, west of North Fork of Rose Creek.
R4	Rose Creek just above Anvil Creek.
R5	Anvil Creek just below the confluence of Rose Creek.
R6	Anvil Creek immediately upstream of Rose Creek.
R7	North Fork of Rose Creek upstream of the confluence with the Faro diversion.
R8	North Fork of Rose Creek, 900 metres downstream of confluence with the Faro Creek diversion.
R9	North Fork of Rose Creek, adjacent to BH-1 and BH-2.
R10	North Fork of Rose Creek, 100 metres upstream from maximum elevation of water impounded behind the North Fork rock drain.

2. WATER USE

2.1 FRESH WATER SUPPLY SYSTEM

The water supply system was unchanged from previous years. Water is supplied from the Pumphouse Pond located near the confluence of the South and North Forks of Rose Creek. The pond can be supplied from three sources:

1. Water stored in the fresh water reservoir which is recharged from the South Fork of Rose Creek. Some control of the reservoir was exercised with the use of stoplogs across the overflow spillway. Withdrawal of reservoir storage water is through control valves and a conduit, located at the base of the reservoir dam (riparian outlet).

2. The North Fork of Rose Creek. Flow may be directed through its' natural channel into the Pumphouse Pond. Alternately, flow may be diverted around the Pumphouse Pond. Typically, the diversion around the Pumphouse Pond is used during the spring and summer seasons in order to minimize sedimentation into the pond.

3. Two groundwater wells, PW3 and PW6, located in the Rose Creek valley near the Pumphouse Pond.

2.2 FRESH WATER USE

During 1996, the fresh water reservoir was the main source of recharge for the Pumphouse Pond. During the winter months, supplementary water was obtained from the diversion of the North Fork of Rose Creek and the two water supply wells in order to conserve water stored in the Freshwater Reservoir.

The two groundwater wells (PW3 and PW6) supply water at a combined rate of 0.12m^3/s. With these supplementary sources combined with water from the reservoir, overflow from the pumphouse pond to the Rose Creek Diversion Canal was maintained above the minimum allowable flow of 0.076 m^3/s for the entire year with the possible exception of a short period during late winter/early spring 1996 when a trench excavated in the lower reach of the Rose Creek diversion channel failed to identify adequate flow. It is possible, however, that flow was subsurface at this location.

The fresh water consumption for 1996 is based on a pumping rate of 370 Lps (5865 USgpm) at an estimated 88% operating time for the year. The total estimated water use for the year was 10.3 million m^3 at an average rate of 28,250 m^3/day. The primary water use in the mill is for grinding and flotation. Daily process water consumption varies with ore feed tonnage. A relatively small volume of water is treated and used for domestic purposes.

Water License IN89-001 limits annual water consumption to 1.538×10^7 m^3 per year and 4.29×10^4 m^3 per day. Both annual and daily consumption were below license limits.

2.3 EFFLUENT DISCHARGE

Water used in mill and other surface operations was pumped to the mined out Faro Pit along with mill tailings. There was no surface discharge and no appreciable groundwater discharge from the Faro Pit. Hydrogeological investigations have shown that the largest potential groundwater flow from the Faro Pit is into the backfilled Zone II Pit. The Zone II Pit is dewatered back to the Faro Pit. Domestic sewage water is passed through a series of settling tanks and the decant flows into the Old Faro Creek channel below the mill.

Surface water discharge to the Down Valley area during 1996 which related directly to mine operations included seepage from the main waste dumps via location X23, occasional short duration discharges of mill tailings as allowed in the Licence, and water used to carry lime as slurry to the Intermediate Dam spillway for water treatment. Other sources of water to the area were possible seepage from the Rose Creek Diversion, flow in Guardhouse Creek, direct precipitation, and local runoff.

There are two effluent discharge streams from the tailings impoundment area. Site X5, outflow from the Cross Valley Pond and site X13, seepage from the Cross Valley Dam. The outflow at X5 consists of a syphon pipe as well as a spillway for surface water. Syphon outflow from the Cross Valley Pond at X5 was continuous through 1996 with the exception of the period from May 30 through August 22. The total volume of water discharged via X5 during 1996 was 2.2 million m^3.

Seepage flows at X13 remained generally constant throughout the year with an average of .053 m^3/sec. Total seepage from this site as determined from the monthly averages was 1.7 million m^3.

The total discharge from the tailings impoundment during 1996 (combined X5 and X13) was 3.9 million m^3.

2.4 FARO MAIN AND ZONE II PITS

Nearly all tailings from mill discharge during 1996 were discharged into the Faro Pit. The total estimated water contained in the tailings slurry was 10.0 million m^3. This was calculated from the total fresh water drawn from Rose Creek less that used for domestic purposes (avg. 60.5 m^3/day) since domestic sewage water is not pumped to the Main Pit. The net effect of moisture gain through ore feed and moisture loss through concentrates is relatively small and has not been included. The total quantity of tailings solids pumped to the Main Pit during 1996 was 4.3million tonnes or 2.3 million m^3 (assuming dry density of 1.9 t/m^3).

Water is pumped from the Zone II Pit into the Faro Pit. The total volume pumped during 1996 was estimated at up to 75,000 m^3 based on recorded pump hours and an average pumping rate of 0.024 m^3/s (375 USgpm pump capacity).

The total net volume of material entering the Main pit is accurately tracked via the elevation rise in water level. The water level elevation relates to a pit volume determined for that elevation from previously performed pit surveys. The total net volume entering the pit includes the sources described above (tailings slurry, tailings solids, Zone II dewatering) as well as direct precipitation, evaporation, local run off, seepage inflow and seepage losses. The average filling rate in the Main pit for 1996 was 38,200 m^3/day or 13.9 million m^3 total for the year.

This indicates that the net volume of water entering the Main pit from direct precipitation, evaporation, local run off, seepage inflow and seepage losses was1.3 million m^3 for the year (avg. 3600 m^3/day).

2.5 ROSE CREEK AT X14

The water level at location X14 in Rose Creek downstream of the mine discharges at X5 and X13 was monitored during 1996 using a pressure transducer and datalogger. Readings of the water level were taken at 15 minute intervals. These readings were downloaded from the datalogger and then converted to equivalent discharge rates using a rating curve first developed in 1992 and amended in 1996 as part of the Integrated Comprehensive Abandonment Plan. Spot flow measurements were also taken during 1996 to verify the ratings curve.

Figure 2.1 presents the daily discharge record for location X14, as reconstructed from the datalogger information. The spot flow measurements are also illustrated. The brief gap indicated on Figure 2.1 in late January/early February is due to false readings resulting from winter conditions which affected the pressure transducer.

The rating curve will continue to be assessed and amended, as required, in 1997.

2.6 NORTH FORK OF ROSE CREEK AT R7

The continuous flow recorder at R7 was not operating properly until September 1996 when a new pressure transducer was installed by Laberge Environmental Services. This will require the compilation of a new stage-discharge curve since the new transducer is not in exactly the same location as the previous (malfunctioning) transducer.

Therefore, no continuous flow data will be available for R7 until some time in 1997 when an adequate stage-discharge curve is developed from a series of spot flow measurements covering a range of flow conditions. During 1997, the curve will be prepared and, at that time, all available data logger information will be transposed into flows.

The spot flow measurements performed at R7 during 1996 are listed in Appendix 1.

FIGURE 2.1 X-14 STREAMFLOW RECORD FOR 1996

3. WATER QUALITY MONITORING PER SCHEDULE 'A'

3.1 OVERVIEW OF WATER QUALITY MONITORING PROGRAM

Schedule A requires the collection of samples from various sites around the mine, mill and tailings areas. These sites are listed in Table 1.1 and illustrated on Figure 1.1. All samples collected were grab samples. Analyses were carried out by Cavendish Laboratory Ltd. with quality control samples occasionally analysed by Quanta Trace Laboratories.

The two surface discharge points from the Faro mine site are X5 and X13, Cross Valley Pond outflow and collected seepage from the Cross Valley Dam, respectively. Surface drainage from the minesite passes through the Down Valley Tailings facility to be discharged at one of the two sites noted above. The largest regularly monitored input to the tailings facility is X23 in the old Faro Creek channel below the main rock dump. All inflows are not monitored individually but collect behind the Intermediate Dam. Site X4 is the decant from the Intermediate Dam and provides information on the quality of surface water in the Down Valley system.

The 1996 water quality data as required by the Licence is listed in Appendix 1 with annual summaries for each parameter. Data collected in excess of the Licence requirements is included in Appendix 2 as previously submitted in monthly reports.

Groundwater Wells PW4 and PW5 are located immediately upstream of the tailings impoundment and were intended to be utilized as a supplemental water supply to the pumphouse pond. These wells were not used during 1996 and, therefore, no water quality information was collected.

3.2 FARO PITS AND ROCK DUMPS (X22, X23, X26, BH1, BH2, BH4)

Water quality in the Faro Main Pit is monitored at location X22. Regular sampling at this location was initiated in June 1996 once the in-pit water level had risen to a point where safe access to the water could be attained. In general, the results showed elevated metals and sulphate at neutral pH which is representative of buffered acid rock drainage. This type of water chemistry is anticipated for this location given the presence of mineralized rock dumps and pit walls in the drainage area and the inflow of lime treated tailings slurry. The concentration of total zinc ranged from 3.3 to 7.8 mg/L and pH ranged from 6.5 to 7.8 during 1996. Sulphate levels during 1996 ranged from 531 to 741 mg/L. The concentration of total ammonia was elevated above background (0.1 to 1.4 mg/L in 1996) due, likely, to leaching of residual blasting agents from surrounding rock dumps and tailings slurry.

Water chemistry in the Main Pit is thought to be undergoing a period of stabilization resulting from the relatively rapid filling of the pit with water. Once the water level in the pit reaches the pumping levels and the water recycle system is operating in 1997, water chemistry should stabilize due to reduced flushing of pit walls. The current water chemistry is also reflective of a significant inflow of alkaline tailings slurry (ph~10) and some clean water inflows. A detailed depth sampling of the Main Pit was performed by DIAND Water Resources in October.

Water quality in the backfilled Zone II Pit is monitored at location X26, which is water pumped from the Zone II Pit into the Main Pit. Water quality was monitored six times during 1996. In general, the results showed elevated metals and sulphate at neutral pH as observed in the Main Pit. However, water quality was poorer in the Zone II Pit due, likely to a lower proportion of clean water inflows. The concentration of total zinc ranged from 50.0 to 66.8 mg/L and pH ranged from 5.9 to 6.5 during 1996. Sulphate levels during 1996 ranged from 1426 to 1840 mg/L. The concentration of total ammonia was elevated above the

levels observed in the Main Pit (1.3 to 2.0 mg/L in 1996) due, likely, to leaching of residual blasting agents from surrounding rock dumps.

The available data suggest that the water quality in the Zone II Pit has been generally consistent since sampling began in 1991. Neither increasing nor decreasing trends are currently evident for pH, sulphate or zinc. This indicates that leaching of contaminants from surrounding waste rock and pit walls is continuing at a steady pace. Further, this data may be suggesting that any expected increase in contaminant leaching is being held in check by partial flooding of the pit walls and some waste rock. The available longer term data for zinc and sulphate are illustrated on Figures 3.1 and 3.2, respectively.

FIGURE 3.1 ZINC AT X26

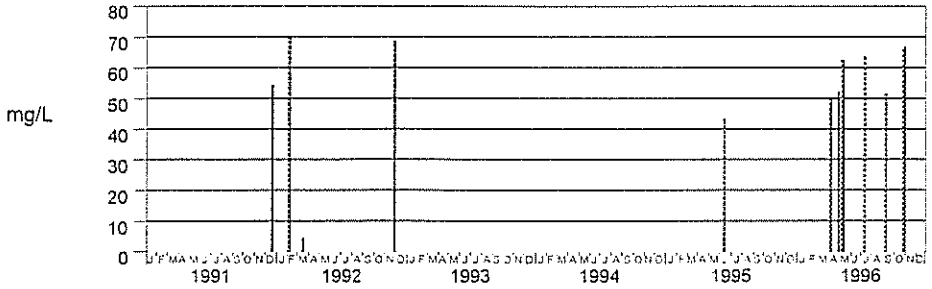
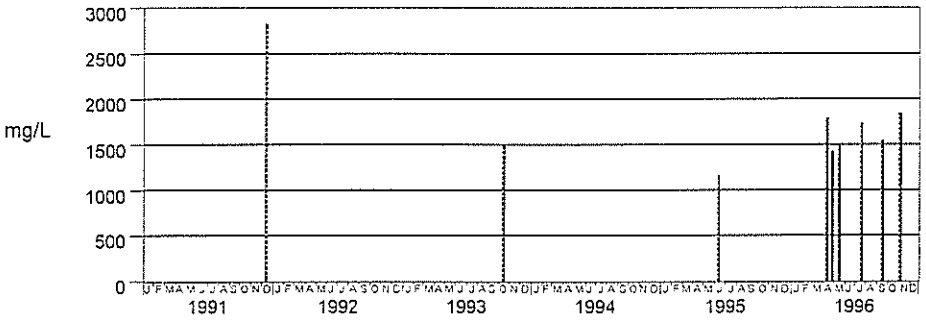


FIGURE 3.2 SULPHATE AT X26



Surface seepage from the rock dumps is sampled at X23 located in the old Faro Creek channel where a large portion of the seepage from the Main and Intermediate rock dumps is collected. This water is passed into the Intermediate Impoundment and receives treatment prior to discharge. Water quality is typical of buffered acid rock drainage with elevated metals and sulphate at neutral pH. The pH at X23 ranged from 6.5 to 7.4 during 1996 with a range in total zinc concentration from 21.8 to 30.5 mg/L. The concentration of total ammonia was slightly elevated above background (0.2 to 0.7 mg/L in 1996) due, likely, to leaching of residual blasting agents from surrounding rock dumps

The water quality at X23 is notably consistent over the year with narrow ranges in metal concentrations as compared to other sites. Over the longer term, water chemistry is also generally stable. Concentrations of iron and copper are relatively low and the concentration of copper at X23 during 1996 was within the maximum allowable discharge limit of 0.20 mg/L (total).

A stepped increase in sulphate at X23 is observed from around 1500 mg/L prior to about 1991 to around 2500 mg/L during and after 1993 as illustrated on Figure 3.3. There is a gap in the sampling record during 1992. The low 'troughs' in sulphate concentrations during early 1987 and second half 1989 may be related to dewatering of the Faro Main Pit which would have resulted in some water passing location X23.

The longer term trend in total zinc concentration at X23 is not clear although a curve may be observed with zinc levels increasing from an annual average of 21.3 mg/L in 1988 to an annual average of 79.1 mg/L in 1993 followed by a decrease to an annual average of 26.0 mg/L in 1996. The longer term zinc trend is illustrated on Figure 3.4. Low concentration 'troughs' are visible for zinc as they are for sulphate although not as clearly for zinc.

The available flow information for X23 indicates that flows prior to 1992 were highly variable and peaks were observed as high as 17.5 L/s (litres per second) as illustrated on Figure 3.5. This is in sharp contrast to the more complete flow record observed during and after 1995 where flows are generally consistent at around 2 L/s. The flow record may be indicating that additional sources of water (including, possibly, dewatering of the Faro Main Pit) passed location X23 prior to 1992 which are no longer present. If this indication were correct, then it would support the concept that operations dewatering of the Faro Main Pit prior to 1992 could have had the effect on zinc and sulphate concentrations described above.

FIGURE 3.3 LONG TERM SO4 AT X23

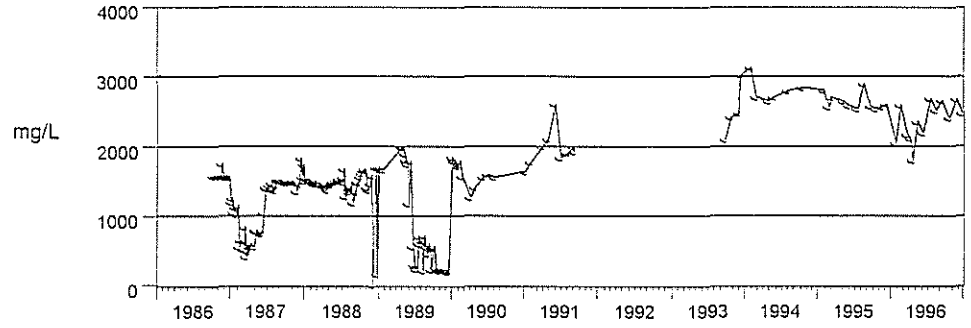


FIGURE 3.4 LONG TERM ZINC AT X23

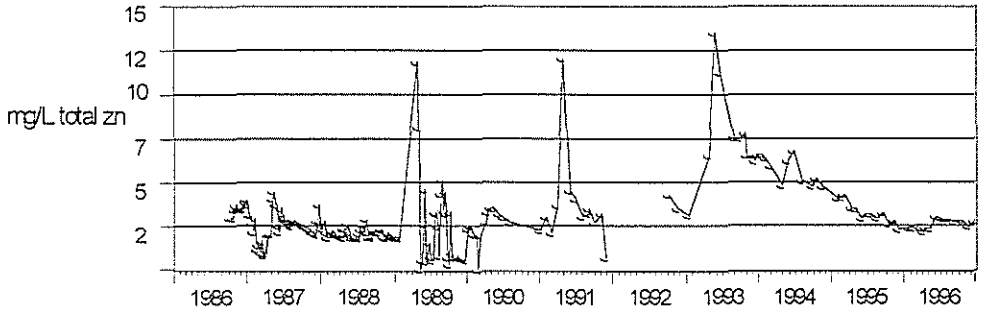
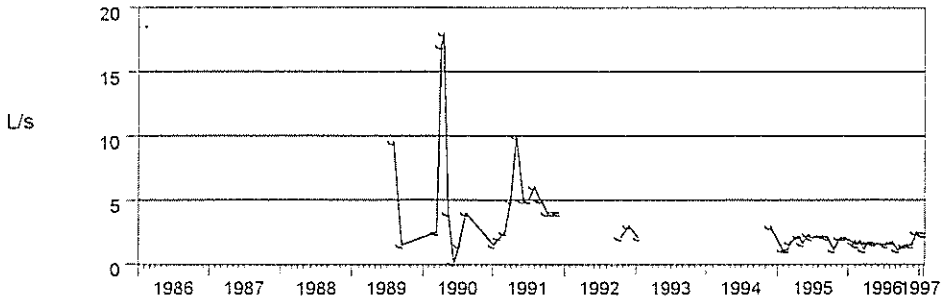


FIGURE 3.5 FLOW AT X23



Shallow groundwater seepage between the Zone II Pit and the North Fork of Rose Creek is monitored regularly at piezometers BH1, BH2 and BH4. Piezometer BH3 was damaged at some time in the past and is no longer operable. The static water levels in these piezometers are below the level of Rose Creek. Piezometer BH2 is closest to the Zone II Pit and BH4 is closest to the North Fork of Rose Creek.

The water quality in BH1 and BH2 are similar and show slightly elevated metals in a pH range which is slightly acidic to neutral. During 1996, dissolved zinc concentrations in BH1 and BH2 ranged from 0.6 to 3.5 mg/L in a pH range from 5.9 to 6.7. Each of BH1 and BH2 have one set of results which show metal concentrations well above the range normally experienced and are considered anomalous at this time. In terms of dissolved zinc, these anomalous results were 29.9 mg/L at BH1 on July 17 and 12.3 mg/L at BH2 on October 25.

Water quality in BH4 is markedly different from that at BH1 and BH2 with greater metal concentrations and lower pH. During 1996, the concentration of dissolved zinc in BH4 ranged from 4.0 to 41.3 mg/L in a pH range of 3.6 to 5.7.

The reasons for the difference in water quality between BH1/BH2 and BH4 are not well understood but may relate to the history of events in this area which includes surface flow of contaminated water and erosion of upstream mineralized areas. These events were of sufficient magnitude that long term impacts on local water quality are possible. For example, it is possible that contaminated seepage from a past overflow from the Zone II Pit is continuing to migrate and that the contaminated "plume" has passed BH1 and BH2 but not BH4.

It is important to cross reference the water chemistry in piezometers BH1, 2 and 4 with surface water quality in the North Fork of Rose Creek (R7 through R10) because the surface water quality data shows that there is currently no observable impact in Rose Creek from the elevated levels of contaminants observed in the piezometers.

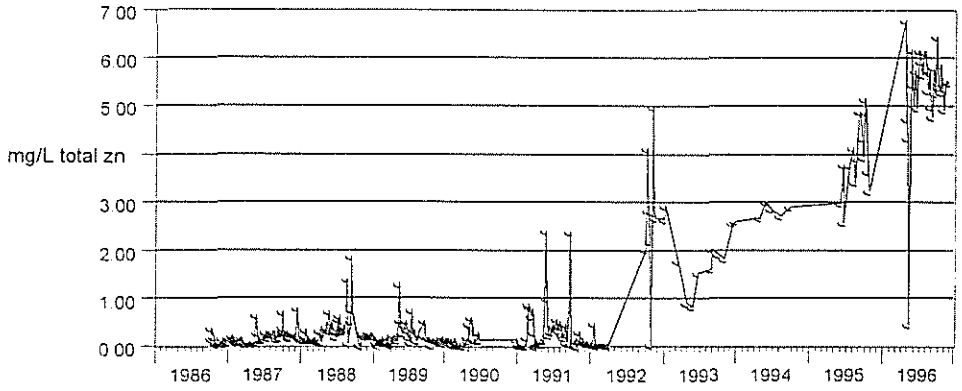
3.3 INTERMEDIATE POND (X4)

Since tailings deposition ceased in the Down Valley Tailings facility there has been an increase in zinc in water flowing through the facility. This is due to the decrease in alkalinity previously added to the tailings pond via the tailings slurry. To reduce zinc to acceptable levels, water treatment was started in 1992. Initially, lime slurry was trucked to the facility and added to the Intermediate Dam spillway or the syphon decant. During 1994 sodium hydroxide was added for a short time. In 1995, a new method of delivering lime slurry was successfully adopted. The slurry was mixed in the mill and piped to the Intermediate Dam spillway in a 3 inch plastic pipe. This successful treatment method was utilized during 1996 from

late April through to November. The increased pH causes metals to precipitate as metal hydroxides and settle out in the Cross Valley Pond.

The concentration of total zinc at X4 ranged from 4.3 to 6.8 mg/L during 1996 excluding one anomalously low concentration of 0.46 mg/L. The long term trend in zinc concentrations is illustrated on Figure 3.6.

FIGURE 3.6 LONG TERM ZINC AT X4

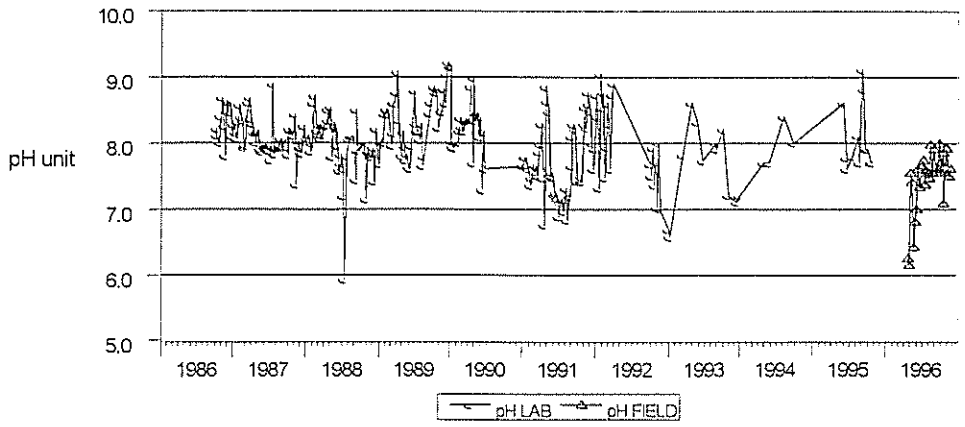


There are no major sources of suspended solids to the Intermediate Pond. Water at X23 (old Faro Creek channel) was generally clear during 1996 with less than 8 mg/L suspended solids with two exceptions only on April 9 (41 mg/L) and December 19 (24 mg/L). During mill upsets, additional suspended solids enter the impoundment via the X23 ditch as allowed in the license. This ditch flows to the north east corner of the Intermediate Impoundment and is often cloudy. During heavy precipitation, sheetflow off the stripped areas adjacent to the Down Valley impoundments represents an additional short lived source of suspended solids. The suspended solids load entering the Intermediate Pond is clarified prior to being discharged to the Cross Valley pond as shown by the low concentrations at X4 which were less than 9 mg/L during 1996 with one exception at 94 mg/L during freshet on April 23.

There are no monitored sources of low pH (acidic) water to the tailings impoundment. Location X23 shows a near neutral pH. Precipitation on the tailings surface likely adds considerable acidity as puddles on the surface can have low pH. Despite the potential for low pH to develop in the impoundment this is not apparent at X4 (range during 1996 from 6.2 to 8.0). This is thought to be due partly to the alkalinity of runoff water in the area, the transport of alkalinity into the impoundment with occasional tailings discharges and the leaching of stored alkalinity in the tailings behind the Intermediate Dam which have not yet become strongly acidic at the surface. The long term trend in pH is illustrated on Figure 3.7.

Ammonia input to the tailings impoundment at X23 has been relatively constant with an average during 1996 of 0.50 mg/L. The breakdown of small quantities of residual cyanide in the impoundment could be an additional source of ammonia. Ammonia would also be added to the tailings area by occasional discharges from the mill. Ammonia levels at X4 are lower than the monitored input at X23 but it is unclear if this is due to degradation of ammonia or dilution. The range in ammonia concentrations at X4 during 1996 was from 0.05 to 0.32 mg/L with an average of 0.21 mg/L.

FIGURE 3.7 LONG TERM pH AT X4



3.4 FINAL EFFLUENT (X5 AND X13)

The analytical results received for samples at X5 and X13 show that these discharges were within the maximum allowable concentrations with only rare excursions. Figures 3.8 and 3.9 show pH and total zinc, respectively, during 1996 for both X5 and X13.

All quarterly bioassays performed during 1996 for locations X5 and X13 were passed. All of the three bioassays performed for X5 (fourth sample not required due to no flow for three months) and three of the four bioassays performed for X13 were non-lethal (no mortalities) and the fourth bioassay for X13 had a result of >100% concentration with 90% survival over the 96 hour test. The bioassays were 96 hour LC_{50} tests using rainbow trout. The bioassay results for September (X5 and X13) may be questionable given an unintentional and atypical delay between sampling and analysis. The analysis protocol calls for beginning the test within 5 days of sampling and, in September, a delay of 6 days occurred. The situation was discussed with DIAND Water Resources and Environment Canada personnel. All bioassay test results are included in Appendix 3.

FIGURE 3.8 1996 EFFLUENT PH

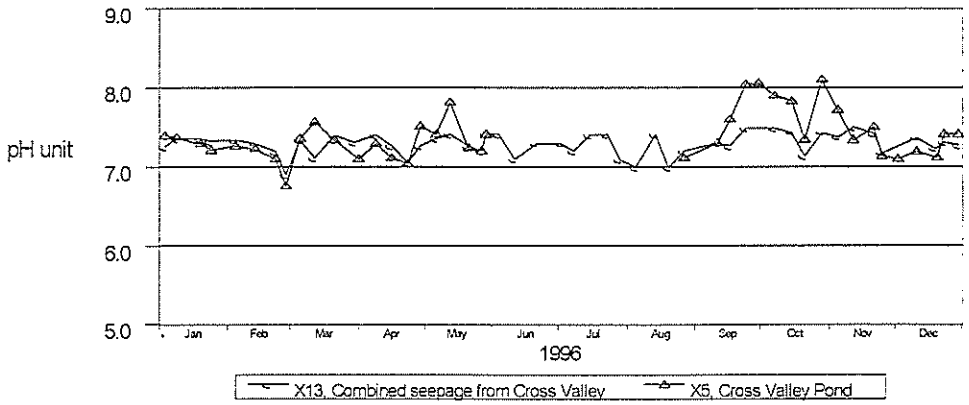
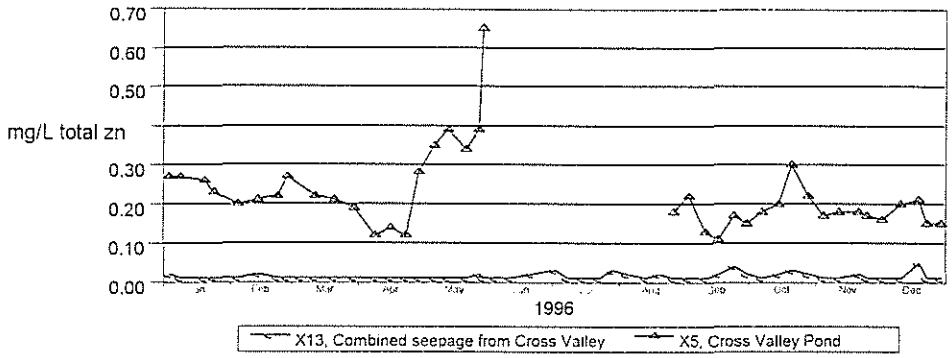


FIGURE 3.9 1996 EFFLUENT ZINC



Discharge from the Cross Valley Pond was suspended on May 30 due to elevated concentrations of total zinc. In -House analyses for extra samples collected on May 29 and 30 showed 0.46 and 0.54 mg/L total zinc, respectively. External results for May 29 later showed 0.65 mg/L total zinc. Depth sampling on June 24 and June 28 indicated a zinc gradient increasing with depth although all zinc concentrations (in-house) were found to be less than 0.50 mg/L. The zinc gradient did not persist as was observed during a detailed depth sampling program on July 31. It is believed that the temporary increase in zinc concentrations was due to the pond turning over.

The concentration of total arsenic at X5 was slightly greater than the maximum allowable concentration of dissolved arsenic (0.05 mg/L) on one occasion in 1996. The level was 0.10 mg/L on December 19. Analysis was performed for total rather than dissolved arsenic in order to maintain analytical consistency with other parameters. The elevated concentrations did not persist and no further investigation was required. All analyses for dissolved arsenic which were performed during 1996 (during May) were less than 0.02 mg/L.

The concentration of ammonia at X13 was greater than the maximum allowable concentration (1.0 mg/L) on nine occasions during 1996. The greatest of these occasions was a concentration of 1.30 mg/L on September 3. The average ammonia concentration at X13 in 1996 was 0.83 mg/L. Ammonia at X13 may follow a seasonal cycle with higher levels generally occurring during winter when surface ponds are ice covered and water temperature is at or near freezing. The concentration of ammonia at X13, however, is higher than at either X4 or X5. This may be due to the lower potential for degradation in the subsurface regime.

3.5 ROSE AND ANVIL CREEKS

3.5.1 North Fork of Rose Creek (R7, R8, R9, R10, X2)

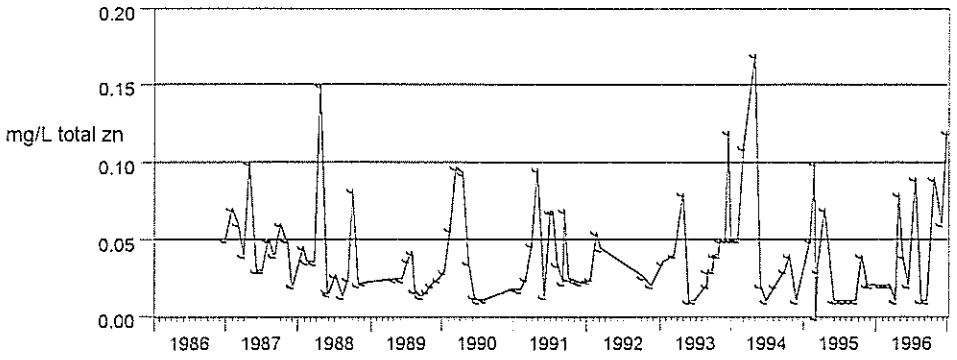
The potential for surface water impact from seepage from the Zone II Pit and the north east rock dumps is monitored at locations R7 through R10 in the North Fork of Rose Creek. The water quality results for these locations show no observable presence of contaminated seepage. None of pH, sulphate or total zinc display any increasing trends from R7 to R10. The concentration of total zinc at the upstream reference location (R7) was as high as 0.04 mg/L on two occasions during 1996 (September 4 and December 9).

The North Fork of Rose Creek is monitored at X2 prior to joining with the South Fork. The additional influences at X2 which may not be present at R10 are surface run off and seepage from the eastern portion of the main rock dump and the rock drain in the Vangorda Haul Road.

The water quality at X2 during 1996 was similar to R10 with the exception of a slight increase in the concentration of total zinc which is in agreement with observations in previous years

The longer term trend of total zinc at X2 shows that the zinc levels observed during 1996 are typical for this location. The longer term trend illustrated on Figure 3.10 indicates that zinc has varied within a range between 0.01 and 0.17 mg/L since 1988 with a historical high of 0.17 mg/L total zinc in April 1994. The concentration of total zinc at X2 ranged from 0.01 to 0.12 mg/L during 1996 with an average concentration of total zinc during 1996 of 0.05 mg/L.

FIGURE 3.10 LONG TERM ZINC AT X2



3.5.2 South Fork of Rose Creek (X3)

The south Fork of Rose Creek is monitored at location X3 which is in the pumphouse pond downstream of the fresh water reservoir. This location also includes the North Fork at times when the North Fork is required as a supplemental water source for plant operations. This location showed no impacts from mining operations during 1996 with metal concentrations at or near detection limits and pH in the neutral to slightly alkaline range. The concentration of total zinc at X3 was greater than 0.03 mg/L on three occasions during 1996. The concentration was 0.04 mg/L on each of April 23 and November 21 and was 0.05 mg/L on December 19. These slightly elevated concentrations of total zinc correspond to higher concentrations observed on the same dates at upstream location X2.

3.5.3 Rose Creek Near Mine Discharges (X10, X14)

Rose Creek upstream of the effluent discharges at X5 and X13 is monitored at location X10 which is near the bottom of the Rose Creek Diversion Canal. The canal diverts Rose Creek along the southern perimeter of the tailings impoundments via a constructed channel. The potential influences on water quality between X10 and X3 at the upper end of the diversion canal are inflows from two side creeks and possible lateral seepage from the tailings impoundments. The water quality at X10 is similar to that at X3 with the exceptions of small unexplained variations in concentrations of zinc and sulphate.

Sulphate concentrations at X10 during 1996 were slightly greater than at X3 on most occasions. The range in sulphate at X10 during 1996 was from 4 to 63 mg/L. The greatest increase in sulphate from X3 to X10 was from 9 mg/L at X3 to 63 mg/L at X10 on June 11. The concentration of sulphate was slightly lower at X10 than at X3 on two of eight corresponding sample dates. The cause of these variations in sulphate concentrations is unknown at this time.

The concentration of total zinc was slightly greater at X10 than at X3 on five of eight corresponding sample dates during 1996. The zinc concentrations were the same on the remaining three occasions. The greatest observed increase in zinc was from 0.02 to 0.08 mg/L on October 21. The average concentration of total zinc at X10 for 1996 was 0.04 mg/L.

Rose Creek immediately downstream of the confluence with effluent discharges at X5 and X13 is monitored at X14. Water quality at X14 shows the presence of mine discharge through concentrations of sulphate, total zinc and ammonia which are elevated above background. The highest concentrations of these parameters correspond directly to periods of discharge from the cross valley pond. Sulphate concentrations at X14 during 1996 ranged from 28 to 503 mg/L with an average annual concentration of 222 mg/L. The average annual and peak monthly concentrations of total zinc were 0.06 and 0.12 mg/L, respectively.

The average annual and peak monthly concentrations of ammonia at X14 were 0.25 and 0.56 mg/L, respectively during 1996. These levels of total ammonia are well within the Canadian Water Quality Guidelines for the protection of Freshwater Aquatic Life as reproduced in Table 3.1. The Guidelines show that the lowest recommended limit for Rose Creek would be 0.93 mg/L for pH about 8 and temperature about 20° C. The guidelines take into consideration the effects of temperature and pH on the toxicity and proportion of un-ionized ammonia.

TABLE 3.1
RECOMMENDED GUIDELINES FOR TOTAL AMMONIA (NH_3) IN mg/L

pH	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	30 °C
6.50	2.5	2.4	2.2	2.2	1.49	1.04	0.73
6.75	2.5	2.4	2.2	2.2	1.49	1.04	0.73
7.00	2.5	2.4	2.2	2.2	1.49	1.04	0.74
7.25	2.5	2.4	2.2	2.2	1.50	1.04	0.74
7.50	2.5	2.4	2.2	2.2	1.50	1.05	0.74
7.75	2.3	2.2	2.1	2.0	1.40	0.99	0.71
8.00	1.53	1.44	1.37	1.33	0.93	0.66	0.47
8.25	0.87	0.82	0.78	0.76	0.54	0.39	0.28
8.50	0.49	0.47	0.45	0.44	0.32	0.23	0.17
8.75	0.28	0.27	0.26	0.27	0.19	0.16	0.11
9.00	0.16	0.16	0.16	0.16	0.13	0.10	0.08

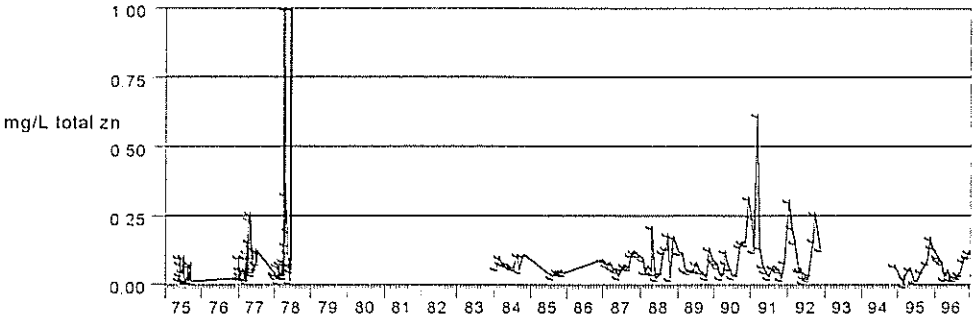
Source: Canadian Water Quality Guidelines

The long term trends at X14 illustrate the beneficial effects of discontinuation of tailings discharge to the Down Valley in 1992. This is observed primarily through annual reductions in total zinc concentrations as illustrated on Figure 3.11. The annual average concentrations of total zinc at X14 ranged from 0.07 to 0.12 mg/L prior to 1992 and from 0.05 to 0.07 mg/L post 1992.

The long term trends for X14 also show a somewhat seasonal cycling of zinc concentrations at X14 with higher levels observed during the winter seasons. The higher winter concentrations are the result of lower dilution flows in Rose Creek. The long term data also illustrate several significant isolated events over the history of the operation including the tailings spill in the mid-1970's.

Concentrations of total cyanide at X14 during 1996 were less than the Canadian Water Quality Guideline for the Protection of Freshwater Aquatic Life of 0.005 mg/L with the single exception of a concentration of 0.007 mg/L on May 29.

FIGURE 3.11 LONG TERM ZINC AT X14



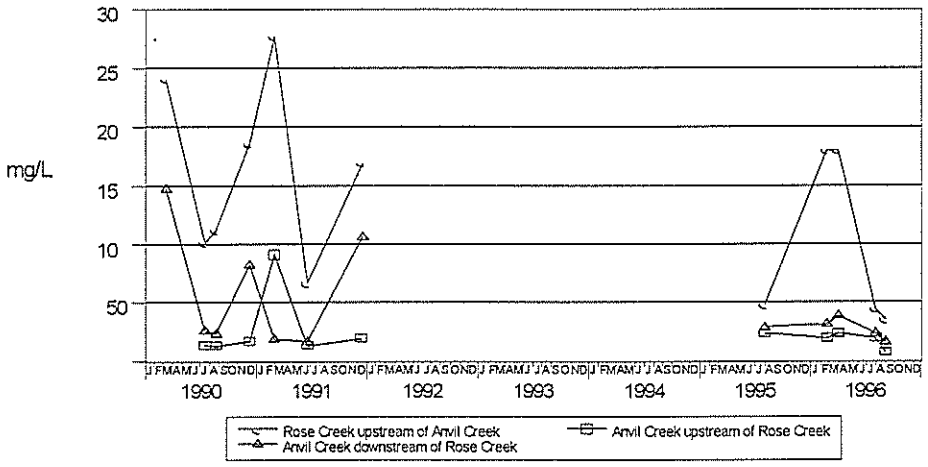
3.5.4 Rose Creek at Anvil Creek / Anvil Creek (R4, R5, R6)

The farthest downstream monitoring locations are at the confluence of Rose and Anvil Creeks approximately 26 km downstream of the Down Valley Tailings facility. The sampling locations are Rose Creek just above Anvil Creek (R4), Anvil Creek just above Rose Creek (R6) and Anvil Creek just below Rose Creek (R5). The three locations were each sampled four times during 1996 as required in the Licence.

Water quality at R4, R5 and R6 did not indicate an influence from mine activities with the possible exception of slightly elevated concentrations of sulphate, total copper and total zinc at R4 in Rose Creek. All concentrations of these parameters returned to background levels at R5 in Anvil Creek after mixing with clean water from upper Anvil Creek (R6).

The concentration of sulphate at R4 in Rose Creek during the winter (February and March) was elevated above background levels at 180 mg/L for both dates as illustrated on Figure 3.12. This is likely an indication of lower dilution flows in Rose Creek during the winter season relative to other times of the year.

FIGURE 3.12 SO4 AT R4, R5,



The concentration of total copper at R4 in September was elevated with respect to other levels at 0.015 mg/L as illustrated on Figure 3.13. This does not match with a corresponding elevated concentration upstream at X14 but does generally relate to the timing of a small spill of copper contaminated water at the Stanchem copper sulphate plant in August.

The concentration of total zinc at R4 was 0.026 mg/L in September which was the highest of all results for the year as illustrated on Figure 3.14. The cause of this elevated reading is currently unknown since there was not a corresponding elevated concentration of zinc observed upstream at X14.

Concentrations of total ammonia and total cyanide at R4 in Rose Creek were at or below detection limits (0.05 mg/L for ammonia and 0.001 mg/L for cyanide).

FIGURE 3.13 COPPER AT R4, R5, R6

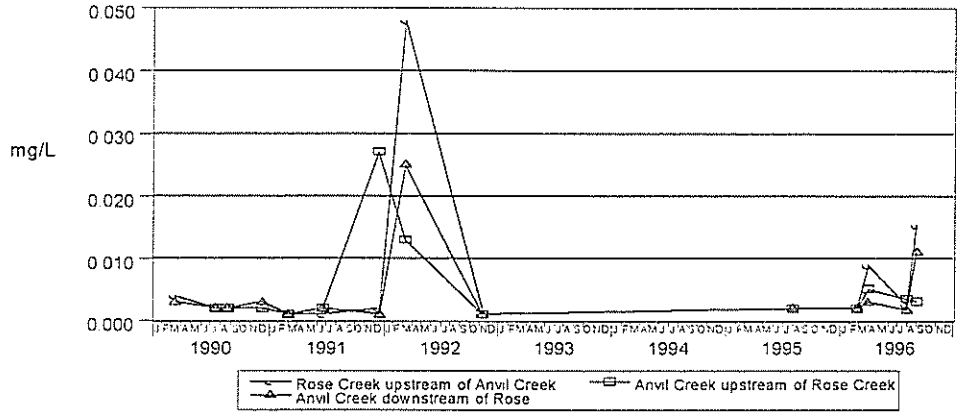
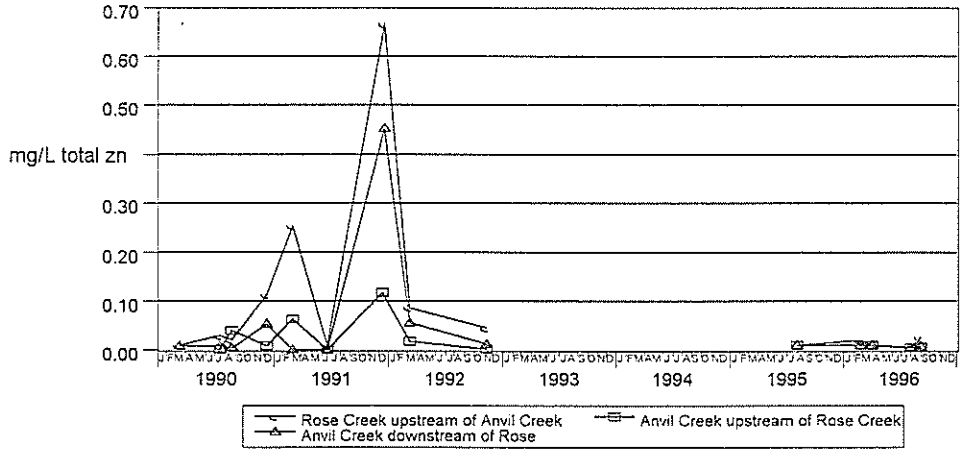


FIGURE 3.14 ZINC AT R4, R5, R6



3.6 DOWN VALLEY GROUNDWATER QUALITY

Groundwater in the aquifer underlying the Down Valley tailings impoundments was monitored during 1996 at piezometers X16 through X18 located just downstream from the Cross Valley Pond. In addition, several new piezometers were installed in the Down Valley which replace previously destroyed

piezometers. These new piezometers are labeled 96-3A/B, 96-4A/B/C/D and 96-5B/C and replace piezometers X24, X25 and X21, respectively.

Water quality in piezometers X16, X17 and X18 has been monitored since 1981. The three piezometers form a line along the approximate centre of the Down Valley with X18 closest to the Cross Valley dam and X16 farthest. The presence of groundwater affected by tailings seepage is evident at X18 as slightly elevated sulphate concentration although pH remains in the neutral range and zinc remains low.

The concentrations of sulphate in the two X18 installations were 395 mg/L (shallow) and 408 mg/L (deep) for two sampling dates in 1996. The corresponding average 1996 concentrations of sulphate in X17 were 30 mg/L (shallow) and 94mg/L (deep) and in X16 were 31 mg/L (shallow) and 24 mg/L (deep). Over the longer term, it is evident that the concentration of sulphate in piezometer X18A/B has been generally increasing since 1981. The longer term trend for piezometer X17A/B shows that the slightly elevated level of sulphate measured in 1996 (94 mg/L) in the deeper installation is a new development and it is currently unknown whether this represents a new increasing trend. Sulphate at piezometer X16A/B has remained at low levels over the longer term with isolated spikes observed in 1987 and 1989. The trends for sulphate at X16, X17 and X18 are illustrated on Figures 3.15, 3.16 and 3.17, respectively.

FIGURE 3.15 SULPHATE AT X16

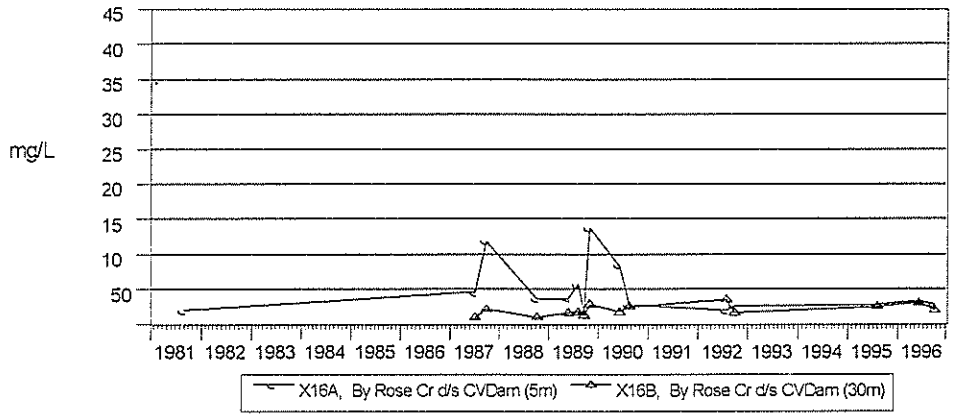


FIGURE 3.16 SULPHATE AT X17

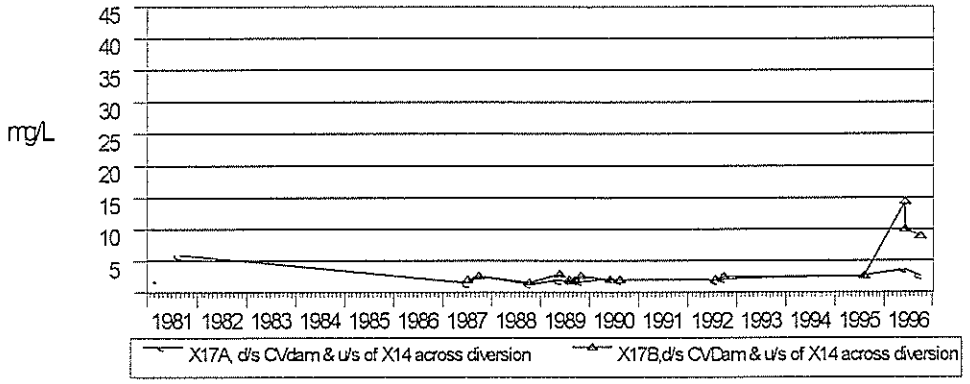
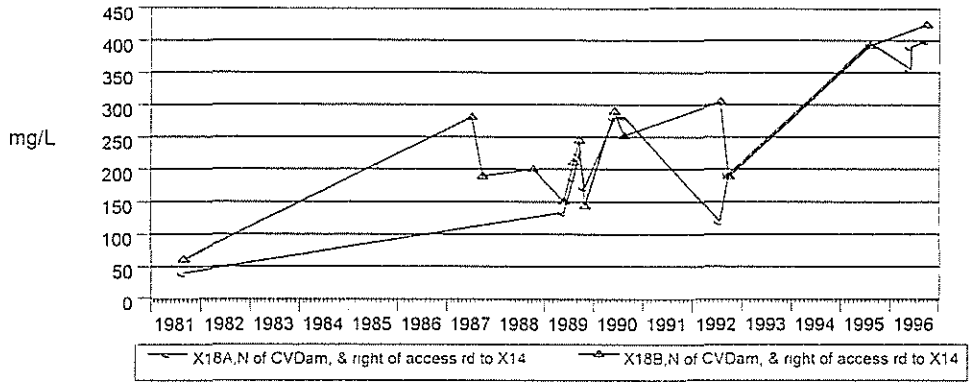


FIGURE 3.17 SULPHATE AT X18



There were no corresponding elevated concentrations of zinc in any of these piezometers during 1996 or over the longer term. The absence of elevated zinc concentrations may be related to metal reduction mechanisms along the flow path and this subject is described in greater detail in the Integrated Comprehensive Abandonment Plan. The greatest concentration of zinc in these piezometers during 1996 was 0.02 mg/L observed in piezometer X16B.

The water quality results for the newly installed (September 1996) piezometers are preliminary. However, the initial indications confirm the results observed in piezometers X16, X17 and X18. Specifically, the water quality shows elevated sulphate concentrations, neutral pH and low zinc concentrations. The highest sulphate concentration was 1048 mg/L observed in piezometer 96-4D which is located deep in the aquifer near the north abutment of the Intermediate Dam (replaces X24). The greatest concentration of zinc was 0.13 mg/L observed in piezometer 96-5B which is located at an intermediate depth below the Second Impoundment dam (replaces X21). The relationships of zinc and sulphate along the length of the Down Valley aquifer below the tailings impoundments is illustrated on Figure 3.18.

The installation report prepared by Robertson Geoconsultants Inc. which describes the installation of the new (1996) piezometers is attached under its' own cover.

3.7 DRINKING WATER QUALITY

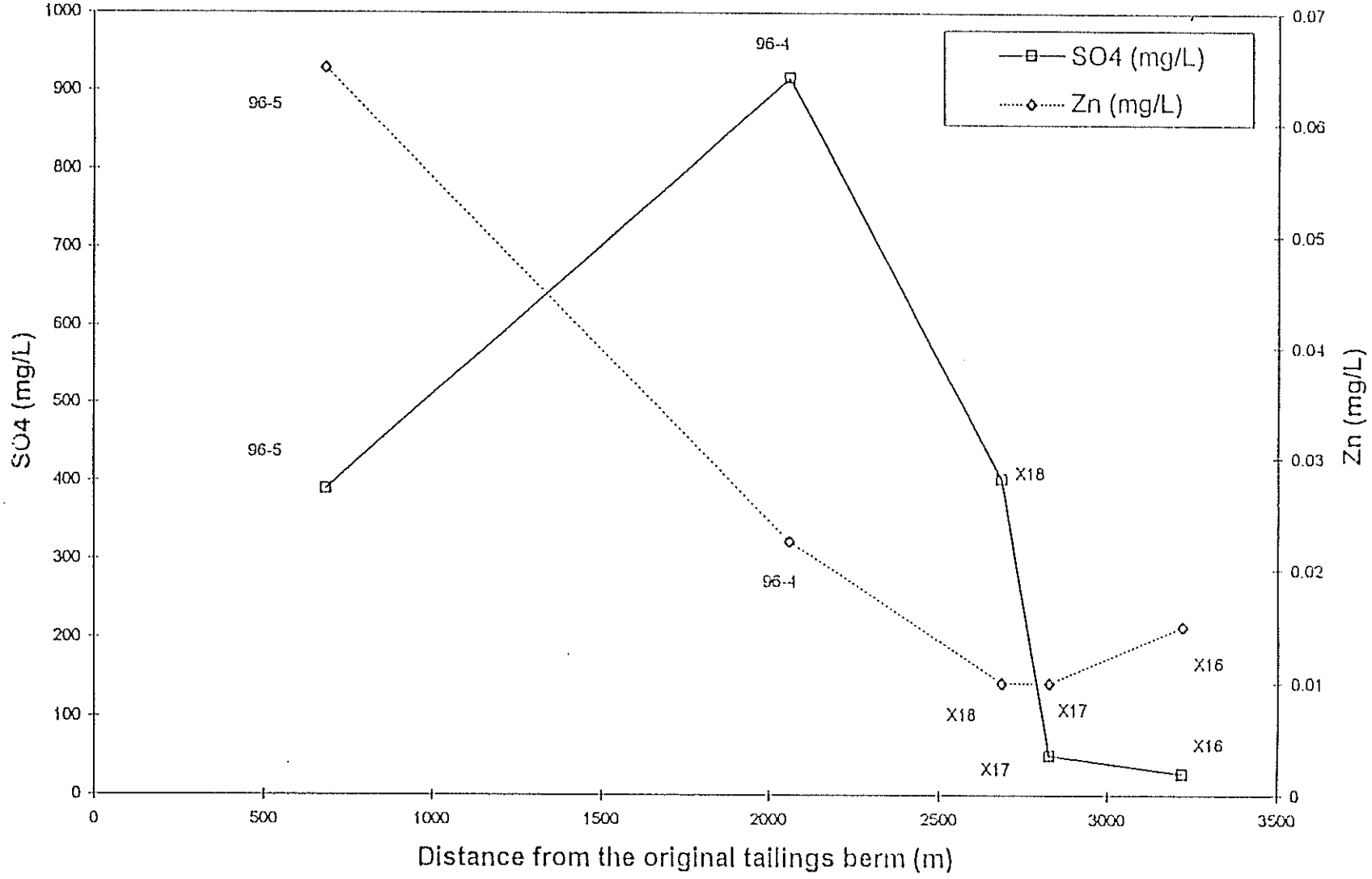
Prior to July 1996, potable water for the Faro site was obtained by passing Rose Creek water through filters and an ultraviolet treatment system. In the spring of 1996, however, bacteriological analyses revealed that this system was not effective in removing coliform bacteria from the water. It is suspected that the ultraviolet system was undersized for the quantity of water requiring treatment.

A chlorination system was installed in July 1996 and has been operated in parallel with the ultraviolet system. Coliform bacteria levels have been within acceptable levels since that time. Drinking water was supplied from the Grum minesite (groundwater supply) during the period between identification of unacceptable quality at the Faro site and installation of the chlorination system.

The chlorination system consists of a metering pump tied to an in-line flow meter which injects an industrial bleach solution (12% sodium hypochlorite) into the water line on a flow proportional basis.

Chlorine levels are regularly monitored by Environmental Department personnel and have been kept within acceptable levels. Samples of drinking water are occasionally analysed for coliform bacteria at Health and Welfare Canada and have been acceptable since installation of the chlorination system

FIGURE 3.18 DOWN VALLEY GROUNDWATER ZINC AND SULPHATE



4. BIOLOGICAL MONITORING PER SCHEDULE 'B'

The biological monitoring program under Schedule 'B' was performed during 1996 by Laberge Environmental Services. The full report is included in Appendix 4. Laberge Environmental Services has performed all of this work in the recent past and provides continuity of methodology and reporting.

The program included water quality, flow, stream sediment and benthic sampling. Sediment sampling is not a requirement of the Licence but was performed as a means of further identifying the biological status of Rose Creek and the aquatic habitat conditions.

The benthic populations present in Rose Creek immediately below the mine site were found to contain pollution sensitive species even though the overall abundance and diversity in this section of the creek were lower than at upstream and downstream reference locations. This indicates that the benthic populations in Rose Creek are healthy in spite of an observed reduction in abundance. The abundance and diversity of benthic populations recovered to normal levels at the mouth of Rose Creek (R4) and in Anvil Creek.

The section of Rose Creek below the tailings area and to the mouth (R4) contains elevated sediment metal concentrations as compared to upstream and downstream reference locations. However, significant reductions in sediment concentrations of copper, lead and zinc were identified with respect to previous studies in 1983 (2 separate studies in July and September 1983). The single exception to the reduction in metal concentrations was at the mouth of Rose Creek (R4) where zinc remained generally steady from the 1983 levels of 1020/750 ppm through to the 1996 level of 908 ppm. This trend could be related to the transport and redeposition of tailings from previous operational events such as the tailings spill in the mid-1970's. However, if tailings redeposition was occurring, then it would be logical to expect corresponding trends in sediment concentrations of copper and lead which were not observed. Alternately, the trend in zinc at R4 may be within natural variations since the zinc concentration at R6 (background in Anvil Creek) in one of the two 1983 studies was found to be 997 ppm.

5. GEOTECHNICAL MONITORING PER SCHEDULE 'C'

The geotechnical monitoring program under Schedule 'C' was performed during 1996 by Golder Associates. The full report (2 volumes) is attached under its' own cover.

The recommended geotechnical instrumentation installed in and around the Rose Creek Diversion Canal, the Intermediate Dam, the Cross Valley Dam and the Freshwater Dam were measured by Anvil Range Mining Corporation personnel and the results were interpreted by Golder Associates in their report. A site visit was conducted by Golder Associates in September.

The facilities were observed to be in generally good condition and a schedule was provided for the 1997 monitoring program. A summary of the most important conclusions and recommendation from the Golder report follows:

- reduce the frequency of readings of geotechnical instrumentation due to increased confidence resulting from previous years data collection (schedule provided).
- clean and upgrade seepage collection weirs below the Cross Valley Pond (completed).
- repair the cascade section of the lower Rose Creek Diversion Canal,
- strengthen the North Wall Interceptor ditch in two locations and improve the road crossing,
- minor restorative work to the Intermediate Pond outflow spillway and diversion canal dyke
- inspect the riparian outlet in the Freshwater Dam.

A review of the as-built configuration of the Freshwater Dam was performed by Golder Associates in order to identify the maximum allowable water level which would not compromise the geotechnical safety of the dam. The review is included in the Golder report and recommended that no more than six stop logs be placed so that the water level would remain at least 0.5 m below the top of the internal low permeability core and at least 2.0 m below the crest of the dam. The six stop logs were placed in October.

Extra monitoring was performed during the fall and early winter of 1996 of the piezometers in and below the Freshwater Dam. This monitoring was in excess of the previous Golder recommendations for assessing geotechnical stability but was deemed advisable in light of the placement of stoplogs in the outflow structure. The results of this extra monitoring are included in the Golder report and were found to indicate no adverse geotechnical effects resulting from placement of the stoplogs. Overtopping of the six stoplogs ceased in January of 1997 as the pond level was drawn down to provide water for mill operations and minimum flow requirements in the Rose Creek diversion.

Two new piezometers were installed into the Intermediate Dam embankment during September 1996 in order to provide the means of monitoring hydraulic pressures within the embankment and assess the performance of the toe drain. This is an important factor in determining the geotechnical safety of the embankment. The preliminary information indicates that there are no excess water pressures in the embankment and that the toe drain is performing as designed. Water levels in these standpipe piezometers will be monitored in the future as part of the overall geotechnical monitoring program.

The installation report prepared by Robertson Geoconsultants Inc. which describes the installation of the new (1996) piezometers is attached under its' own cover.

6. MINE CLOSURE MONITORING

6.1 SCHEDULE 'D' AMENDMENT

An amendment to Schedule 'D' has been proposed by Anvil Range Mining Corporation as part of the proposed amendment to License IN89-001 submitted June 08, 1995 and July 31, 1996. The proposed amendment would update the studies to be performed and the reporting requirements for mine closure planning.

6.2 1996 MONITORING

A surface sampling campaign was performed in July 1996 as part of the seep surveys initiated in previous years. The sites included Faro Creek, Faro Creek Diversion, North Fork of Rose Creek, Pit Walls, Upper Guardhouse Creek, Guardhouse Creek, and the North Wall Interceptor Ditch.

The sampling campaign was performed by Anvil Range Mining Corporation. The analytical results are included in Appendix 5. In general, the results confirm previous indications that the Faro Creek Diversion is unaffected by mine activities and that Upper Guardhouse Creek and the North Wall Interceptor Ditch are unaffected by run off from the North West rock dump.

Piezometers around the Faro site were monitored twice during 1996 in May and September by Anvil Range Mining Corporation as part of the groundwater surveys initiated in previous years. The analytical results are included in Appendix 1. This piezometer monitoring program included the piezometers below the sulphide rock dump (1,2 and 3) and the complete set of 1994 BH-series piezometers. Piezometers BH1,2 and 3 (1990) are monitored monthly and are described elsewhere in this report.

The water quality in the BH-1994 piezometers is generally as expected given the known soil and bedrock conditions logged during installation. The water chemistry is described in detail in the Integrated Comprehensive Abandonment Plan Section 4.2.13. Piezometers BH-12, 13 and 14 are of particular importance because they measure seepage from the northeast rock dumps towards the North Fork of Rose Creek. Water quality here did not indicate the presence of a subsurface flow of contaminated water. Surface water quality data (R7, R8 and R9) confirms that there is no impact on surface water from rock dump seepage in this location.

The water quality results from the piezometers below the Main Rock Dump (#1,2 and 3) showed that some indication of seepage from the rock dumps may be evident in shallow groundwater flow as slightly elevated concentrations of sulphate and zinc. During 1996, the maximum concentrations of sulphate and total zinc in the three wells were 1,371 and 0.15 mg/L, respectively. These groundwater quality results may relate to surface water quality in the North Fork of Rose Creek (R10 and X2) where zinc is observed to be slightly elevated at X2 with respect to R10. This will be the subject of future investigations.

Several new piezometers were installed during 1996 for the purpose of collecting information pertaining to closure of the mine site. These piezometers are in the Faro Creek channel near X23 below the mill (96-8A/B), below the Main/Intermediate rock dumps (96-7), and below the east side of the Main rock dump near the rockfill drain in the haul road (96-6). These piezometers were sampled once during 1996 and the results are preliminary in nature due to the potential effects of installation work. These new piezometers will be incorporated into future groundwater monitoring programs.

The installation report prepared by Robertson Geoconsultants Inc. which describes the installation of the new (1996) piezometers is attached under its' own cover.

7. SITE MAINTENANCE

7.1 GLACIATION

There were several occasions during 1996 when glaciation in creeks and ditches became an environmental concern.

Glaciation in the Rose Creek Diversion Canal was monitored on a daily basis early in 1996. In the beginning of February glaciation was causing water flow above the ice. The channel continued to be monitored on a daily basis and no further concerns arose.

In March, a trench was dug across the Rose Creek Diversion channel in order to verify water flow. The result of this excavation was that the trench froze solid to the bottom of the channel and created an ice dam which greatly increased the potential for ice blockage and overflow from the spillway during freshet. This did not occur but the excavation of trenches into the ice will be avoided in the future.

In April, the ditch which directs water from X23 and emergency mill discharges into the Intermediate Pond became blocked with ice such that water overflowed into the Second Impoundment for approximately 2 weeks while the ditch was repaired. There was overflow across the Second Impoundment dam and some local erosion and rilling of the crest but no significant geotechnical impact on the stability of the dam.

The Faro Creek diversion channel became blocked with ice in May and some water was observed to overflow into the Faro Main Pit. The blockage was immediately cleared and no significant impacts of this event were identified.

7.2 FLOW MONITORING SYSTEMS

Important maintenance work was performed on the flow monitoring systems around the Faro mine site in September of 1996. The work was performed in conjunction with Laberge Environmental Services.

The weirs and channels below the Cross Valley dam were repaired such that leakage around the weir plates was eliminated and the approach channels and stilling pools were cleaned out. This work was in accordance with previous recommendations from Golder Associates.

Similar repairs were performed on two weirs below the Freshwater Dam. One weir is in the seepage collection channel and the other below the low level outlet gate in the Freshwater Dam.

A new pressure transducer was installed at the continuous flow recorder at R7 in the North Fork of Rose Creek upstream of the Faro Creek diversion. This was necessary to re-initiate continuous flow measurement at this site.

A new weir was installed in the lower reach of the Intermediate Dam outflow channel below the lime slurry addition location. This weir will allow flow measurements and a sampling location to meet licence requirements and to more efficiently regulate the addition of lime slurry.

7.3 PIEZOMETERS

A total of 14 piezometers were installed in 8 drill holes around the Faro mine site during August and September 1996. The field installation work was supervised by Robertson Geoconsultants Inc. and the report on the installations is attached under its' own cover.

Three of the drill holes comprising 8 of the piezometers were directly related to replacing previously destroyed piezometers which are required monitoring sites per the Licence. These locations are X24 and X25 below the Intermediate Dam and X21 below the Second Impoundment dam.

Two of the drill holes with one piezometer each were installed into the Intermediate Embankment. These piezometers will be used to monitor water pressures in the toe drainage blanket as a means of verifying the structural safety of the dam.

The remaining piezometers were installed around the perimeter of the Main and Intermediate rock dumps and will be incorporated into the groundwater monitoring program to provide information related to closure planning and monitoring seepage from the rock dumps.

7.4 GRASS SEEDING

A small amount of grass seeding was performed at the Faro site in conjunction with a larger program at the Vangorda Plateau site. The areas seeded were the roadsides approaching the Faro security gate and the fill slopes below the mill.

There is no previous on-site information regarding grass seeding and fertilizing. The seed and fertilizer mixtures used and the application rates were developed based on generic components and general Yukon experience. Arctic Alpine Seed of Whitehorse was used for development and performance of the program.

This initial grass seeding program will provide information directly relevant to future reclamation work.

The seed and fertilizer mixtures used were as follows:

Seed:	Boreal (Creeping Red Fescue)	40%	
	Sheep (Fescue)	30%	
	Annual Rye	10%	
	Crested Wheat	10%	
	Alsike Clover	10%	application rate 75 kg/ha
Fertilizer: 18-18-18			application rate 400 kg/ha

8. SUMMARY OF ENVIRONMENTAL EVENTS AND SPILLS

8.1 SPILL OF DIESEL FUEL- FEBRUARY

On February 16, a spill of approximately 80,000 litres of diesel fuel occurred at the bulk storage tank farm. The spill was contained within the containment berm and all possible fuel was recovered. A small amount of fuel likely seeped into the ground.

8.2 OVERFLOW FROM THE FARO CREEK DIVERSION INTO THE MAIN PIT

The Faro Creek diversion overflowed into the Main Pit for a short period during May due to ice blockage in the channel. The blockage was quickly cleared and there were no significant environmental impacts from this event.

This event was reported to the Spills Action centre.

8.3 ACCIDENTAL DISCHARGE FROM THE CROSS VALLEY POND

Discharge from the Cross Valley Pond was suspended on May 30, 1996 due to elevated zinc in the discharge. On June 9, the victaulic coupling at the bottom end of the syphon pipeline failed resulting in the resumption of discharge. The accidental discharge was identified and immediately stopped.

Water samples were taken of the accidental discharge, X10 (upstream in Rose Creek) and at X14 (downstream in Rose Creek). The in-house analytical results for total zinc showed that the discharge was 0.46 mg/L zinc.

The incident was treated as a spill and was reported to the Spills Action Centre.

8.4 SPILL OF DIESEL FUEL - JUNE

A spill of diesel fuel occurred on June 5, 1996 at the Emergency Generator shack near the mill.

The spilled material was largely contained by rapid construction of a soil dyke in the flowpath. The escaped material reported to the Intermediate Pond via the X23 ditch where it was evaporated from the surface of the pond prior to overflowing into the Cross Valley Pond.

The spill was reported to the Spills Action Centre.

8.5 SPILL OF COPPER CONTAMINATED WATER AT STANCHEM PLANT

On August 17, 1996 a spill of copper contaminated water occurred from the Stanchem copper sulphate plant into the diversion arm of the North Fork of Rose Creek. Anvil Range was notified by the Stanchem operators and Anvil Range environmental personnel attended the site immediately upon notification.

The Anvil Range personnel were informed that the spill had been reported appropriately to the Spills Action Centre and that the situation was under their control and, therefore, no further actions were taken by Anvil Range.

8.6 FISHERIES EVENT AT FRESHWATER RESERVOIR

Stop logs were placed in the overflow channel of the Freshwater Dam in August of 1996. The initial placement was such that all flow was cut off to the channel. Placement of the stop logs during August is earlier than the typical timing and was done during 1996 due to indications that fall could be relatively dry.

When flow was cut off from the channel, fish which were not previously known to be in the channel were stranded in isolated pools of water. The fish were primarily small (less than about 3 inches) grayling. Some fish died, presumably as a result of oxygen depletion in the pools, before the problem was identified and remedied by restoring flow to the channel.

This event was reported to DFO as was follow up information.

The stop logs were again placed in the channel during October on a staged basis which reduced flow gradually such that some flow was maintained in the channel with six stop logs in place. No fish were observed in the channel up until the time that the water level in the reservoir had dropped sufficiently to stop overflow into the channel in January 1997.

8.7 SPILL OF COPPER SULPHATE

A small (less than 100 litres) spill of copper sulphate occurred in the mill on September 3, 1996. The spill was the result of eroded bolts in a distribution pump. All bolts were later replaced with stainless steel.

The spilled material was contained to a large extent at the source with a small portion escaping to the Intermediate Pond via the X23 ditch. Samples analysed for pH and copper concentration indicated no observable impact of the spilled material in the Intermediate Pond, the Cross Valley Pond or Rose Creek.

The spill was reported to the Spills Action Centre.

8.8 METAFINA SITE DEBRIS

Two containers containing debris cleaned up from the Metafina spill site in the town of Faro were disposed of near the water level in the Faro Main Pit in September 1996. The debris was then covered with soil so that there would be no floating garbage when the water rose above the disposal location.

The disposal was used as a training exercise for the Emergency Response team.

The debris had been containerized and brought to the mine site previously by a government led clean up team not associated with Anvil Range Mining Corporation.

9. SUMMARY OF MAJOR DOCUMENTS FILED WITH THE WATER BOARD

9.1 UPDATE TO APPLICATION FOR AMENDMENT

An update to the application for licence amendment which was originally filed in June 1995 was filed in July 1996. The update included some amendments to the original application as well as a number of new 'housekeeping' applications intended to clarify the terms of the licence.

9.2 WATER BOARD HEARING

A hearing was held regarding the proposed amendments to the Licence on November 20, 1996. Written and oral interventions were presented by DIAND Water Resources, Environment Canada, Ross River Dena Council, and Yukon Conservation Society.

A written response to the intervenors' comments was filed by Anvil Range at the hearing.

9.3 INTEGRATED COMPREHENSIVE ABANDONMENT PLAN (ICAP)

The proposed licence amendments include a revision of the submission date for the ICAP to November 30, 1996. The original submission date was not met by the previous mine operator and Anvil Range required some time to prepare a report of this magnitude.

Even though the proposed submission date had not been approved and written into the licence, the ICAP was submitted on November 29, 1996.

The general direction of the ICAP is to establish a long term water collection and treatment system utilizing the existing Faro Main Pit as a holding pond for water not meeting discharge limits. Utilization of the Main Pit in this manner reduces the requirement for constructing a large holding pond elsewhere on the site.

Another important part of the ICAP is the plan to reprocess tailings from the Down Valley such that the costs of moving tailings to the Main Pit are recovered through sale of concentrate. This is a continuation of the plans developed by the previous mine operator. Sufficient tailings would be moved such that all tailings would ultimately be underwater either in the Main Pit or in the Down Valley.

9.4 ENVIRONMENTAL MANAGEMENT PLAN FOR TEMPORARY CLOSURE

The submission date for this report was also proposed to be changed to November 30, 1996 in the licence amendments currently under review. As for the ICAP, the document was filed on November 29, 1996 even though the amended licence had not been received.

This document outlines the environmental work to be performed in the case of temporary closure of the Faro mine site.

9.5 TAILINGS REPROCESSING FEASIBILITY STUDY

The date for submission of this document was proposed to be changed to December 31, 1996 in the application for amendment currently under review. The document was filed on January 3, 1997 with the slight delay due to excess time required for binding and copying.

This document describes in detail new metallurgical testing performed during 1996 for the purpose of expanding upon the preliminary testwork performed by the previous mine operator. The 1996 testwork was performed by Lakefield Research and included pilot plant tests.

The general conclusion of the study was that the reprocessing project could reach a break even status but that above average metal prices were required. In addition, the study concluded that reprocessing tailings in parallel with milling of ore from the Grizzly deposit would provide the best economic conditions for the reprocessing project through the potential for blending of concentrates, sharing of overhead and shipping costs and combined marketing efforts.

APPENDIX 1

1996 COMPLIANCE WATER QUALITY SUMMARY

1996 FARO SURFACE WATER QUALITY

STATION: X2, N Fork of Rose Creek u/s of mine access road

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96		0.9	7.42	349	<.001	<.05	29	<5	<.003	<.02	0.071	<.002	0.002	<.02	<.002	<.005	<.02	<.02		0.02
Feb/14/96	0.080	1.2	7.39	377	<.001	<.05	26	<5	<.003	<.02	0.081	<.002	<.002	<.02	<.002	<.005	<.02	<.02		0.02
Mar/12/96	0.111	1.1	7.31	362	<.001	0.14	20	<5	<.003	0.03	0.074	<.002	<.002	<.02	0.002	<.005	<.02	<.03		0.02
Apr/9/96	0.240	1.4	7.31	362	<.001	<.05	18	<5	<.003	0.02	0.073	<.002	0.018	<.02	<.002	0.008	<.02	<.03		<.01
Apr/23/96		2.0	7.41	241	0.004	<.05	20	7	<.003	<.02	0.059	<.002	<.002		<.002	<.005	<.02	0.04		0.08
May/13/96		3.5	7.60	119	<.001	<.05	6	7	<.003	<.02	0.033	<.002	0.05		0.004	<.005	<.02	<.03		0.04
Jun/11/96		4.0	7.57	110	<.001	<.05	8	<5	<.003	<.02	0.032	<.002	<.002	<.02	0.003	<.005	<.02	<.03		0.02
Jul/17/96	2.247	6.0	7.47	1120	<.001	<.05	109	<5	<.003	<.02	0.037	<.002	<.002	<.02	0.007	<.005	<.02	<.03		0.09
Aug/15/96	1.024	5.0	7.82	146	<.001	<.05	11	<5	<.003	<.02	0.038	<.002	0.002	<.02	<.002	<.005	<.02	<.03		0.01
Sep/11/96	1.221	4.0	7.91	144	<.001	<.05	11	<5	<.003	<.02	0.073	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.01
Oct/21/96		0.0	7.58	192	0.048	<.05	16	<5	<.003	<.02	0.075	<.002	0.049	<.02	<.002	<.005	<.02	<.03		0.09
Nov/21/96		0.0	7.44	202	<.001	0.01	27	<5	<.003	<.02	0.073	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.06
Dec/19/96		0.0	7.4	274	<.001	0.11	13	6	<.003	<.02	0.112	0.002	0.005	<.02	<.002	0.006	0.05	<.03		0.12
JAN 1996 - DEC 1996																				
Mean	0.821	2.1	7.5	308	0.005	0.06	24	5	0.003	0.02	0.064	0.002	0.011	0.02	0.003	0.005	0.02	0.03		0.05
Std. Deviation	0.852	2	0.18	263	0.013	0.03	27	1	0	0	0.023	0	0.018	0	0.001	0.001	0.01	0		0.04
Minimum Value	0.08	0	7.31	110	0.001	0.01	6	5	0.003	0.02	0.032	0.002	0.002	0.02	0.002	0.005	0.02	0.02		0.01
Maximum Value	2.247	6	7.91	1120	0.048	0.14	109	7	0.003	0.03	0.112	0.002	0.05	0.02	0.007	0.008	0.05	0.04		0.12
Median	0.632	1.3	7.43	241	0.001	0.05	18	5	0.003	0.02	0.073	0.002	0.002	0.02	0.002	0.005	0.02	0.03		0.02
Num. Values	6	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	13	13		13

Standard	Inst.Max.
F: FARO WATER LICENCE	
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: X3, S Fork Rose Creek at the pumphouse reservoir

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96	0.027	0.9	7.5	255	<.001	<.05	15	<5	<.003	<.02	0.053	<.002	0.007	<.02	<.002	<.005	<.02	<.02	n/a	0.01
Feb/14/96		1.6	7.52	263	<.001	<.05	22	<5	<.003	<.02	0.053	<.002	0.005	<.02	<.002	<.005	<.02	<.02	n/a	0.01
Mar/12/96		1.5	7.51	245	0.001	<.05	20	<5	<.003	0.02	0.049	<.002	<.002	<.02	<.002	<.005	<.02	0.04	n/a	<.01
Apr/9/96	0.103	1.8	7.55	237	<.001	<.05	19	<5	<.003	0.02	0.053	<.002	0.013	<.02	0.004	<.005	<.02	<.03	n/a	<.01
Apr/23/96		2.0	7.53	236	0.001	<.05	23	5	<.003	<.02	0.058	<.002	<.002		0.007	<.005	<.02	<.03	n/a	0.04
May/13/96		2.5	7.56	140	<.001	<.05	9	<5	<.003	<.02	0.050	<.002	0.011		<.002	<.005	<.02	<.03	n/a	0.03
Jun/11/96		5.5	7.5	107	<.001	<.05	9	<5	<.003	<.02	0.030	<.002	<.002	<.02	0.003	<.005	<.02	<.03	n/a	<.01
Jul/17/96	0.162	9.0	7.75	114	<.001	<.05	11	<5	<.003	<.02	0.017	<.002	<.002	<.02	0.006	<.005	<.02	<.03	n/a	<.01
Aug/15/96		7.0	7.86	138	<.001	<.05	12	<5	<.003	<.02	0.028	<.002	<.002	<.02	<.002	<.005	0.02	<.03	n/a	<.01
Sep/11/96		5	7.95	148	<.001	<.05	12	<5	<.003	<.02	0.096	<.002	0.003	<.02	<.002	<.005	<.02	<.03	n/a	0.01
Oct/21/96		0	7.6	173	<.001	<.05	15	<5	<.003	<.02	0.070	<.002	0.027	<.02	<.002	<.005	<.02	<.03	n/a	0.02
Nov/21/96		0	7.2	177	<.001	0.02	21	<5	<.003	<.02	0.053	<.002	<.002	<.02	<.002	<.005	<.02	<.03	n/a	0.04
Dec/19/96		0	7.48	261	<.001	<0.05	21	<5	<.003	<.02	0.081	0.002	<.002	<.02	<.002	<.005	<.02	<.03	n/a	0.05
JAN 1996 - DEC 1996																				
Mean	0.0973	2.6	7.57	192	0.001	0.05	16	5	0.003	0.02	0.053	0.002	0.006	0.02	0.003	0.005	0.02	0.03		0.02
Std. Deviation	0.0677	2.9	0.18	59	0	0.01	5	0	0	0	0.021	0	0.007	0	0.002	0	0	0		0.01
Minimum Value	0.027	0	7.2	107	0.001	0.02	9	5	0.003	0.02	0.017	0.002	0.002	0.02	0.002	0.005	0.02	0.02		0.01
Maximum Value	0.162	9	7.95	263	0.001	0.05	23	5	0.003	0.02	0.096	0.002	0.027	0.02	0.007	0.005	0.02	0.04		0.05
Median	0.103	1.7	7.53	177	0.001	0.05	15	5	0.003	0.02	0.053	0.002	0.002	0.02	0.002	0.005	0.02	0.03		0.01
Num. Values	3	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	13	13		13

Standard	Inst.Max.
F: FARO WATER LICENCE	
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: X4, Intermediate Dam decant

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Apr/23/96		4.5	6.24	795	0.003	0.28	322	94 +	<.003	<.02	0.067	0.008	0.002		0.002	0.017	0.08	0.04		6.77 +
Apr/29/96	0.070	5.0	6.15	608	0.147 +	0.23	255	9	<.003	<.02	0.059	0.005	0.007		0.005	0.011	0.02	<.03		4.74 +
May/6/96	0.085	7.0	7.53	532	0.126 +	0.17		5	<.003	<.02	0.064	<.002	0.007		<.002	0.006	<.02	<.03		4.33 +
May/13/96	0.085	7.0	7.40	156	<.001	<.05	59	<5	<.003	<.02	0.064	<.002	0.014		<.002	<.005	<.02	<.03		0.46
May/21/96	0.088		6.41	746	0.198 +	0.2	384	7	<.003	<.02	0.034	0.006	0.031	<.02	<.002	<.005	<.02	0.03	<.02	6.18 +
May/27/96	0.088	6.0	6.80	855	0.165 +	0.31	416	<5	<.003	<.02	0.029	0.005	0.007	<.02	<.002	0.006	<.02	<.03		5.46 +
Jun/4/96		9.5	7.00	967	0.185 +	0.22	450		<.003	<.02	0.041	0.008	0.009	<.0001	<.002	0.021	<.02	<.03	<.02	5.02 +
Jun/11/96	0.018	10.0	7.60	1002	.140 +	0.21	417	<5	<.003	<.02	0.077	<.002	0.004	<.02	<.002	0.028	<.02	<.03		5.72 +
Jun/21/96	0.010	11.0	7.33	925	0.023	0.2	544		<.003	<.02	0.043	0.005	0.003	<.02	0.003	0.009	0.03	<.03		4.96 +
Jul/2/96		12.0	7.64	950	0.022	0.22	544	<5	<.003	<.02	0.161	<.002	0.01	<.02	0.002	0.013	<.02	<.03		6.15 +
Jul/8/96	0.004	16.5	7.73	840	0.056 +	0.28	564	<5	<.003	<.02	0.066	0.007	<.002	<.02	<.002	<.005	<.02	<.03		5.93 +
Jul/15/96	0.013	12.0	7.37	969	0.088 +	0.32	525	<5	<.003	<.02	0.024	0.002	<.002	<.02	0.008	0.018	<.02	<.03		5.64 +
Jul/23/96	0.012	5.5	7.58	916	0.076 +	0.3	545	<5	<.003	<.02	0.057	0.004	0.004	<.02	<.002	<.005	0.02	<.03		6.14 +
Jul/29/96	0.010	7.0	7.53	981	0.077 +	0.25	506	<5	<.003	<.02	0.065	0.011	0.013	<.02	0.004	0.009	0.03	<.03		6.14 +
Aug/5/96	0.015	13.0	7.47	923	0.057 +	0.25		<5	<.003	0.03	0.100	0.011	0.01	<.02	<.002	0.014	<.02	<.03		5.77 +
Aug/14/96	0.014	13.0	7.96	939	0.059 +	0.19	554	<5	<.003	0.03	0.096	0.007	0.024	<.02	<.002	0.029	0.03	<.03		5.32 +
Aug/20/96	0.013	12.0	7.53	885	.058 +	0.14	536	<5	<.003	0.03	0.038	0.009	0.008	<.02	<.002	0.032	<.02	<.03		5.71 +
Aug/27/96	0.015	13.0	7.90	921	0.073 +	0.26	451	<5	<.003	<.02	0.071	0.007	0.003	<.02	<.002	0.007	0.02	<.03		4.99 +
Sep/3/96	0.043			923	0.076 +	0.28	515	<5	<.003		0.007	0.01	0.006	<.02	<.002	<.005	<.02	<.03		4.78 +
Sep/11/96	0.043	8.0	7.55	878	0.022	0.15	550	<5	<.003	<.02	0.091	0.004	0.006	<.02	0.004	0.038	<.02	<.03		5.81 +
Sep/17/96	0.043	8.0	7.60	1042	0.024	0.13	561	<5	<.003	<.02	0.117	<.002	0.01	<.02	0.002	0.011	<.02	<.03		5.27 +
Sep/24/96	0.043	7.0	7.98	890	0.049	0.29	593	<5	<.003	<.02	0.078	0.009	0.027	<.02	<.002	0.034	<.02	<.03		6.45 +
Sep/30/96	0.039	2.9	7.70	899	0.052 +	0.19	560	<5	<.003	<.02	0.089	0.003	0.011	<.02	<.002	0.015	<.02	<.03		5.40 +
Oct/7/96	0.021		7.55	1011	0.057 +	0.18	554	<5	<.003	<.02	0.070	<.002	0.009	<.02	<.002	0.009	<.02	<.03		5.50 +
Oct/15/96	0.043	3.5	7.84	798	0.039	0.26	460	<5	<.003	<.02	0.051	0.002	0.032	<.02	<.002	0.018	<.02	<.03		5.30 +
Oct/21/96	0.043	2.5	7.08	852	<.001	0.23	496	<5	<.003	<.02	0.051	0.006	0.032	<.02	<.002	0.037	0.02	<.03		5.86 +
Oct/29/96	0.031	0	7.91	843	0.027	0.21	458	<5	<.003	<.02	0.074	0.008	0.028	<.02	<.002	0.016	<.02	<.03		4.93 +
Nov/5/96	0.031			934	0.069 +	0.19	568		<.003	<.02	0.076	0.004	0.009	<.02	<.002	0.016	<.02	<.03		5.35 +
Nov/12/96	0.028	0	7.5	997	0.054 +	0.12	531	<5	<.003	<.02	0.033	0.006	0.01	<.02	<.002	<.005	<.02	<.03		5.53 +
Nov/21/96	0.024	0	7.61	893	0.039	0.12	550	<5	<.003	<.02	0.059	0.009	0.005	<.02	<.002	0.024	<.02	<.03		5.50 +

JAN 1996 - DEC 1996

Mean	0.036	7.5	7.41	862	0.069	0.21	481	9	0.003	0.02	0.065	0.006	0.012	0.0192	0.002	0.016	0.02	0.03	0.02	5.37
Std. Deviation	0.026	4.5	0.49	173	0.053	0.06	115	17	0	0	0.030	0.003	0.01	0.0039	0.001	0.01	0.01	0	0	1.07
Minimum Value	0.004	0	6.15	156	0.001	0.05	59	5	0.003	0.02	0.007	0.002	0.002	0.0001	0.002	0.005	0.02	0.03	0.02	0.46
Maximum Value	0.088	16.5	7.98	1042	0.198	0.32	593	94	0.003	0.03	0.161	0.011	0.032	0.02	0.008	0.038	0.08	0.04	0.02	6.77
Median	0.031	7	7.54	908	0.057	0.21	528	5	0.003	0.02	0.065	0.005	0.009	0.02	0.002	0.014	0.02	0.03	0.02	5.5
Num. Values	27	26	28	30	30	30	28	27	30	29	30	30	30	26	30	30	30	30	2	30

1996 FARO SURFACE WATER QUALITY

STATION: X5, Cross Valley Dam decant

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-D mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/4/96		2.8	7.38	1229	0.007	0.3	530	<5	<0.003		<0.02	0.036	<0.002	0.012	<0.03	<0.002	0.006	<0.02	<0.02		0.27
Jan/9/96	0.120	3.3	7.36	1215	0.004	0.23	462	<5	<.003		<.02	0.045	<.002	0.007	<.02	<.002	<.005	<.02	<.02		0.27
Jan/20/96	0.120	3.3	7.28	1235	0.003	0.61	412	<5	<.003		0.03	0.041	0.002	0.003	<.02	<.002	0.006	<.02	<.02		0.26
Jan/25/96	0.120	2.7	7.21	1247	0.001	0.5	416	<5	<.003		0.03	0.034	<.002	0.013	<.02	<.002	<.005	<.02	<.02		0.23
Feb/5/96	0.120	3.8	7.26	946	0.008	0.45	527	<5	<.003		<.02	0.045	0.002	0.007	<.02	<.002	0.005	<.02	<.02		0.20
Feb/14/96	0.080	3.6	7.22	1307	<.001	0.61	508	<5	<.003		<.02	0.039	<.002	< 002	<.02	<.002	<.005	<.02	<.02		0.21
Feb/23/96	0.080	3.4	7.1	1268	<.001	0.61	559	<5	<.003		<.02	0.053	<.002	0.008	<.02	<.002	<.005	< 02	<.02		0.22
Feb/28/96	0.080	3.5	6.75	1141	0.001	0.59	551	<1	<.003		<.02	0.046	<.002	0.012	<.02	<.002	0.008	<.02	<.02		0.27
Mar/5/96	0.080	3.9	7.35	1133	0.001	0.96	521	7													
Mar/12/96	0.080	3.1	7.56	1255	0.001	0.61	491	<5	0.003		0.03	0.068	0.002	0.003	<.02	<.002	0.011	0.04	<.03		0.22
Mar/21/96	0.080	4.1	7.33	1304	<.001	0.66	441	<5	<.003		<.02	0.052	<.002	0.008	<.02	0.003	0.007	0.03	<.03		0.21
Mar/30/96	0.080	4.0	7.1	1265	<.001	0.45	592	<5	<.003		<.02	0.052	<.002	0.006	<.02	0.002	0.009	<.02	<.03		0.19
Apr/9/96	0.070	2.9	7.28	1286	<.001	0.66	520	<5	<.003		<.02	0.057	<.002	0.017	<.02	<.002	<.005	<.02	<.03		0.12
Apr/16/96	0.070	3.0	7.11	1286	<.001	0.57	370	<5	<.003		<.02	0.048	<.002	0.014	<.02	<.002	0.012	<.02	<.03		0.14
Apr/23/96	0.070	4.5	7.03	1195	.125 +	0.56	503	<5	<.003		0.02	0.059	<.002	0.002	<.02	<.002	0.009	0.03	<.03	<.02	0.12
Apr/29/96	0.070	4.5	7.51	1215	<.001	0.68	506	<5	<.003		<.02	0.065	0.002	0.003	<.02	<.002	0.010	<.02	<.03	<.02	0.28
May/6/96	0.080	4.5	7.4	1150	0.001	0.52		<5	<.003	<.02	<.02	0.061	<.002	0.008	<.02	<.002	0.006	<.02	<.03	<.02	0.35
May/13/96	0.070	4.5	7.81	1133	<.001	0.54	483	<5	<.003	<.02	<.02	0.061	<.002	0.024	<.02	0.004	0.007	<.02	<.03	<.02	0.39
May/21/96	0.070		7.23	1125	<0.001	0.44	505	<5	<.003	<.02	<.02	0.044	<.002	0.004	<.02	<.002	<.005	<.02	<.03	<.02	0.34
May/27/96	0.070	0.1	7.2	1118	0.006	0.57	476	<5	<.003	<.02	<.02	0.051	<.002	0.006	<.0001	<.002	<.005	<.02	<.03	<.02	0.39
May/29/96	0.070	5.6	7.4	1188	0.003	0.49	543	<5	<.003		<.02	0.057	<.002	0.008	<.02	<.002	0.013	<.02	<.03		0.65
Aug/27/96	0.091	9.5	7.11	1148	0.002	0.5	499	<5	<.003		<.02	0.081	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.18
Sep/3/96	0.091			1102	0.002	0.47	321	<5	<.003		<.02	0.094	<.002	0.005	<.02	<.002	<.005	<.02	<.03		0.22
Sep/11/96	0.091	9.0	7.29	1090	<.001	0.23	549	<5	<.003		<.02	0.077	<.002	0.011	<.02	0.003	<.005	< 02	<.03		0.13
Sep/17/96	0.091	8.5	7.59	1064	0.005	0.21	464	<5	<.003		<.02	0.094	<.002	0.006	<.02	0.003	<.005	<.02	<.03		0.11
Sep/24/96	0.091	8.0	8.04	887	0.008	0.28	469	<5	<.003		<.02	0.110	<.002	0.024	<.02	<.002	0.022	<.02	<.03		0.17
Sep/30/96	0.091	4.8	8.05	910	0.002	0.53	471	<5	<.003		<.02	0.054	<.002	0.006	<.02	<.002	<.005	<.02	<.03		0.15
Oct/7/96	0.091	4.1	7.89	1203	0.005	0.26	457	<5	<.003		<.02	0.069	<.002	0.009	<.02	<.002	<.005	<.02	<.03		0.18
Oct/15/96	0.091	3.0	7.83	848	<.001	0.35	395	<5	<.003		<.02	0.037	<.002	0.026	<.02	<.002	<.005	<.02	<.03		0.20
Oct/21/96	0.091	2.0	7.34	874	<.001	0.33	437	<5	<.003		<.02	0.065	<.002	0.038	<.02	<.002	0.013	<.02	<.03		0.30
Oct/29/96	0.091	0	8.09	876	<.001	0.42	378	<5	<.003		0.02	0.046	0.002	0.025	< 02	<.002	<.005	<.02	<.03		0.22
Nov/5/96	0.070	0	7.71	997	<.001	0.25	476		<.003		<.02	0.035	<.002	0.006	<.02	<.002	<.005	<.02	<.03		0.17
Nov/12/96	0.070	0	7.33	961	0.007	0.21	498	<5	<.003		<.02	0.036	<.002	0.009	<.02	<.002	<.005	<.02	<.03		0.18
Nov/21/96	0.070	0	7.5	954	<.001	0.2	509	<5	<.003		<.02	0.081	<.002	0.007	<.02	<.002	0.024	<.02	<.03		0.18
Nov/25/96	0.070	0	7.13	947	<.001	0.23	469	<5	<.003		<.02	0.062	<.002	0.005	<.02	<.002	<.005	< 02	<.03		0.17
Dec/2/96	0.070	0	7.09	1075	<.001	0.49	455	<5	<.003		<.02	0.047	0.004	0.005	<.02	<.002	0.011	<.02	<.03		0.16

DATA CONTINUED

STATION: X5, Cross Valley Dam decant

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-D mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Dec/11/96	0.070	0	7.18	1021	<.001	0.21	176	7	<.003		<.02	0.124	<.002	0.009	<.02	<.002	0.014	<.02	<.03		0.20
Dec/19/96	0.070	1.5	7.11	1256	<.001	0.24	486	<5	<.003		0.10	0.075	<.002	0.010	<.02	0.004	0.028	<.02	<.03		0.21
Dec/23/96	0.070	0	7.4	1259	<.001	0.73	436	<5	<.003		<.02	0.054	<.002	0.009	<.02	0.007	0.008	<.02	<.03		0.15
Dec/30/96	0.070	0	7.41	1269	<.001	0.55	434	<5	<.003		<.02	0.034	<.002	0.003	<.02	<.002	0.006	<.02	<.03		0.15
JAN 1996 - DEC 1996																					
Mean	0.083	3.2	7.38	1125	0.005	0.458	469	5	0.003	0.02	0.02	0.059	0.002	0.010	0.0197	0.002	0.008	0.02	0.03	0.02	0.22
Std. Deviation	0.015	2.6	0.3	140	0.02	0.179	74	1	0	0	0.01	0.021	0	0.008	0.0036	0.001	0.006	0	0	0	0.10
Minimum Value	0.070	0	6.75	848	0.001	0.2	176	1	0.003	0.02	0.02	0.034	0.002	0.002	0.0001	0.002	0.005	0.02	0.02	0.02	0.11
Maximum Value	0.120	9.5	8.09	1307	0.125	0.96	592	7	0.003	0.02	0.10	0.124	0.004	0.038	0.0300	0.007	0.028	0.04	0.03	0.02	0.65
Median	0.080	3.3	7.33	1144	0.001	0.49	476	5	0.003	0.02	0.02	0.054	0.002	0.008	0.0200	0.002	0.006	0.02	0.03	0.02	0.20
Num. Values	39	38	39	40	40	40	39	39	39	4	39	39	39	39	39	39	39	39	39	6	39

Standard	Inst.Max.
F: FARO WATER LICENCE	
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
AS-D (mg/L)	0.05
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: X10, Rose Creek Diversion Channel below weirs

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96		2.4	7.72	267	<.001	<.05	10	<5	<.003	<.02	0.073	0.002	0.008	<.02	<.002	<.005	<.02	<.02		0.03
Mar/12/96		2.0	7.76	1276	0.001	<.05	50	<5	<.003	<.02	0.076	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.01
May/13/96	0.9760	4.0	8.05	156	<.001	<.05	56	6	<.003	<.02	0.047	<.002	0.015	<.02	<.002	<.005	<.02	<.03	<.02	0.03
May/29/96	4.7500	2.9	7.9	73	0.002	<.05	4	7	<.003	<.02	0.030	<.002	<.002	<.0001	<.002	<.005	<.02	<.03	<.02	0.03
Jun/11/96	2.6060	5.0	8.24	124	<.001	<.05	63	<5	<.003	<.02	0.036	<.002	<.002	<.02	<.002	<.005	<.02	<.03		<.01
Jul/17/96	3.3526	7.5	7.78	133	<.001	<.05	12	<5	<.003	<.02	0.112	<.002	<.002	<.02	0.005	<.005	<.02	<.03		0.03
Sep/3/96									<.003	<.02	0.225	<.002	<.002	<.02	<.002	0.009	<.02	<.03		0.05
Sep/11/96	1.3490	5.0	8.08	165	<.001	<.05	9	<5	<.003	<.02	0.139	<.002	0.002	<.02	<.002	0.005	<.02	<.03		0.03
Oct/21/96		0	7.84	208	<.001	<.05	20	<5	<.003	<.02	0.046	<.002	0.024	<.02	<.002	<.005	<.02	<.03		0.08
Dec/19/96		0	7.75	364	<.001	<0.05	40	6	<.003	<.02	0.120	<.002	0.007	<.02	0.006	0.017	<.02	<.03		0.09
JAN 1996 - DEC 1996																				
Mean	2.6067	3.1	7.9	307	0.001	0.05	29	5	0.003	0.02	0.090	0.002	0.007	0.018	0.003	0.007	0.020	0.03	0.02	0.04
Std. Deviation	1.5322	2.4	0.18	373	0	0.00	23	1	0	0	0.060	0	0.007	0.0063	0.001	0.004	0	0	0	0.03
Minimum Value	0.9760	0	7.72	73	0.001	0.05	4	5	0.003	0.02	0.030	0.002	0.002	0.0001	0.002	0.005	0.02	0.02	0.02	0.01
Maximum Value	4.7500	7.5	8.24	1276	0.002	0.05	63	7	0.003	0.02	0.225	0.002	0.024	0.02	0.006	0.017	0.020	0.03	0.02	0.09
Median	2.6060	2.7	7.84	165	0.001	0.05	20	5	0.003	0.02	0.074	0.002	0.002	0.02	0.002	0.005	0.02	0.03	0.02	0.03
Num. Values	5	9.0	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	2	10

Standard Inst.Max.

F: FARO WATER LICENCE

NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: X11, Seepage from north toe of Cross Valley Dam

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Mar/12/96	0.0059																			
Apr/9/96	0.0059																			
Apr/16/96	0.0059																			
Apr/23/96	0.0068																			
Apr/29/96	0.0082																			
May/6/96	0.0059																			
May/13/96	0.0059																			
May/13/96	0.0059	8.0	7.28	1466	<.001	1.03 +	717	8	<.003	<.02	0.111	0.003	0.039		<.002	0.031	0.02	0.03		0.04
May/21/96	0.0068																			
May/27/96	0.0082																			
Jun/4/96	0.0109																			
Jun/11/96	0.0122																			
Jun/21/96	0.0135																			
Jun/26/96	0.0149																			
Jul/2/96	0.0149																			
Jul/8/96	0.0149																			
Jul/15/96	0.0179																			
Jul/22/96	0.0149																			
Jul/29/96	0.0213																			
Aug/5/96	0.0196																			
Aug/12/96	0.0231																			
Aug/20/96	0.0231																			
Sep/9/96	0.0164																			
Sep/11/96	0.0164	5.5	7.15	1014	<.001	0.44	418	<5	<.003	<.02	0.15	<.002	0.005	<.02	<.002	0.017	<.02	<.03		0.02
Sep/24/96	0.0250																			
Sep/30/96	0.0244																			
Dec/19/96	0.0100	0	7.23	1725	<.001	0.89	706	6	<.003	0.15	0.14	<.002	0.020	<.02	0.003	0.041	<.02	0.04		0.10

JAN 1996 - DEC 1996

Mean	0.0133	3.6	7.22	1402	0.001	0.79	614	6	0.003	0.06	0.13	0.002	0.021	0.02	0.002	0.03	0.02	0.03		0.05
Std. Deviation	0.0065	3.8	0.07	360	0	0.31	170	2	0	0.08	0.02	0.001	0.017	0	0.001	0.012	0	0.01		0.04
Minimum Value	0.0059	0	7.15	1014	0.001	0.44	418	5	0.003	0.02	0.11	0.002	0.005	0.02	0.002	0.017	0.020	0.03		0.02
Maximum Value	0.0250	8	7.28	1725	0.001	1.03	717	8	0.003	0.15	0.15	0.003	0.039	0.02	0.003	0.041	0.02	0.04		0.10
Median	0.0135	3.2	7.23	1466	0.001	0.89	706	6	0.003	0.02	0.14	0.002	0.02	0.02	0.002	0.031	0.02	0.03		0.04
Num. Values	26	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3		3.00

1996 FARO SURFACE WATER QUALITY

STATION: X12, Seepage from south toe of Cross Valley Dam

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Mar/12/96	0.0032																			
Apr/9/96	0.0032																			
Apr/16/96	0.0032																			
Apr/23/96	0.0032																			
Apr/29/96	0.0038																			
May/6/96	0.0032																			
May/13/96	0.0032																			
May/13/96	0.0032	5.0	7.32	1077	<.001	0.78	370	<5	<.003	<.02	0.103	<.002	0.010		<.002	0.004	<.02	<.03		0.02
May/21/96	0.0032																			
May/27/96	0.0038																			
Jun/4/96	0.0044																			
Jun/11/96	0.0052																			
Jun/21/96	0.0068																			
Jun/26/96	0.0068																			
Jul/2/96	0.0068																			
Jul/8/96	0.0077																			
Jul/15/96	0.0077																			
Jul/22/96	0.0044																			
Jul/29/96	0.0068																			
Aug/5/96	0.0068																			
Aug/12/96	0.0077																			
Aug/20/96	0.0077																			
Sep/9/96	0.0164																			
Sep/11/96		4.5	7.17	1261	<.001	0.72	666	9	<.003	<.02	0.172	<.002	0.007	<.02	0.003	0.015	<.02	<.03		0.01
Sep/24/96	0.0086																			
Sep/30/96	0.0086																			
Dec/19/96	0.0083	0.0	7.15	1174	<.001	0.75	388	7	<.003	0.06	0.159	<.002	0.006	<.02	<.002	<.005	<.02	<.03		0.07
JAN 1996 - DEC 1996																				
Mean	0.0059	3.2	7.21	1171	0.001	0.75	475	7	0.003	0.03	0.145	0.002	0.008	0.02	0.002	0.008	0.02	0.03		0.03
Std. Deviation	0.0030	2.8	0.09	92	0	0.03	166	2	0	0.02	0.037	0	0.002	0	0.001	0.006	0	0		0.03
Minimum Value	0.0032	0	7.15	1077	0.001	0.72	370	5	0.003	0.02	0.103	0.002	0.006	0.02	0.002	0.004	0.020	0.03		0.01
Maximum Value	0.0164	5	7.32	1261	0.001	0.78	666	9	0.003	0.06	0.172	0.002	0.01	0.02	0.003	0.015	0.02	0.03		0.07
Median	0.0060	4.5	7.17	1174	0.001	0.75	388	7	0.003	0.02	0.159	0.002	0.007	0.02	0.002	0.005	0.02	0.03		0.02
Num. Values	26	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3		3.00

1996 FARO SURFACE WATER QUALITY

STATION: X13, Combined seepage from Cross Valley Dam

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-D mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/4/96	0.0310	2.5	7.25	1293	<.001	0.47	538	6	<.003		0.04	0.109	<.002	0.008	<0.03	<.002	<.005	<0.02	0.03		0.02
Jan/9/96	0.0310	2.4	7.35	1310	0.002	0.57	490	<5	<.003		<.02	0.100	<.002	0.007	<.02	<.002	<.005	<.02	<.02		0.01
Jan/20/96	0.0310	2.0	7.35	1288	<.001	1.02 +	385	6	<.003		<.02	0.123	<.002	0.009	<.02	<.002	0.005	<.02	<.02		0.01
Jan/25/96	0.0310	0.9	7.32	1385	<.001	1.15 +	480	8	<.003		<.02	0.113	<.002	0.010	<.02	<.002	<.005	<.02	<.02		<.01
Feb/5/96	0.0270	3.0	7.33	1345	<.001	0.87	551	8	<.003		<.02	0.112	<.002	0.004	<.02	<.002	0.012	<.02	<.02		<.01
Feb/14/96	0.0290	3.0	7.28	1330	<.001	1.03 +	538	7	<.003		<.02	0.104	<.002	0.006	<.02	<.002	<.005	<.02	<.02		0.02
Feb/23/96	0.0300	1.7	7.18	932	0.001	1.22 +	620	6	<.003		<.02	0.113	<.002	0.006	<.02	<.002	0.012	<.02	<.02		<.01
Feb/28/96	0.0300	2.0	6.89	1264	0.001	1.08 +	620	<1	<.003		<.02	0.092	<.002	0.003	<.02	<.002	<.005	<.02	<.02		0.01
Mar/5/96	0.0300	1.9	7.33	1147	0.002	1.01 +	517	12	<.003		<.02	0.110	<.002	0.003	<.05	<.002	<.005	<.02	<.03		<.01
Mar/12/96	0.0270	1.7	7.11	1280	0.001	0.99	503	14	<.003		0.04	0.122	<.002	0.004	<.02	<.002	0.005	<.02	<.03		0.01
Mar/21/96	0.0230	2.0	7.38	1363	<.001	0.97	465	6	<.003		0.07	0.113	0.005	0.002	<.02	<.002	0.009	<.02	0.03		<.01
Mar/30/96	0.0230	3.2	7.3	1287	<.001	0.94	534	5	<.003		0.03	0.108	<.002	0.009	<.02	<.002	<.005	<.02	<.03		<.01
Apr/9/96	0.0190	3.4	7.39	1287	<.001	0.94	534	5	<.003		<.02	0.137	<.002	0.018	<.02	<.002	<.005	<.02	<.03		<.01
Apr/16/96	0.0230	4.0	7.26	1346	<.001	0.76	403	10	<.003		<.02	0.107	<.002	0.011	<.02	0.004	<.005	<.02	<.03		<.01
Apr/23/96	0.0230	1.5	7.05	1262	0.002	0.85	501	13	<.003		<.02	0.117	<.002	<.002	<.02	<.002	0.018	<.02	<.03	<.02	0.01
Apr/29/96	0.0230	2.0	7.26	1251	<.001	0.86	511	8	<.003		0.03	0.120	<.002	0.004	<.02	<.002	0.026	<.02	<.03	<.02	0.01
May/6/96	0.0310	10.5	7.35	1287	<.001	0.95		7	<.003	<.02	0.03	0.127	<.002	0.008	<.02	0.003	0.013	<.02	<.03	<.02	0.01
May/13/96	0.0310	8.0	7.4	1259	<.001	0.93	561	7	<.003	<.02	<.02	0.113	0.006	0.018	<.02	0.002	0.012	<.02	0.04	<.02	0.01
May/21/96	0.0310	6.0	7.25	1278	<.001	0.80	589	8	<.003	<.02	0.03	0.107	<.002	0.023	<.02	<.002	0.016	0.02	<.03	<.02	0.01
May/27/96	0.0310	6.0	7.2	1220	0.001	0.99	498	6	<.003	<.02	<.02	0.108	<.002	0.008	<.0001	<.002	<.005	<.02	<.03	<.02	0.02
May/29/96	0.0310	5.5	7.4	1305	0.001	0.72	544	7	<.003	<.02	<.02	0.124	<.002	0.006	<.0001	<.002	0.010	<.02	<.03	<.02	0.01
Jun/4/96	0.0340	6.0	7.4	1292	<.001	0.74	542	7	<.003		<.02	0.119	<.002	0.005	<.0001	<.002	<.005	<.02	<.03	<.02	<.01
Jun/11/96	0.0350	5.0	7.1	1328	<.001	0.72	447	<5	<.003		<.02	0.111	<.002	0.003	<.02	<.002	<.005	<.02	<.03		0.01
Jun/21/96	0.0390	7.0	7.28	1209	<.001	0.72	592	<5	<.003	<.02	<.02	0.067	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.02
Jul/2/96	0.0439	5.0	7.28	1320	<.001	0.71	686	5	<.003		<.02	0.150	<.002	<.002	<.02	<.002	0.007	<.02	<.03	<.02	0.03
Jul/8/96	0.0486	6.5	7.2	1259	<.001	0.79	572	6	<.003		<.02	0.069	<.002	<.002	<.02	<.002	<.005	<.02	<.03		<.01
Jul/15/96	0.0635	4.5	7.39	1260	<.001	1.09 +	582	7	<.003		<.02	0.115	<.002	<.002	<.02	0.003	<.005	<.02	<.03		<.01
Jul/23/96	0.0439	7.0	7.41	1111	<.001	0.76	526	<5	<.003		<.02	0.098	<.002	0.003	<.02	<.002	<.005	<.02	<.03		0.01
Jul/29/96	0.0534	18.0	7.08	1060	0.001	0.88	530	5	<.003		<.02	0.101	<.002	0.007	<.02	0.002	0.005	<.02	<.03		0.03
Aug/5/96	0.0534	4.5	6.99	1158	0.007	0.81		5	<.003		0.04	0.136	<.002	0.010	<.02	<.002	0.008	<.02	<.03		0.02
Aug/14/96	0.0635	6.0	7.4	1168	0.005	0.71	563	6	<.003		0.02	0.100	<.002	0.008	<.02	0.003	0.006	<.02	<.03		<.01
Aug/20/96	0.0534	8.0	6.99	1168	<.001	0.65	530	5	<.003		0.02	0.099	<.002	0.005	<.02	<.002	0.014	<.02	<.03		0.02
Aug/27/96	0.0534	6.0	7.19	1125	0.002	1.24 +	446	6	<.003		<.02	0.127	<.002	<.002	<.02	0.003	<.005	0.03	<.03		0.01
Sep/3/96	0.0534			1166	0.002	1.30 +	481	6	<.003		<.02	0.106	<.002	0.003	<.02	<.002	<.005	<.02	<.03		0.01
Sep/11/96	0.0534	5.0	7.29	1135	<.001	0.25	557	7	<.003		<.02	0.125	<.002	0.007	<.02	<.002	<.005	<.02	<.03		<.01
Sep/17/96	0.0534	5.0	7.26	1261	<.001	0.62	538	5	<.003		<.02	0.168	<.002	0.009	<.02	<.002	0.018	<.02	<.03		0.02
Sep/24/96	0.0698	5.0	7.48	1078	<.001	0.52	631	8	<.003		<.02	0.136	0.005	0.025	<.02	<.002	0.014	<.02	<.03		0.04
Sep/30/96									<.003		<.02	0.087	<.002	0.012	<.02	<.002	<.005	<.02	<.03		0.02

DATA CONTINUED

STATION: X13, Combined seepage from Cross Valley Dam

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-D mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Oct/7/96	0.0613	5.1	7.48	1166					<.003		<.02	0.190	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.01
Oct/15/96	0.0613	4.5	7.43	965	0.014	0.86	500	<5	<.003		<.02	0.130	<.002	0.028	<.02	<.002	0.007	<.02	<.03		0.02
Oct/21/96	0.6130	0.5	7.13	983	<.001	0.70	398	7	<.003		<.02	0.099	<.002	0.034	<.02	<.002	0.009	<.02	<.03		0.03
Oct/29/96	0.0531	0	7.43	972	<.001	0.81	422	<5	<.003		<.02	0.130	<.002	0.027	<.02	<.002	<.005	<.02	<.03		0.02
Nov/5/96	0.0530	0	7.37	1164	0.005	0.67	509	6	<.003		<.02	0.102	<.002	0.007	<.02	<.002	<.005	<.02	<.03		<.01
Nov/12/96	0.0530	0	7.49	1098	0.015	0.45	475	<5	<.003		<.02	0.119	<.002	0.008	<.02	<.002	<.005	<.02	<.03		0.01
Nov/21/96	0.0610	0	7.42	999	<.001	0.58	496	6	<.003		<.02	0.143	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.02
Nov/25/96	0.0520	0	7.17	1020	0.006	0.55	501	<5	<.003		<.02	0.113	<.002	0.004	<.02	<.002	<.005	<.02	<.03		0.01
Dec/2/96	0.0520	0		1423	<.001	0.96	522	7	<.003		<.02	0.083	<.002	0.005	<.02	<.002	<.005	<.02	<.03		0.01
Dec/11/96	0.0453	0	7.36	1053	<.001	0.68	164	<5	<.003		<.02	0.176	<.002	0.007	<.02	<.002	0.012	<.02	<.03		0.01
Dec/19/96	0.0453	0	7.23	1427	<.001	0.84	513	8	<.003		0.02	0.140	<.002	0.007	<.02	<.002	<.005	<.02	<.03		0.05
Dec/23/96	0.0453	0	7.31	1355	<.001	0.97	470	7	<.003		<.02	0.110	<.002	0.015	<.02	0.004	0.019	<.02	<.03		0.01
Dec/30/96	0.0453	0	7.27	1483	<.001	0.87	433	<5	<.003		<.02	0.105	<.002	0.008	<.02	<.002	<.005	<.02	<.03		0.01
JAN 1996 - DEC 1996																					
Mean	0.0528	3.7	7.28	1218	0.002	0.828	511	7	0.003	0.02	0.02	0.116	0.002	0.008	0.02	0.002	0.008	0.02	0.03	0.02	0.02
Std. Deviation	0.0820	3.4	0.14	131	0.003	0.214	80	2	0	0	0.01	0.023	0.001	0.007	0.007	0	0.005	0	0	0.00	0.01
Minimum Value	0.0190	0	6.89	932	0.001	0.25	164	1	0.003	0.02	0.02	0.067	0.002	0.002	0.0001	0.002	0.005	0.02	0.02	0.02	0.01
Maximum Value	0.6130	18	7.49	1483	0.015	1.3	686	14	0.003	0.02	0.07	0.190	0.006	0.034	0.05	0.004	0.026	0.03	0.04	0.02	0.05
Median	0.0439	3.2	7.3	1260	0.001	0.84	517	6	0.003	0.02	0.02	0.113	0.002	0.007	0.02	0.002	0.005	0.02	0.03	0.02	0.01
Num. Values	50	49	48	50	49	49	47	49	51	6	51	51	51	51	51	51	51	51	51	9	51

Standard	Inst.Max.
F: FARO WATER LICENCE	
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
AS-D (mg/L)	0.05
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: X14, Rose Cr downstream of the diversion channel

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96		0.9	7.51	1145	0.001	0.55	341	<5	<.003	0.04	0.068	<.002	0.017	<.02	<.002	0.008	<.02	<.02		0.10
Feb/14/96		2.2	7.68	1207	<.001	0.5	480	<5	<.003	<.02	0.091	<.002	0.005	<.02	<.002	<.005	<.02	<.02		0.09
Mar/12/96		2.4	7.56	1206	0.001	0.56	442	<5	<.003	0.03	0.090	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.08
Apr/9/96	0.220	3.1	7.75	1203	<.001	0.53	503	<5	<.003	<.02	0.096	<.002	0.019	<.02	<.002	0.008	0.06	<.03		0.02
May/15/96	1.291	3.0	7.8	269	<.001	0.05	55	10	<.003	<.02	0.051	<.002	0.015	<.02	<.002	<.005	<.02	<.03	<.02	0.05
May/29/96	4.992	2.2	7.9	116	0.007	<.05	31	6	<.003	<.02	0.032	<.002	<.002	<.02	0.004	<.005	<.02	<.03		0.04
Jun/11/96	1.835	5	8.01	208	0.002	<.05	89	<5	<.003	<.02	0.042	<.002	0.009	<.0001	<.002	<.005	<.02	<.03	<.02	0.02
Jul/17/96	3.394	7	7.55	183	<.001	<.05	28	<5	<.003	<.02	0.023	<.002	<.002	<.02	0.002	<.005	<.02	<.03		0.02
Aug/15/96	1.243	8	7.99	273	<.001	0.07	58	<5	<.003	<.02	0.045	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.03
Sep/3/96									<.003	<.02	0.125	<.002	0.006	<.02	<.002	<.005	<.02	0.04		0.04
Sep/11/96	2.037	5	7.73	329	<.001	<.05	74	<5	<.003	<.02	0.056	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.04
Oct/2/96	1.523																			
Oct/21/96		0	7.47	519	<.001	0.11	126	<5	<.003	<.02	0.107	<.002	0.03	<.02	<.002	<.005	<.02	<.03		0.09
Nov/21/96		0	7.6	605	<.001	0.17	268	<5	<.003	<.02	0.074	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.10
Dec/19/96	0.2441	0	7.61	1136	<.001	0.5	392	<5	<.003	<.02	0.097	<.002	0.005	<.02	<.002	<.005	<.02	<.03		0.12

JAN 1996 - DEC 1996

Mean	1.8643	3	7.7	646	0.002	0.25	222	5	0.003	0.02	0.07	0.002	0.008	0.019	0.002	0.005	0.02	0.03	0.02	0.06
Std. Deviation	1.5129	2.6	0.18	458	0.002	0.23	186	1	0	0.01	0.03	0	0.009	0.005	0.001	0.001	0.01	0	0	0.04
Minimum Value	0.22	0	7.47	116	0.001	0.05	28	5	0.003	0.02	0.02	0.002	0.002	1E-04	0.002	0.005	0.02	0.02	0.02	0.02
Maximum Value	4.992	8	8.01	1207	0.007	0.56	503	10	0.003	0.04	0.13	0.002	0.03	0.02	0.004	0.008	0.06	0.04	0.02	0.12
Median	1.523	2.4	7.68	519	0.001	0.11	126	5	0.003	0.02	0.07	0.002	0.005	0.02	0.002	0.005	0.02	0.03	0.02	0.04
Num. Values	9	13	13	13	13	13	13	13	14	14	14	14	14	14	14	14	14	14	2	14

Standard

F: FARO WATER LICENCE	Inst.Max.
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2

	Inst.Max.
MERCURY: TOTAL Hg (mg/L)	0.01
MOLYBDENUM: TOTAL Mo (mg/L	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
SELENIUM: TOTAL Se (mg/L)	0.05
ZINC: TOTAL Zn (mg/L)	0.5

1996 FARO SURFACE WATER QUALITY

STATION: Decant of tailings slurry from mill

Date	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-D mg/L	AS-D mg/L	BA-D mg/L	CD-D mg/L	CU-D mg/L	HG-D mg/L	MO-D mg/L	NI-D mg/L	PB-D mg/L	SB-D mg/L	SE-D mg/L	ZN-D mg/L
Jan/25/96			250	0.82 +	<.05	107	<5	<.003	<.02	0.13	<.002	0.017	<.02	0.006	0.058	0.26	0.03		<.01
May/28/96			642	0.007	1.06 +	341		<.003	<.02	0.05	0.003	0.019	<.02	0.011	<.005	0.26	<.03		0.71

STATION: X22B, Faro Pit water while filling with tailings

Date	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jun/21/96		7.72	1076	4.900 +	1.38 +	731		<.003	<.02	0.020	0.012	0.009	<.02	0.004	0.155	0.11	<.03		7.80 +
								AG-D	AS-D	BA-D	CD-D	CU-D	HG-D	MO-D	NI-D	PB-D	SB-D	SE-D	ZN-D
Jul/17/96	11.0	7.30	1150	4.800 +	1.30 +	686	18 +	0.004	0.04	<.002	0.014	0.014	<.02	0.014	0.179	0.11	0.09		8.56
Aug/15/96		7.78	1109	5.000 +	0.07	678	<5	<.003	<.02	0.047	0.012	0.045	<.02	0.006	0.111	0.22 +	0.06		4.08 +
Sep/12/96			1111	0.116 +	1.11 +	741	<5	<.003	<.02	0.077	0.013	0.045	<.02	0.019	0.059	0.03	<.03		4.01 +
Oct/21/96		6.50	981	3.589 +	0.87	531	<5	<.003	<.02	0.037	0.010	0.047	<.02	<.002	0.077	<.02	<.03		3.33 +
Nov/21/96	2.0	7.51	1038	1.060 +	0.82	636		<.003	0.04	0.050	0.006	0.023	<.02	0.003	0.094	0.02	<.03		3.70 +
Dec/19/96	0	7.51	1333	<.001	0.49	679	7	<.003	<.02	0.274	0.006	0.032	<.02	0.011	0.108	0.27 +	0.07		4.26 +

NOTE; July 17 dissolved metals not included in statistics.

JAN 1996 - DEC 1996

Mean	3.2	7.4	1114	2.781	0.86	669	8	0.003	0.02	0.084	0.010	0.034	0.02	0.007	0.101	0.11		0.04	4.53
Std. Deviation	5.3	0.43	111	2.307	0.46	70	6	0	0.01	0.095	0.003	0.015	0	0.006	0.033	0.11		0.02	1.64
Minimum Value	0	6.5	981	0.001	0.07	531	5	0.003	0.02	0.02	0.006	0.009	0.02	0.002	0.059	0.02		0.03	3.33
Maximum Value	11.0	7.78	1333	5	1.38	741	18	0.003	0.04	0.274	0.013	0.047	0.02	0.019	0.155	0.27		0.07	7.80
Median	1.0	7.51	1109	3.589	0.87	679	5	0.003	0.02	0.048	0.011	0.039	0.02	0.005	0.101	0.07		0.03	4.05
Num. Values	3	6	7	7	7	7	5	6	6	6	6	6	6	6	6	6		6	6.00

1996 FARO SURFACE WATER QUALITY

STATION: X23, Old Faro Creek channel at toe of waste dumps

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96	0.0017	0.8	7.37	4870	<.001	0.50	2053	6	<.003	0.15	0.079	0.016	0.032	<.02	<.002	0.296	<.02	0.13 +		24.43 +
Feb/14/96	0.0015	2.1	7.25	4850	<.001	0.56	2597	5	<.003	<.02	0.090	0.006	0.023	<.02	<.002	0.216	<.02	<.02		24.21 +
Mar/22/96	0.0011	2.3	7.31	4770	0.002	0.56	2175	<5	0.004	0.02	0.101	0.022 +	0.023	<.02	<.002	0.257	0.020	0.03		24.15 +
Apr/9/96	0.0017	4.0	7.22	4130	<.001	0.41	2118	41 +	<.003	<.02	0.459	0.009	0.080	<.02	<.002	0.170	2.03 +	<.03		21.84 +
Apr/23/96		4.3	6.52	3750	0.009	0.52	1811	5	<.003	0.08	0.093	0.018	0.017		<.002	0.298	0.11	0.06		23.88 +
May/13/96	0.0016	5.0	7.3	3740	<.001	0.74	2345	<5	0.009	<.02	0.092	0.051 +	0.032		<.002	0.255	<.02	<.03		23.40 +
Jun/11/96		6.0	7.08	3680	0.002	0.50	2197	<5	<.003	<.02	0.081	<.002	0.034	<.02	<.002	0.272	<.02	<.03		30.49 +
Jul/17/96	0.0015	7.0	6.64	3210	0.001	0.60	2687	<5	<.003	<.02	0.093	0.008	0.018	<.02	0.008	0.311	<.02	<.03		28.61 +
Aug/15/96	0.0017	7.0	6.64	3380	0.002	0.45	2520	<5	<.003	<.02	0.083	.021 +	0.022	<.02	<.002	0.294	<.02	0.03		28.86 +
Sep/11/96	0.0011	5.5	7.13	3720	<.001	0.58	2656	8	0.010	<.02	0.144	<.002	0.025	<.02	<.002	0.259	<.02	<.03		27.41 +
Oct/21/96	0.0015	0	6.88	6300	<.001	0.37	2407	<5	<.003	<.02	0.099	.022 +	0.049	<.02	<.002	0.272	<.02	<.03		28.19 +
Nov/21/96	0.0015	0	7.17	5956	<.001	0.20	2684	<5	0.031	<.02	0.118	0.011	0.021	<.02	<.002	0.287	<.02	<.03		24.87 +
Dec/19/96	0.0025	0	7.25	4258	<.001	0.51	2486	24 +	<.003	<.02	0.126	0.007	0.03	<.02	<.002	0.31	<.02	<.03		27.74 +
JAN 1996 - DEC 1996																				
Mean	0.0017	3.1	7.07	4355	0.002	0.50	2364	10	0.006	0.03	0.128	0.015	0.031	0.02	0.002	0.269	0.180	0.04		26.01
Std. Deviation	0.0004	2.7	0.28	955	0.002	0.13	276	11	0.008	0.04	0.101	0.013	0.017	0	0.002	0.04	0.56	0.03		2.64
Minimum Value	0.0011	0.0	6.52	3210	0.001	0.20	1811	5	0.003	0.02	0.079	0.002	0.017	0.02	0.002	0.17	0.02	0.02		21.84
Maximum Value	0.0025	7.0	7.37	6300	0.009	0.74	2687	41	0.031	0.15	0.459	0.051	0.08	0.02	0.008	0.311	2.03	0.13		30.49
Median	0.0016	3.1	7.19	4130	0.001	0.51	2407	5	0.003	0.02	0.093	0.011	0.025	0.02	0.002	0.272	0.020	0.03		24.87
Num. Values	11	13	13	13	13	13	13	13	13	13	13	13	13	11	13	13	13	13		13.00

1996 FARO GROUNDWATER WATER QUALITY

STATION: X26, Zone II Pit water (from production well)

Date	TEMP deg C	PH-F pH unit	COND-L µS/cm	ALK-T mg/L	ACID4.5 mg/L	ACID8.3 mg/L	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	AG-D mg/L	AS-D mg/L	BA-D mg/L	CD-D mg/L	CU-D mg/L	FE-D mg/L	HG-D mg/L	MN-D mg/L	MO-D mg/L	NA-D mg/L	NI-D mg/L	PB-D mg/L	SB-D mg/L	SE-D mg/L	ZN-D mg/L
Apr/10/96	2.1	6.36		607	<1	241		1.85 +	1787	<.003	<.02	0.095	0.039	0.021	38.80	<.02	11.4	<.002	29	1.058	<.02	<.03		>50
Apr/23/96			2830				0.004	1.93 +	1426															
May/15/96	3.0	5.93	2150				<.001	1.98 +	1480	<.003	<.02	0.101	0.028	0.014	34.64		10.9	<.002	24	1.028	<.02	0.13		62.50
Jul/15/96			1194	478	<1	230	<.001	1.91 +	1737	0.005	0.04	<.002	0.028	0.022	9.64	<.02	12.6	0.01	31	1.248	0.04	0.11		63.62
Sep/11/96	3.0	6.17	4780	443	4	261	<.001	1.30 +	1535	0.012	<.02	0.123	0.024	0.021	26.66	<.02	9.27	0	29	0.773	0.02	<.03		51.75
Oct/31/96		6.50	1807	379	<1	160			1840	0.023	0.03	0.062	0.032	0.031	45.99	<.02	12.5	0	44	1.148	0.06	0.1		66.80
JAN 1996 - DEC 1996																								
Mean	2.7	6.24	2552	477	1.8	223	0.002	1.79	1634	0.009	0.03	0.077	0.030	0.022	31.15	0.020	11.4	0	31	1.051	0.03	0.08		58.93
Std. Deviation	0.5	0.25	1379	96	1.5	44	0.002	0.28	175	0.009	0.01	0.047	0.006	0.006	13.91	0.000	1.38	0	8	0.178	0.02	0.05		7.55
Minimum Value	2.1	5.93	1194	379	1	160	0.001	1.3	1426	0.003	0.02	0.002	0.024	0.014	9.64	0.02	9.27	0	24	0.773	0.02	0.03		50.00
Maximum Value	3.0	6.50	4780	607	4	261	0.004	1.98	1840	0.023	0.04	0.123	0.039	0.031	45.99	0.020	12.6	0.01	44	1.248	0.06	0.13		66.80
Median	3.0	6.27	2150	460	1	236	0.001	1.91	1636	0.005	0.02	0.095	0.028	0.021	34.64	0.02	11.4	0	29	1.058	0.02	0.1		62.50
Num. Values	3	4	5	4	4	4	4	5	6	5	5	5	5	5	5	4	5	5	5	5	5	5		5

STATION: BH1, W of Zone II, by NFR Cr. (5.18m)

Date	SWL meters	TEMP deg C	PH-F pH unit	COND-L µS/cm	ALK-T mg/L	ACID4.5 mg/L	ACID8.3 mg/L	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	AG-D mg/L	AS-D mg/L	BA-D mg/L	CD-D mg/L	CU-D mg/L	FE-D mg/L	HG-D mg/L	MN-D mg/L	MO-D mg/L	NA-D mg/L	NI-D mg/L	PB-D mg/L	SB-D mg/L	SE-D mg/L	ZN-D mg/L
May/28/96	3.3		6.27	376	142	<1	78		0.09	53	<.003	<.02	0.064	0.003	0.009	0.58	<.02	2.43	<.002	4	<.005	<.02	<.03		0.55
Jun/14/96	3.9		6.45	453	131	<1	77		<.05	83	<.003	0.03	0.060	0.004	0.006	0.12	<.02	1.69	<.002	10	<.005	<.02	<.03		0.82
Jul/17/96			6.7	1166	72	<1	92	0.001	0.12	847	0.007	0.06 +	0.126	0.053	0.033	0.07	<.02	6.36	0.010	8	0.145	0.08	0.11		29.9
Aug/14/96	3.8	7.0	5.96	665	137	<1	46	0.006	<.05	266	<.003	<.02	0.069	0.010	0.009	0.01	<.02	1.68	<.002	6	0.025	0.02	<.03		3.49
Sep/12/96	4.2	7.0	6.18	483	117	<1	54	<.001	<.05	164	<.003	<.02	0.007	0.006	0.009	0.06	<.02	2.25	<.002	8	0.016	<.02	<.03		2.30
Oct/25/96			5.86	492	145	<1	41			131	<.003	<.02	0.068	<.002	0.006	0.19	<.02	1.13	<.002	10	0.006	<.02	<.03		0.62
JAN 1996 - DEC 1996																									
Mean	3.8	7	6.24	606	124	1	65	0.003	0.07	257	0.004	0.03	0.066	0.013	0.012	0.17	0.02	2.59	0	8	0.034	0.03	0.04		6.28
Std. Deviation	0.4	0	0.31	290	27	0	20	0.003	0.03	298	0.002	0.02	0.038	0.02	0.01	0.21	0	1.9	0	2	0.055	0.02	0.03		11.6
Minimum Value	3.3	7	5.86	376	72	1	41	0.001	0.05	53	0.003	0.02	0.007	0.002	0.006	0.01	0.02	1.13	0	4	0.005	0.02	0.03		0.55
Maximum Value	4.2	7	6.7	1166	145	1	92	0.006	0.12	847	0.007	0.06	0.126	0.053	0.033	0.58	0.02	6.36	0.01	10	0.145	0.08	0.11		29.9
Median	3.9	7	6.22	488	134	1	66	0.001	0.05	148	0.003	0.02	0.066	0.005	0.009	0.09	0.02	1.97	0	8	0.011	0.02	0.03		1.56
Num. Values	4	2	6	6	6	6	6	3	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6

1996 FARO GROUNDWATER WATER QUALITY

STATION: BH2, W of Zone II, by NFR Cr. (5.55m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	CN-T	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/28/96	4.70	2.0	6.46	618	83	<1	38		<.05	246	<.003	<.02	0.072	0.010	0.007	0.24	<.02	<.01	<.002	4	0.035	<.02	<.03		4.19
Jun/14/96	4.87		6.48	632	78	<1	27		<.05	251	<.003	<.02	0.059	0.006	0.009	0.13	<.02	0.02	<.002	5	0.026	<.02	<.03		4.06
Jul/17/96		4.0	6.43	567	103	<1	36	0.001	<.05	242	<.003	<.02	0.052	0.003	0.003	0.11	<.02	0.04	0.005	3	0.016	<.02	<.03		4.16
Aug/14/96	4.94	7.0	6.70	474	117	<1	36	0.005	<.05	128	<.003	<.02	0.080	0.005	<.002	0.02	<.02	<.01	<.002	4	0.014	<.02	<.03		2.77
Sep/12/96	4.94	4.5	6.52	447	105	<1	38	<.005	<.05	152	<.003	<.02	0.011	0.008	0.005	0.21	<.02	0.01	<.002	6	0.021	<.02	<.03		3.78
Oct/25/96			5.88	764	122	<1	33	0.036	<.05	472	<.003	<.02	0.145	0.031	0.007	0.46	<.02	0.10	<.002	10	0.106	<.02	<.03		12.3
JAN 1996 - DEC 1996																									
Mean	4.86	4.4	6.41	584	101	1	35	0.023	0.05	248	0.003	0.02	0.070	0.010	0.006	0.19	0.02	0.03	0.003	5	0.036	0.02	0.03		5.2
Std. Deviation	0.11	2.1	0.28	116	18	0	4	0.024	0	122	0	0	0.044	0.010	0.003	0.15	0	0.04	0.001	3	0.035	0	0		3.5
Minimum Value	4.70	2.0	5.88	447	78	1	27	0.001	0.05	128	0.003	0.02	0.011	0.003	0.002	0.02	0.02	0.01	0.002	3	0.014	0.02	0.03		2.77
Maximum Value	4.94	7.0	6.7	764	122	1	38	0.005	0.05	472	0.003	0.02	0.145	0.031	0.009	0.46	0.02	0.1	0.005	10	0.106	0.02	0.03		12.3
Median	4.90	4.2	6.47	592	104	1	36	0.020	0.05	244	0.003	0.02	0.065	0.007	0.006	0.17	0.02	0.01	0.002	4	0.02	0.02	0.03		4.11
Num. Values	4	4	6	6	6	6	6	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		6

STATION: BH4, W of Zone II, by NFR Cr. (3.20m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	CN-T	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jul/17/96		6	3.6	2820	<5	578	1042	0.001	3.30 +	2159	0.005	0.11 +	0.028	0.09	0.770	5.39	<.02	5.84	0.013	8	0.506	0.06	0.09		41.3
Aug/14/96	2.56	6	3.96	713	<1	16	276	0.006	0.44	454	<.003	<.02	0.065	0.02	0.183	0.49	<.02	0.91	<.002	5	0.089	0.04	0.05		7.67
Sep/12/96	2.55	6	5.68	422	19	17	265	<.001	<.05	214	<.003	<.02	0.003	0.01	0.008	0.04	<.02	0.44	<.002	5	0.027	<.02	<.03		3.98
Oct/25/96			4.62	748	<1	14	251	0.042	0.43	458	<.003	<.02	0.058	0.03	0.029	0.18	<.02	1.11	<.002	9	0.122	0.03	<.03		10.1
JAN 1996 - DEC 1996																									
Mean	2.55	6	4.46	1176	6	156	458	0.012	1.05	821	0.003	0.04	0.038	0.04	0.247	1.52	0.02	2.08	0.005	7	0.186	0.04	0.05		15.8
Std. Deviation	0.01	0	0.91	1106	9	281	389	0.020	1.51	899	0.001	0.04	0.029	0.04	0.357	2.58	0	2.53	0.006	2	0.217	0.02	0.03		17.2
Minimum Value	2.55	6	3.6	422	1	14	251	0.001	0.05	214	0.003	0.02	0.003	0.01	0.008	0.04	0.02	0.44	0.002	5	0.027	0.02	0.03		3.98
Maximum Value	2.56	6	5.68	2820	19	578	1042	0.042	3.3	2159	0.005	0.11	0.065	0.09	0.770	5.39	0.02	5.84	0.013	9	0.506	0.06	0.09		41.3
Median	2.55	6	4.29	730	3	16	270	0.004	0.44	456	0.003	0.02	0.043	0.03	0.106	0.34	0.02	1.01	0.002	6	0.106	0.03	0.04		8.89
Num. Values	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		4

1996 FARO GROUNDWATER QUALITY

STATION: BH5, W of Zone II, by NFR Cr. (8.33m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	2.42	3.0	5.3	642	145	<1	299	0.85	239	<.003	<.02	0.045	0.002	0.004	19.95	<.02	2.16	<.002	10	0.021	<.02	<.03		4.25
Sep/12/96	2.78	4	5.53	575	160	<1	279	<.05	184	<.003	<.02	0.018	0.007	<.002	0.04	<.02	1.74	<.002	16	<.005	<.02	<.03		3.75

STATION: BH6, W of Zone II, by NFR Cr. (6.55m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	3.50	2.5	5.83	371	90	<1	95	<.05	110	<.003	<.02	0.038	0.01	0.003	5.06	<.02	3.07	<.002	4	0.022	<.02	<.03		3.89
Sep/25/96	3.43	4.5	6.09	451	82	<1	43	<.05	125	<.003	<.02	0.051	0.01	0.016	8.1	<.02	3.7	<.002	10	0.039	<.02	<.03		5.16

STATION: BH7A, W of Zone II, by NFR Cr. (9.00m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	5.23	3.5	6.16	221	108	<1	48	<.05	43	<.003	<.02	0.026	0	0.002	0.06	<.02	0.02	<.002	3.00	<.005	<.02	<.03		0.83
Sep/25/96	5.33	3.5	6.03	216	99	<1	30	<.05	34	<.003	<.02	0.025	<.002	0.003	0.08	<.02	<.01	<.002	9.00	<.005	<.02	<.03		0.85

STATION: BH7B, W of Zone II, by NFR Cr. (6.78m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	5.54	5	6.51	218	118	<1	41	<.05	25	<.003	<.02	0.020	0.01	0.006	0.09	<.02	0.02	<.002	3.00	<.005	0.03	<.03		0.47
Sep/25/96	5.63	4		234	118	<1	32	<.05	15	<.003	<.02	0.006	<.002	0.004	0.06	<.02	<.01	<.002	7.00	<.005	<.02	<.03		0.62

STATION: BH8, W of Zone II, by NFR Cr. (21.00m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	18.90	6	5.73							<.003	<.02	0.132	0.31	0.041	392.7	<.02	8.6	<.002	25	0.277	0.15	0.21		>50
Sep/25/96	16.61	4.5	4.74	8300	<5	353	1470	0.05	2656	0.015	0.29	0.152	0.55	0.114	461	<.02	10.2	<.002	50	0.425	0.18	0.16		228

STATION: BH10A, W of Zone II, by NFR Cr. (34.17m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	7.36	4	5.6	681	224	<1	288	0.09	172	<.003	<.02	0.033	0	0.007	28.54	<.02	1.03	<.002	10	0.038	0.04	<.03		4.32
Sep/25/96		3.5	6.17	611	197	<1	21	<.05	226	<.003	<.02	0.067	0	0.008	31.46	<.02	1.09	<.002	16	0.023	<.02	<.03		3.96

STATION: BH10B, W of Zone II, by NFR Cr. (52.92m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	7.60	4	5.29	852	342	<1	608	0.09	245	<.003	<.02	0.130	<.002	0.006	36.63	<.02	1.27	<.002	14	0.039	<.02	<.03		3.03
Sep/25/96		4		847	333	<1	620	<.05	247	<.003	<.02	0.111	0	0.015	40.27	<.02	1.05	<.002	24	0.044	<.02	<.03		3.89

STATION: BH12A, W of Zone II, by NFR Cr. (2.85m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/25/96	2.39	3.1	7.29	1080	197	<1	18	<.05	538	<.003	<.02	0.056	<.002	0.014	0.23	<.02	<.01	<.002	11	0.014	<.02	<.03		0.06

1996 FARO GROUNDWATER QUALITY

STATION: BH12B, W of Zone II, by NFR Cr. (8.05m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/25/96	2.45	2.7	7.31	1020	227	<1	17	<.05	466	<.003	<.02	0.060	<.002	0.010	0.03	<.02	0.76	<.002	11	<.005	<.02	<.03		<.01

STATION: BH13B, W of Zone II, by NFR Cr. (4.25m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/27/96	2.76	2.5	7.01	990	95	<1	24	<.05	384	<.003	<.02	0.020	<.002	<.002	0.51	<.02	0.47	<.002	18	0.005	<.02	<.03		<.01

STATION: BH14A, W of Zone II, by NFR Cr. (6.22m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/25/96	3.02	3.3	6.92	1498	318	<1	41	<.05	883	<.003	<.02	0.080	<.002	0.016	0.39	<.02	0.01	<.002	31	0.014	<.02	<.03		0.03

STATION: BH14B, W of Zone II, by NFR Cr. (10.00m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/25/96	3.64	3.1	7.03	1560	344	<1	51	<.05	732	<.003	<.02	0.072	<.002	0.011	0.15	<.02	0.02	<.002	21	<.005	<.02	<.03		0.03

STATION: BH15A, Area by SP5/6 seep site (13.70m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May/29/96	6.94	5	6.9	885	244	<1	17	<.05	305	<.003	<.02	0.054	<.002	0.015	<.01	<.02	0.52	0.003	21	<.005	<.02	<.03		0.04

1996 FARO GROUNDWATER QUALITY

STATION: X16A, By Rose Cr d/s CVDam (5m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
May/30/96	3.38		7.6	396	147	<1	3	<.05	33	<.003	<.02	0.096	<.002	0.005		0.57	<.02	0.04	<.002	2	<.005	<.02	<.03		0.01	
Sep/26/96	3.57	5	6.97	327	147	<1	2	<.05	26	<.003	<.02	0.078	<.002	0.003	0.023	0.38	<.02	0.01	<.002	6	<.005	<.02	<.03		0.01	0.19

STATION: X16B, By Rose Cr d/s CVDam (30m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
May/30/96	3.86		7.8	425	173	<1	<1	<.05	29	<.003	<.02	0.113	<.002	<.002		0.06	<.02	<.01	<.002	2	<.005	<.02	<.03		<.01	
Sep/27/96	3.92	3.3	7.57	361	172	<1	2	<.05	19	<.003	<.02	0.138	<.002	<.002		0.07	<.02	0.02	<.002	6	<.005	<.02	<.03		0.02	

STATION: X17A, d/s CVdam & u/s of X14 across diversion (5m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
May/30/96	2.35	3	7.72	481	200	<1	2	<.05	36	<.003	<.02	0.125	<.002	0.004		0.01	<.02	0.04	<.002	2	<.005	<.02	<.03		<.01	
Sep/26/96	2.15	3.2	7.2	384	184	<1	<1	<.05	25	<.003	<.02	0.110	<.002	0.004	0.110	4	<.02	<.01	<.002	6	<.005	<.02	<.03		<.01	0.49

STATION: X17B,d/s CVDam & u/s of X14 across diversion (20m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
May/30/96	2.9	4	7.22	955	421	<1	12	<.05	143	<.003	<.02	0.352	<.002	0.005		0.63	<.02	0.38	<.002	12	<.005	<.02	<.03		<.01	
Sep/26/96	3.1	3.3	7.07	660	409	<1	16	<.05	88	<.003	<.02	0.155	<.002	0.005	0.066	0.430	<.02	0.15	<.002	10	0.005	<.02	<.03		<.01	0.16

STATION: X18A,N of CVDam, & right of access rd to X14 (10m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
May/30/96	4.5	2.0	7.50	989	231	<1	9	0.10	355	<.003	<.02	0.192	<.002	0.005		2.020	<.02	0.20	<.002	32	<.005	<.02	<.03		<.01	
Sep/26/96	4.11	2.2	6.68	912	240	<1	<1	<.05	400	<.003	<.02	0.211	<.002	0.009	0.013	3.150	<.02	0.15	<.002	32	<.005	<.02	<.03		0.01	<.01

STATION: X18B,N of CVDam, & right of access rd to X14 (20m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	3.78	2.8	6.68	909	224	<1	12	<.05	424	<.003	<.02	0.161	<.002	0.010	0.067	0.220	<.02	0.64	<.002	29	0.008	<.02	<.03		0.02	0.21

STATION: X19A, d/s CVDam by X13 (9.79m) damaged

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/27/96	6.9	3.3	7.41	571	227	<1	13	1.21 +	105	<.003	<.02	0.186	<.002	0.018		0.280	<.02	0.81	<.002	18	0.006	<.02	< 03		0.02	

STATION: X21B-96, Toe 2nd Impoundment (15.43m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	4.5	3.5	6.68	1299	202	<1	36	0.970	767	<.003	<.02	0.090	<.002	0.007		9.890	<.02	10.56	<.002	<1	<.005	<.02	<.03		0.13	

1996 FARO GROUNDWATER QUALITY

STATION: X21C-96, Toe 2nd Impoundment (30.18m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	4.5	3.3	7.58	363	178	<1	7	0.380	12	<.003	<.02	0.112	<.002	<.002		0.050	<.02	0.22	<.002	9	<.005	<.02	<.03		<.01	

STATION: X24A-96, N abutment Int Dam (5.88m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	3.3	3.4	6.53	1364	315	<1	59	<.05	835	<.003	<.02	0.102	<.002	0.015		0.040	<.02	14.40	<.002	50	0.032	<.02	<.03		0.02	

STATION: X24B-96, N abutment Int Dam (10.80m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/27/96	3.3		6.75	1350	332	<1	50	0.400	758	<.003	<.02	0.120	<.002	0.034		9.190	<.02	20.80	<.002	60	0.041	<.02	<.03		0.04	

STATION: X24C-96, N abutment Int Dam (15.87)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	3.1	2.9	6.47	1492	363	<1	72	0.130	1005	<.003	<.02	0.086	<.002	0.013		0.060	<.02	12.98	<.002	<1	0.051	<.02	<.03		0.02	

STATION: X24D-96, N abutment Int Dam (28.22m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	3.1	3.3	6.49	1605	394	<1	79	<.05	1048	<.003	<.02	0.092	<.002	0.007		<.01	<.02	0.92	<.002	<1	<.005	<.02	<.03		0.01	

STATION: X25A-96, S abutment Int Dam (9.65m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	2.5	3.0	6.78	769	236	<1	15	2.10 +	269	<.003	<.02	0.106	<.002	0.009		0.050	<.02	5.68	<.002	25	<.005	<.02	<.03		0.03	

STATION: X25B-96, S abutment Int Dam (19.80m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	CU-T	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D	ZN-T
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Sep/26/96	2.4	2.7	7.04	1056	277	<1	10	<.05	468	<.003	<.02	0.058	<.002	0.007		<.01	<.02	0.11	<.002	<1	<.005	<.02	<.03		0.01	

1996 FARO GROUNDWATER QUALITY

STATION: P96-6, Toe Int Dump above Rock Drain (20.85m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/25/96	12.76	2.3		538	228	<1	114	<.05	108	<.003	<.02	0.059	0.003	0.008	3.53	<.02	0.31	<.002	10	0.031	<.02	<.03		0.54

STATION: P96-7, Toe Main Dump, below Haul Road (9.90m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/27/96	5.2	2.5	7.39	1227	160	<1	15	<.05	662	<.003	<.02	0.104	<.002	<.002	1.86	<.02	0.21	<.002	17	<.005	<.02	<.03		<.01

STATION: P96-8A, Old Faro Cr channel by X23 (4.87m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/26/96	3.5	4.5	6.31	5430	464	<1	102	<.05	2278	<.003	<.02	0.088	<.002	0.012	0.08	<.02	1.94	<.002	37	0.103	0.03	<.03		16.10

STATION: P96-8B, Old Faro Cr channel by X23 (9.30m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/26/96	3.09	3.4	6.3	7390	702	<1	173.00	0.08	2576	<.003	<.02	0.155	<.002	0.026	0.40	<.02	9.28	<.002	47	0.046	0.65	0.31		2.37

STATION: P81-4D,2nd impound into sand/gravel aquifer (deep)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Sep/27/96	12.4	4.0	3.77	235	97	<1	142	1.13 +	680	<.003	<.02	0.085	<.002	0.033	####	<.02	20.64	<.002	81	0.036	<.02	<.03		0.45

1996 FARO GROUNDWATER QUALITY

STATION: S1A, S of Sulphide Waste Dump (12.80m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun/13/96	4.3		6.63	1754	316	<1	65	<0.05	1217	<.003	<.02	0.062	<.002	0.012	0.13	<.02	0.29	<.002	14	<.005	<.02	<.03		0.10
Sep/27/96	4.0	2.4	6.57	1548	344	<1	83	<.05	1299	<.003	<.02	0.049	<.002	0.006	<.01	<.02	0.29	<.002	17	<.005	<.02	<.03		0.12

STATION: S1B, S of Sulphide Waste Dump (5.37m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun/13/96	4.4		6.54	1439	184	<1	57	<0.05	937	<.003	<.02	0.045	<.002	0.010	0.12	<.02	1.46	<.002	29	<.005	<.02	<.03		0.05
Sep/27/96	2.6			1259	70	<1	24	<.05	921	<.003	<.02	0.045	<.002	0.010	0.98	<.02	0.02	<.002	57	0.005	<.02	<.03		<.01

STATION: S2A, S of Sulphide Waste Dump (8.04m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun/13/96	4.9		6.41	1222	69	<1	23	<0.05	808	<.003	<.02	0.063	<.002	0.015	0.17	<.02	1.55	<.002	6	<.005	<.02	<.03		0.04
Sep/27/96	4.4	2.4	6.44	1521	121	2.00	46	<.05	1367	<.003	<.02	0.086	<.002	0.039	0.10	<.02	0.91	<.002	18	0.006	<.02	<.03		0.07

STATION: S2B, S of Sulphide Waste Dump (10.60m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun/13/96	3.3		6.08							<.003	<.02	0.048	<.002	0.006	4.90	<.02	1.14	<.002	6	<.005	<.02	<.03		0.15
Sep/27/96	3.2	2.4	6.54	768	109	<1	51	<.05	771	<.003	<.02	0.102	<.002	0.090	9.69	<.02	1.15	<.002	14	<.005	<.02	<.03		0.14

STATION: S3, S of Sulphide Waste Dump (6.56m)

Date	SWL	TEMP	PH-F	COND-L	ALK-T	ACID4.5	ACID8.3	NH3-N	SO4-T	AG-D	AS-D	BA-D	CD-D	CU-D	FE-D	HG-D	MN-D	MO-D	NA-D	NI-D	PB-D	SB-D	SE-D	ZN-D
	meters	deg C	pH unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jun/13/96	2.9		6.05	1343	97	<1	81	0.150	1371	<.003	<.02	0.104	<.002	0.012	24.97	<.02	1.83	<.002	16	<.005	<.02	<.03		0.09
Sep/27/96	2.5	3.5	6.38	1402	105	<1	93	0.060	876	<.003	<.02	0.094	<.002	< 002	24.49	<.02	1.56	<.002	21	<.005	<.02	<.03		0.08

1996 FARO SURFACE WATER QUALITY

STATION: R4, Rose Creek upstream of Anvil Creek

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-F µS/cm	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Feb/24/96	0.210	0.4	7.57		689		<.05	180	<5	<.003	<.02	0.127	<.002	<.002	<.02	<.002	<.005	<.02	<.02		0.02
Mar/30/96	0.116	0.4	7.52		625		<.05	180	<5	<.003	<.02	0.09	<.002	0.009	<.02	0.003	0.009	<.02	<.03		0.01
Aug/1/96	2.379	9.7		282		<.001	<.05	45	<5	<.003	<.02	0.048	<.0005	0.003	<.02	<.002	<.005	<.005	<.03		0.006
Sep/4/96	3.108	5.6	8.1	297		0.001	<.05	35	<5	<.003	<.02	0.066	<.0005	0.015	<.02	<.002	<.005	<.02	<.02		0.026
JAN 1996 - DEC 1996																					
Mean	1.453	4.0	7.73	290	657	0.001	0.05	110	5	0.003	0.02	0.083	0.0013	0.007	0.020	0.002	0.006	0.02	0.02		0.015
Std. Deviation	1.520	4.5	0.32	11	45	0	0	81	0	0	0	0.034	0.0009	0.006	0	0	0.002	0.01	0.01		0.009
Minimum Value	0.116	0.4	7.52	282	625	0.001	0.05	35	5	0.003	0.020	0.048	0.0005	0.002	0.020	0.002	0.005	0.01	0.02		0.006
Maximum Value	3.108	9.7	8.1	297	689	0.001	0.05	180	5	0.003	0.020	0.127	0.002	0.015	0.020	0.003	0.009	0.02	0.03		0.026
Median	1.295	3.0	7.57	290	657	0.001	0.05	112	5	0.003	0.02	0.078	0.0013	0.006	0.020	0.002	0.005	0.02	0.02		0.015
Num. Values	4	4	3	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4		4

STATION: R5, Anvil Creek downstream of Rose Creek

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-F µS/cm	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Feb/24/96	1.210	0.4	7.69		373		<.05	31	<5	<.003	<.02	0.097	<.002	<.002	<.02	<.002	<.005	<.02	<.02		<.01
Mar/30/96	0.841		7.77		381		<.05	39	<5	<.003	<.02	0.077	<.002	0.003	<.02	0.003	0.009	<.02	<.03		<.01
Aug/1/96	4.960	8.2		272			<.05	24	<5	<.003	<.02	0.047	<.0005	0.002	<.02	<.002	<.005	<.005	<.03		<.005
Sep/4/96	5.770	4.8	7.96	271			<.05	16	<5	<.003	<.02	0.072	<.0005	0.011	<.02	<.002	<.005	<.005	<.02		0.009
JAN 1996 - DEC 1996																					
Mean	3.195	5	7.81	272	377		0.05	28	5	0.003	0.02	0.073	0.0013	0.004	0.02	0.002	0.006	0.01	0.02		0.008
Std. Deviation	2.532	3.9	0.14	1	6		0	10	0	0	0	0.021	0.0009	0.004	0	0	0.002	0.01	0.01		0.002
Minimum Value	0.841	0.4	7.69	271	373		0.05	16	5	0.003	0.02	0.047	0.0005	0.002	0.02	0.002	0.005	0.01	0.02		0.005
Maximum Value	5.770	8.2	7.96	272	381		0.05	39	5	0.003	0.02	0.097	0.002	0.011	0.02	0.003	0.009	0.02	0.03		0.010
Num. Values	4	3	3	2	2		4	4	4	4	4	4	4	4	4	4	4	4	4		4

STATION: R6, Anvil Creek upstream of Rose Creek

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-F µS/cm	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Feb/24/96	1.000	0.4	7.72		371		<.05	20	<5	<.003	<.02	0.093	<.002	<.002	<.02	<.002	<.005	<.02	<.02		<.01
Mar/30/96	0.730		7.81		369		<.05	24	<5	<.003	<.02	0.075	<.002	0.005	<.02	0.004	0.006	<.02	<.03		<.01
Aug/1/96	2.786	7.9		271			<.05	20	<5	<.003	<.02	0.056	<.0005	0.004	<.02	<.002	0.009	<.005	<.03		<.005
Sep/4/96	2.662	4.8	7.95	268			<.05	7	<5	<.003	<.02	0.072	<.0005	0.003	<.02	<.002	<.005	<.005	<.02		0.006
JAN 1996 - DEC 1996																					
Mean	1.795	4.4	7.83	270	370		0.05	18	5	0.003	0.02	0.074	0.0013	0.003	0.02	0.003	0.006	0.01	0.02		0.008
Std. Deviation	1.080	3.8	0.12	2	1		0	7	0	0	0	0.015	0.0009	0.001	0	0.001	0.002	0.01	0.01		0.003
Minimum Value	0.730	0.4	7.72	268	369		0.05	7	5	0.003	0.02	0.056	0.0005	0.002	0.02	0.002	0.005	0.01	0.02		0.005
Maximum Value	2.786	7.9	7.95	271	371		0.05	24	5	0.003	0.02	0.093	0.002	0.005	0.02	0.004	0.009	0.02	0.03		0.01
Median	1.831	4.8	7.81	270	370		0.05	20	5	0.003	0.02	0.073	0.0013	0.003	0.02	0.002	0.005	0.01	0.02		0.008
Num. Values	4	3	3	2	2		4	4	4	4	4	4	4	4	4	4	4	4	4		4

1996 FARO SURFACE WATER QUALITY

STATION: R7, N Fork of Rose Creek above Faro Ck Diversion

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AS-T mg/L	BA-T mg/L	CD-T mg/L	CU-T mg/L	HG-T mg/L	MO-T mg/L	NI-T mg/L	PB-T mg/L	SB-T mg/L	SE-T mg/L	ZN-T mg/L
Jan/25/96		0.8	7.56	312		<.05	5	<5	<.003	<.02	0.063	<.002	0.009	<.02	<.002	<.005	<.02	<.02		0.01
Feb/14/96		2.1	7.53	276		<.05	11	<5	<.003	<.02	0.070	<.002	0.004	<.02	<.002	<.005	<.02	<.02		0.02
Mar/22/96		1.2	7.82	272		<.05	9	<5	<.003	<.02	0.059	<.002	<.002	<.02	<.002	<.005	<.02	<.03		<.01
Apr/10/96		1.8	7.60	325		<.05	11	<5	<.003	<.02	0.068	<.002	0.017	<.02	0.014	0.008	<.02	<.03		<.01
Apr/23/96			7.06	202		<.05	20	<5	<.003	<.02	0.067	<.002	<.002		<.002	0.007	<.02	<.03		<.01
May/15/96		3.0	6.86	87		<.05	3	8	<.003	<.02	0.03	<.002	0.045		<.002	<.005	<.02	<.03		0.02
Jun/14/96	0.900		8.05	104		<.05	5	<5	<.003	<.02	0.03	<.002	0.002	<.02	<.002	<.005	<.02	<.03		<.01
Jul/17/96	1.597	5.0	7.65	112		<.05	4	<5	<.003	<.02	0.068	<.002	<.002	<.02	<.002	<.005	<.02	<.03		<.01
Aug/1/96	0.770	10.8	7.90			<.05	6	<5	<.003	<.02	0.038	<.0005	0.0022	<.02	<.002	<.005	<.005	<.03		0.01
Aug/14/96	0.735	4.5	7.50	140		<.05	8	<5	<.003	<.02	0.066	<.002	0.002	<.02	<.002	<.005	<.02	<.03		<.01
Sep/4/96	1.097	5.4	7.64			<.05	3	<5	<.003	<.02	0.04	<.0005	0.002	<.02	<.002	<.005	<.005	<.03		0.04
Sep/17/96	0.700	4.5	7.50	110		<.05	5	7	<.003	<.02	0.09	<.002	<.002	<.02	<.002	<.005	<.02	<.03		<.01
Oct/25/96		0	6.92	173		<.05	10	<5	<.003	<.02	0.11	<.002	0.034	<.02	<.002	<.005	<.02	<.03		0.02
Nov/21/96			7.80	273		0.01	9	6	<.003	<.02	0.07	<.002	<.002	<.02	<.002	<.005	<.02	<.03		0.01
Dec/19/96		0	7.42	255		<.05	19	<5	<.003	<.02	0.14	<.002	0.002	<.02	<.002	<.005	<.02	<.03		0.04
JAN 1996 - DEC 1996																				
Mean	0.967	3.3	7.52	203		0.05	9	5	0.003	0.02	0.07	0.0018	0.0086	0.02	0.003	0.005	0.018	0.03		0.02
Std. Deviation	0.341	3.1	0.34	86		0.01	5	1	0	0	0.03	0.0005	0.0133	0	0.003	0.001	0.005	0		0.01
Minimum Value	0.700	0.0	6.86	87		0.01	3	5	0.003	0.02	0.03	0.001	0.002	0.02	0.002	0.005	0.005	0.02		0.01
Maximum Value	1.597	10.8	8.05	325		0.05	20	8	0.003	0.02	0.14	0.002	0.045	0.02	0.014	0.008	0.02	0.03		0.04
Median	0.835	2.5	7.56	202		0.05	8	5	0.003	0.02	0.07	0.002	0.002	0.02	0.002	0.005	0.02	0.03		0.01
Num. Values	6	12	15	13		15	15	15	15	15	15	15	15	13	15	15	15	15		15

1996 FARO SURFACE WATER QUALITY

STATION: R8, N Fork of Rose Creek 900 m below Faro Ck Div.

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	ALK-T mg/L	ACID4.5 mg/L	ACID8.3 mg/L	CL-T mg/L	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L
Jan/25/96		0.8	7.50	313	167	<1	8			<.05	4	<5	<.003	0.02	<.02	0.073	<.001	<.04	32.4	<.002
Feb/14/96		2.0	7.61	278		<1	<1			<.05	11	<5	<.003	0.05	<.02	0.079	<.001	<.04	34.6	<.002
Mar/22/96		1.2	7.82	282		<1	<1	3.2		<.05	9	<5	<.003	0.06	<.02	0.068	<.001	<.04	32.6	<.002
Apr/10/96		1.8	7.6	322	161	<1	1			<.05	11	<5	<.003	0.10	<.02	0.075	<.001	<.04	32.3	<.002
Apr/23/96			6.86	200	122	<1	2	3.8		<.05	10		<.003	0.13	<.02	0.060	<.001	<.04	26.0	<.002
May/15/96		3.0	6.86	88	39	<1	7	4.3			3		<.003	0.19	<.02	0.031	<.001	<.04	9.7	<.002
Jun/14/96			7.77	93	46	<1	<1	3.5		<.05	5	<5	<.003	<.05	<.02	0.030	<.001	0.04	12.2	<.002
Jul/17/96		5.0	7.68	55	23	<1	3			<.05	3	<5	<.003	<.05	<.02	0.004	<.001	<.04	4.9	<.002
35291.00		5.0	7.27	135	72	<1	1				7	<5	<.003	0.05	<.02	0.040	<.001	<.04	16.8	<.002
Sep/17/96		5.0	7.27	96	49	<1	2	0.7		<.05	5	5	<.003	0.05	<.02	0.086	<.001	<.04	11.9	<.002
Oct/25/96		0	6.88	171	75	<1	1			<.05	9	<5	<.003	0.05	<.02	0.039	<.001	<.04	23.6	<.002
Nov/21/96		0	7.77										<.003	<.05	<.02	0.103	0.003	<.04	29.3	<.002
Dec/19/96	0.2342	0	7.37	257	68	<1	3	1.9		<.05	16	<5	<.003	0.05	<.02	0.081	<.001	<.04	36.5	<.002

JAN 1996 - DEC 1996

Mean	0.2342	2.2	7.4	191	82	0.93	3	2.9		0.05	8	5	0.003	0.07	0.02	0.059	0.001	0.04	23.3	0.002
Std. Deviation	0	2	0.35	97	51	0.26	2	1.3		0	4	0	0	0.05	0	0.028	0.001	0	10.9	0
Minimum Value	0.2342	0	6.86	55	23	0.1	1	0.7		0.05	3	5	0.003	0.02	0.02	0.004	0.001	0.04	4.9	0.002
Maximum Value	0.2342	5	7.82	322	167	1	8	4.3		0.05	16	5	0.003	0.19	0.02	0.103	0.003	0.04	36.5	0.002
Median	0.2342	1.8	7.5	186	70	1	2	3.4		0.05	8	5	0.003	0.05	0.02	0.068	0.001	0.04	26	0.002
Num. Values	1	11	13	12	10	12	12	6		10	12	10	13	13	13	13	13	13	13	13

DATA CONTINUED

STATION: R8, N Fork of Rose Creek 900 m below Faro Ck Div.																			
CO-T	CR-T	CU-T	FE-T	HG-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SI-T	SR-T	TI-T	V-T	W-T	ZN-T
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<.005	<.005	0.006	0.21	<.02	<.005	6.5	0.02	<.002	2	<.005	<.04	<.02	1	<.02	2.37	0.163	<.005	<.005	<.02	0.01
<.005	<.005	<.002	0.19	<.02	<.005	7.1	0.01	<.002	1	<.005	<.04	<.02	8	<.02	2.74	0.172	<.005	<.005	<.02	<.01
<.005	<.005	<.002	0.09	<.02	<.005	6.6	<.01	<.002	2	0.005	0.09	<.02	3	<.03	1.51	0.162	<.005	0.006	<.03	<.01
<.005	<.005	0.013	0.14	<.02	<.005	6.5	0.01	0.003	2	0.007	<.04	<.02	6	<.03	2.49	0.165	<.005	0.006	<.03	<.01
<.005	<.005	<.002	0.32		<.005	5.5	0.02	<.002	<1	<.005	<.04	<.02	7	<.03	2.34	0.128	<.005	<.005	<.03	<.01
<.005	<.005	0.018	0.62		<.005	1.8	0.03	<.002	<1	<.005	<.04	<.02	2	<.03	1.61	0.048	<.005	<.005	<.03	0.02
<.005	<.005	0.009	0.48	<.02	<.005	2.3	0.01	<.002	<1	<.005	<.04	<.02	3	<.03	0.84	0.060	<.005	<.005	<.03	0.01
<.005	<.005	<.002	0.14	<.02	<.005	1.0	<.01	<.002	<1	<.005	<.04	<.02	<1	<.03	5.2	0.027	<.005	<.005	<.03	0.04
<.005	<.005	<.002	0.23	<.02	<.005	3.5	0.02	0.003	1	<.005	<.04	<.02	3	<.03	3.9	0.080	<.005	0.005	<.03	<.01
<.005	<.005	0.002	0.48	<.02	<.005	2.3	0.02	<.002	1	0.008	<.04	<.02	1	<.03	5.3	0.058	<.005	<.005	<.03	0.02
<.005	<.005	0.025	0.40	<.02	<.005	4.8	0.04	<.002	4	0.008	0.11	<.02	3	<.03	5.3	0.114	<.005	<.005	<.03	0.02
<.005	<.005	<.002	0.19	<.02	<.005	6.0	0.04	<.002	2	<.005	<.04	<.02	2	<.03	4.1	0.142	<.005	<.005	<.03	<.01
<.005	0.010	<.002	0.15	<.02	<.005	7.2	0.01	<.002	5	<.005	0.05	<.02	4	<.03	4.4	0.170	<.005	<.005	<.03	0.03
0.005	0.005	0.007	0.28	0.02	0.005	4.7	0.02	0.002	2	0.005	0.05	0.02	3	0.03	3.24	0.115	0.005	0.005	0.03	0.02
0	0.001	0.008	0.17	0	0	2.2	0.01	0	1	0.001	0.02	0	2	0	1.54	0.053	0	0	0	0.01
0.005	0.005	0.002	0.09	0.02	0.005	1	0.01	0.002	1	0.005	0.04	0.02	1	0.02	0.84	0.027	0.005	0.005	0.02	0.01
0.005	0.01	0.025	0.62	0.02	0.005	7.2	0.04	0.003	5	0.008	0.11	0.02	8	0.03	5.3	0.172	0.005	0.006	0.03	0.04
0.005	0.005	0.002	0.21	0.02	0.005	5.5	0.02	0.002	1	0.005	0.04	0.02	3	0.03	2.74	0.128	0.005	0.005	0.03	0.01
13	13	13	13	11	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

1996 FARO SURFACE WATER QUALITY

STATION: R9, N Fork of Rose Creek adjacent BH1 and BH2

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	ALK-T mg/L	ACID4.5 mg/L	ACID8.3 mg/L	CL-T mg/L	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L
Jan/25/96		0.8	7.54	336	159	<1	<.1			<.05	5	<5	<.003	0.02	<.02	0.063	<.001	<.04	34.7	<.002
Feb/14/96		1.5	7.43	339		<1	<1			<.05	16	<5	<.003	0.04	<.02	0.075	<.001	<.04	35.0	<.002
Mar/12/96		2.3	7.71	344		<1	<1			<.05	16	<5	<.003	0.13	<.02	0.064	<.001	<.04	35.6	<.002
Apr/10/96		2.6	7.70	334	155	<1	2	3.5		<.05	16	<5	<.003	0.06	<.02	0.073	<.001	<.04	33.6	<.002
Apr/23/96			6.84	208	134	<1	4	4.0	.076 +	<.05	13		<.003	0.13	<.02	0.058	<.001	<.04	27.9	<.002
May/15/96		1.0	7.04	96	44	<1	8	4.9			5		<.003	0.24	<.02	0.03	<.001	<.04	11.2	<.002
Jun/14/96			7.42	108	48	<1	1	4.2		<.05	8	<5	<.003	<.05	<.02	0.035	<.001	0.05	13.5	<.002
Jul/17/96		0	7.22	117	55	<1	2	<.1		<.05	7	<5	<.003	<.05	<.02	0.022	<.001	<.04	13.4	<.002
Aug/14/96		5	7.39	145	75	<1	2	1.8		0.05	10	<5	<.003	0.05	<.02	0.039	<.001	<.04	18.3	<.002
Sep/17/96		5	7.39	109	54	<1	2	0.9		<.05	6	<5	<.003	0.05	<.02	0.125	0.003	<.04	15.2	<.002
Oct/25/96		0	6.56	185	72	<1	1	1.8		<.05	14	<5	<.003	0.05	<.02	0.043	<.001	<.04	25.0	<.002
Nov/21/96		0	7.56	279	51	<1	4	0.6		0.01	17	6	<.003	<.05	<.02	0.076	0.003	<.04	33.1	<.002
Dec/19/96		0	7.15	271	69	<1	3	1.7		<.05	18	<5	<.003	0.05	<.02	0.088	<.001	<.04	36.9	<.002

NOTE; Duplicate samples were taken on April 23 for lab comparisons. Cyanide value recieved from the other lab was <.005 mg/L.

JAN 1996 - DEC 1996

Mean		1.7	7.3	221	83	0.93	2.4	2.3	0.076	0.05	12	5	0.003	0.07	0.02	0.061	0.001	0.04	25.6	0.002
Std. Deviation		1.9	0.34	100	44	0.25	2.1	1.7	0	0.01	5	0	0	0.06	0	0.028	0.001	0	10	0
Minimum Value		0	6.56	96	44	0.1	0.1	0.1	0.076	0.01	5	5	0.003	0.02	0.02	0.022	0.001	0.04	11.2	0.002
Maximum Value		5	7.71	344	159	1	8	4.9	0.076	0.05	18	6	0.003	0.24	0.02	0.125	0.003	0.05	36.9	0.002
Median		1	7.39	208	69	1	2	1.8	0.076	0.05	13	5	0.003	0.05	0.02	0.063	0.001	0.04	27.9	0.002
Num. Values		11	13	13	11	13	13	10	1	12	13	11	13	13	13	13	13	13	13	13

DATA CONTINUED

STATION: R9, N Fork of Rose Creek adjacent BH1 and BH2																			
CO-T	CR-T	CU-T	FE-T	HG-T	LA-T	MG-T	MN-T	MO-T	NA-T	NI-T	P-T	PB-T	S-T	SB-T	SI-T	SR-T	TI-T	V-T	W-T	ZN-T
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<.005	<.005	0.008	0.13	<.02	<.005	7.4	0.01	<.002	2	<.005	<.04	<.02	1	<.02	2.39	0.174	<.005	<.005	<.02	<.01
<.005	<.005	<.002	0.16	<.02	<.005	7.4	0.02	<.002	1	<.005	<.04	<.02	6	<.02	2.63	0.174	<.005	<.005	<.02	<.01
<.005	<.005	<.002	0.07	<.02	<.005	7.3	0.01	<.002	2	<.005	<.04	<.02	10	<.03	1.68	0.183	<.005	<.005	<.02	<.01
<.005	<.005	0.010	0.08	<.02	<.005	6.9	0.01	0.007	2	<.005	0.18	<.02	7	<.03	2.50	0.173	<.005	0.005	<.03	<.01
<.005	<.005	<.002	0.30	<.02	<.005	6.1	0.03	<.002	<1	<.005	<.04	<.02	11	<.03	2.35	0.139	<.005	<.005	<.03	<.01
<.005	<.005	0.040	0.59		<.005	2.1	0.05	<.002	<1	<.005	<.04	<.02	2	<.03	2.08	0.057	<.005	<.005	<.03	0.02
<.005	<.005	<.002	0.28	<.02	<.005	3.0	<.01	<.002	<1	<.005	<.04	<.02	3	<.03	0.87	0.069	<.005	<.005	<.03	0.01
<.005	<.005	<.002	0.23	<.02	<.005	2.6	0.01	<.002	<1	<.005	0.06	<.02	3	<.03	4.20	0.061	<.005	<.005	<.03	0.01
<.005	<.005	<.002	0.14	<.02	<.005	4.0	0.01	0.002	<1	<.005	<.04	<.02	3	<.03	4.0	0.090	<.005	<.005	<.03	<.01
<.005	<.005	<.002	0.61	<.02	<.005	3.1	0.03	<.002	1	0.023	<.04	<.02	1	<.03	5.5	0.078	<.005	<.005	<.03	0.03
<.005	<.005	0.022	0.31	<.02	<.005	5.0	0.02	0.003	4	<.005	0.10	<.02	2	<.03	4.9	0.123	<.005	<.005	<.03	0.03
<.005	<.005	<.002	0.14	<.02	<.005	6.9	0.02	<.002	2	<.005	<.04	<.02	2	<.03	4.5	0.160	<.005	<.005	<.03	0.01
<.005	0.008	<.002	0.13	<.02	<.005	7.4	0.02	<.002	5	<.005	<.04	<.02	4	<.03	4.2	0.175	<.005	<.005	<.03	0.03

0.005	0.005	0.008	0.24	0.02	0.005	5.3	0.02	0.002	2	0.006	0.06	0.02	4	0.03	3.22	0.127	0.005	0.01	0.03	0.02
0	0.001	0.011	0.18	0	0	2.1	0.01	0.001	1	0.005	0.04	0	3	0	1.41	0.05	0	0	0	0.01
0.005	0.005	0.002	0.07	0.02	0.005	2.1	0.01	0.002	1	0.005	0.04	0.02	1	0.02	0.87	0.057	0.005	0.01	0.02	0.01
0.005	0.008	0.04	0.61	0.02	0.005	7.4	0.05	0.007	5	0.023	0.18	0.02	11	0.03	5.5	0.183	0.005	0.01	0.03	0.03
0.005	0.005	0.002	0.16	0.02	0.005	6.1	0.02	0.002	1	0.005	0.04	0.02	3	0.03	2.63	0.139	0.005	0.01	0.03	0.01
13	13	13	13	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

1996 FARO SURFACE WATER QUALITY

STATION: R10, North Fork of Rose Creek u/s of rock drain

Date	FLOW m3/sec	TEMP deg C	PH-F pH unit	COND-L µS/cm	ALK-T mg/L	ACID4.5 mg/L	ACID8.3 mg/L	CL-T mg/L	CN-T mg/L	NH3-N mg/L	SO4-T mg/L	TSS mg/L	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L
Jan/25/96		0.8	7.49	334	166	<1	<1	2.9		<.05	4	<5	<.003	0.02	<.02	0.063	<.001	<.04	36.4	<.002
Feb/14/96		1.0	7.39	341		<1	<1	8.4		<.05	17	<5	<.003	0.07	<.02	0.073	0.001	<.04	33.6	<.002
Mar/12/96		2.4	7.47	347		<1	<1	4.2		<.05	15	<5	<.003	0.15	<.02	0.073	<.001	<.04	40.2	<.002
Apr/10/96		2.6	7.5	335	153	<1	<1			<.05	15	<5	<.003	0.07	<.02	0.069	<.001	<.04	32.6	<.002
Apr/23/96			7.06	213	129	<1	4	3.9	.078 +	<.05	15		<.003	0.31	<.02	0.060	<.001	<.04	27.8	<.002
May/15/96			7.83	96	41	<1	5	3.9		<.05	5	7	<.003	0.09	<.02	0.033	<.001	<.04	11.8	<.002
Jun/14/96			7.83	104	48	<1	1	2.9		<.05	9	<5	<.003	<.05	<.02	0.03	<.001	<.04	13.2	<.002
Jul/17/96				117	54	<1	2			<.05	7	<5	<.003	<.05	<.02	0.018	<.001	<.04	13.8	<.002
Aug/14/96		5.0	7.26	138	75	<1	2				9	<5	<.003	0.05	<.02	0.092	<.001	<.04	17.8	<.002
Sep/17/96		5.0	7.26	104	54	<1	2	0.5		<.05	7	5	<.003	0.05	<.02	0.100	0.001	<.04	15	<.002
Oct/25/96		0	6.58	186	74	<1	2			<.05	14	<5	<.003	0.05	<.02	0.059	<.001	<.04	27.7	<.002
Nov/21/96		0	7.65	303	44	<1	7	0.6		0.01	12	<5	<.003	<.05	<.02	0.066	0.003	<.04	30.8	<.002
Dec/19/96		0	7.24	273	71	<1	<1	2.2		<.05	15	<5	<.003	0.05	<.02	0.086	<.001	<.04	37.9	<.002

NOTE; Duplicate samples were taken on April 23 for lab comparisons. Cyanide value recieved from the other lab was <.005 mg/L.

JAN 1996 - DEC 1996

Mean		1.9	7.38	222	83	0.93	2.2	3.3	0.08	0.05	11	5	0.003	0.08	0.02	0.063	0.001	0.04	26	0.002
Std. Deviation		2	0.34	103	45	0.25	2	2.4	0	0.01	4	1	0	0.08	0	0.024	0.001	0	10.3	0
Minimum Value		0	6.58	96	41	0.1	0	0.5	0.08	0.01	4	5	0.003	0.02	0.02	0.018	0.001	0.04	11.8	0.002
Maximum Value		5	7.83	347	166	1	7	8.4	0.08	0.05	17	7	0.003	0.31	0.02	0.1	0.003	0.04	40.2	0.002
Median		1	7.43	213	71	1	2	2.9	0.08	0.05	12	5	0.003	0.05	0.02	0.066	0.001	0.04	27.8	0.002
Num. Values		9	12	13	11	13	13	9	1	12	13	12	13	13	13	13	13	13	13	13

Standard	Inst.Max.
F: FARO WATER LICENCE	
CYANIDE: TOTAL CN (mg/L)	0.05
NH3-N (mg/L)	1
TSS (mg/L)	15
SILVER: TOTAL Ag (mg/L)	0.1
BARIUM: TOTAL Ba (mg/L)	1
CADMIUM: TOTAL Cd (mg/L)	0.02
COPPER: TOTAL Cu (mg/L)	0.2
MERCURY: TOTAL Hg (mg/L)	0.005
MOLYBDENUM: TOTAL Mo (mg/L)	0.5
NICKEL: TOTAL Ni (mg/L)	0.5
LEAD: TOTAL Pb (mg/L)	0.2
ANTIMONY: TOTAL Sb (mg/L)	0.1
ZINC: TOTAL Zn (mg/L)	0.5

CO-T mg/L	CR-T mg/L	CU-T mg/L	FE-T mg/L	HG-T mg/L	LA-T mg/L	MG-T mg/L	MN-T mg/L	MO-T mg/L	NA-T mg/L	NI-T mg/L	P-T mg/L	PB-T mg/L	S-T mg/L	SB-T mg/L	SI-T mg/L	SR-T mg/L	TI-T mg/L	V-T mg/L	W-T mg/L	ZN-T mg/L
<.005	<.005	0.005	0.18	<.02	<.005	7.6	0.02	<.002	2	<.005	<.04	<.02	1	<.02	2.44	0.184	<.005	<.005	<.02	0.01
<.005	<.005	<.002	0.15	<.02	<.005	7.1	0.02	<.002	1	<.005	<.04	<.02	7	<.02	2.57	0.168	<.005	<.005	<.02	<.01
<.005	<.005	<.002	0.10	<.02	<.005	8.2	0.02	<.002	2	<.005	<.04	<.02	6	<.03	1.88	0.209	<.005	<.005	<.02	0.01
<.005	<.005	0.013	0.11	<.02	<.005	6.8	0.01	0.008	2	0.007	0.12	<.02	4	<.03	2.46	0.169	<.005	0.008	<.03	<.01
<.005	<.005	<.002	0.40	<.02	<.005	6.2	0.03	0.003	<1	<.005	0.10	<.02	14	<.03	2.37	0.139	<.005	<.005	<.03	0.04
<.005	<.005	0.019	0.54		<.005	2.2	0.03	<.002	<1	<.005	0.06	<.02	2	<.03	1.48	0.060	<.005	<.005	<.03	0.02
0.006	<.005	0.019	0.28	<.02	<.005	2.9	<.01	<.002	<1	<.005	<.04	<.02	2	<.03	0.95	0.066	<.005	0.006	<.03	0.01
<.005	<.005	<.002	0.22	<.02	<.005	2.7	0.01	<.002	<1	<.005	<.04	<.02	<1	<.03	4.10	0.064	<.005	<.005	<.03	<.01
<.005	<.005	<.002	0.14	<.02	<.005	3.9	0.01	<.002	<1	<.005	<.04	<.02	3	<.03	4.00	0.088	<.005	<.005	<.03	<.01
<.005	<.005	<.002	0.61	<.02	<.005	2.9	0.03	<.002	1	0.018	<.04	<.02	1	<.03	5.3	0.079	<.005	<.005	<.03	0.02
<.005	<.005	0.036	0.13	0.02 +	<.005	5.7	0.02	<.002	4	<.005	<.04	<.02	2	<.03	5.9	0.134	<.005	<.005	<.03	0.03
<.005	<.005	<.002	0.15	<.02	<.005	6.4	0.02	<.002	2	<.005	<.04	<.02	5	<.03	4.2	0.149	<.005	<.005	<.03	0.01
<.005	0.007	0.006	0.11	<.02	<.005	7.7	0.01	<.002	5	<.005	<.04	<.02	3	<.03	4.4	0.180	<.005	<.005	<.03	0.06

0.005	0.005	0.009	0.24	0.02	0.005	5.4	0.02	0.003	2	0.006	0.05	0.02	4	0.03	3.23	0.13	0.005	0.005	0.03	0.02
0	0.001	0.01	0.17	0	0	2.2	0.01	0.002	1	0.004	0.03	0	4	0	1.52	0.052	0	0.001	0	0.02
0.005	0.005	0.002	0.1	0.02	0.005	2.2	0.01	0.002	1	0.005	0.04	0.02	1	0.02	0.95	0.06	0.005	0.005	0.02	0.01
0.006	0.007	0.036	0.61	0.02	0.005	8.2	0.03	0.008	5	0.018	0.12	0.02	14	0.03	5.9	0.209	0.005	0.008	0.03	0.06
0.005	0.005	0.002	0.15	0.02	0.005	6.2	0.02	0.002	1	0.01	0.04	0.02	3	0.03	2.57	0.139	0.005	0.005	0.03	0.01
13	13	13	13	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13

APPENDIX 2

1996 MONTHLY DATA REPORTS
CONTAINING EXTRA WATER QUALITY DATA

FARO WATER QUALITY DATA

JANUARY 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M^3/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X2	25-Jan-96	7.42	0.9	349	Glaciated	<5	29	<.05	<.001	
X3 Pond	25-Jan-96	7.50	0.9	255	* 0.107	<5	15	<.05	<.001	
X4 Weekly	4-Jan-96	Not Decanting								SEE ATTACHED ICP RESULTS
	9-Jan-96	Not Decanting								
	20-Jan-96	Not Decanting								
	25-Jan-96	Not Decanting								
X5 Weekly	4-Jan-96	7.38	2.8	1229	Estimate 0.12	<5	530	0.30	0.007	
	9-Jan-96	7.36	3.3	1215	Estimate 0.12	<5	462	0.23	0.004	
	20-Jan-96	7.28	3.3	1235	Estimate 0.12	<5	412	0.61	0.003	
	25-Jan-96	7.21	2.7	1247	Estimate 0.12	<5	416	0.50	0.001	
X9a	25-Jan-96	N/A	N/A	250	0.425 (28%solids)	<5	107	<.05	0.820	
X10	25-Jan-96	7.72	2.4	267	N/A	<5	10	<.05	<.001	
X11	Semi Annual (May & Sept)									
X12	Semi Annual (May & Sept)									
X13 Weekly	4-Jan-96	7.25	2.5	1293	0.031	6	538	0.47	<.001	
	9-Jan-96	7.35	2.4	1288	0.031	6	385	1.02	<.001	
	20-Jan-96	7.35	2	1310	0.031	<5	490	0.57	0.002	
	25-Jan-96	7.32	0.9	1385	0.031	8	480	1.15	<.001	
X14	25-Jan-96	7.51	0.9	1145	N/A	<5	341	0.55	0.001	
X22b		Main Pit Water (no safe access)								
X22c		Main Pit at Point of Discharge								
X23	25-Jan-96	7.37	0.8	4870	1.67 Usec.	6	2053	0.50	<.001	
X26	25-Jan-96	Not Pumping								

N/A Data not obtained or meter malfunction.

COMMENTS: Sample X9a is a sample of the decant from the mill tailings.
Sample for site X3 was taken within the pumphouse pond just downstream of water supply wells, PW3 and 6. * Flow indicated is combined supply of these wells to the pumphouse pond.

FARO WATER QUALITY DATA

CONTINUED FOR JANUARY 1996

Site		Date	pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X16a	PEIZOMETERS BELOW CROSS	Semi Annual (May & Sept)										SEE ATTACHED ICP RESULTS
X16b		Semi Annual (May & Sept)										
X17a		Semi Annual (May & Sept)										
X17b		Semi Annual (May & Sept)										
X18a		Semi Annual (May & Sept)										
X18b		Semi Annual (May & Sept)										
X20		Semi Annual (May & Sept)										
1A	INTERMEDIATE DUMP BOREHOLES	Semi Annual (May & Sept)										
1B		Semi Annual (May & Sept)										
2A		Semi Annual (May & Sept)										
2B		Semi Annual (May & Sept)										
3		Semi Annual (May & Sept)										

Site		Date	pH	Temp. °C	us/cm Conductivity	M3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Chloride	Acidity pH 4.5	Acidity pH 8.3	Metals
R4	ROSE CREEK WATER QUALITY STATIONS	Quarterly (Mar, June, Sept, Dec)											SEE ICP DATA
R5		Quarterly (Mar, June, Sept, Dec)											
R6		Quarterly (Mar, June, Sept, Dec)											
R7		25-Jan-96	7.56	0.8	312	N/A	<5	5	<.05	N/A	<.10	0.4	
R8		25-Jan-96	7.5	0.8	313	N/A	<5	4	<.05	N/A	<.10	8.4	
R9		25-Jan-96	7.54	0.8	336	N/A	<5	5	<.05	N/A	<.10	<.1	
R10		25-Jan-96	7.49	0.8	334	N/A	<5	4	<.05	N/A	<.10	0.4	

N/A Data not obtained or meter malfunction.

COMMENTS; All water quality data for the North Fork of Rose Creek was well within license limits, and there is no indication that contamination due to groundwater is occurring.

BH SERIES WATER QUALITY DATA JANUARY 1996

Site	Date	pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Acidity pH 4.3	Acidity pH 8.3	Metals
BH1	25-Jan-96	Frozen										SEE ATTACHED ICP RESULTS
BH2	25-Jan-96	Frozen										
BH4	25-Jan-96	Frozen										
BH5		Semi Annual (May & Sept)										
BH6		Semi Annual (May & Sept)										
BH7a		Semi Annual (May & Sept)										
BH7b		Semi Annual (May & Sept)										
BH8		Semi Annual (May & Sept)										
BH9		Semi Annual (May & Sept)										
BH10a		Semi Annual (May & Sept)										
BH10b		Semi Annual (May & Sept)										
BH11		Semi Annual (May & Sept)										
BH12a		Semi Annual (May & Sept)										
BH12b		Semi Annual (May & Sept)										
BH13a		Semi Annual (May & Sept)										
BH13b		Semi Annual (May & Sept)										
BH14a		Semi Annual (May & Sept)										
BH14b		Semi Annual (May & Sept)										
BH15a		Semi Annual (May & Sept)										
BH15b		Semi Annual (May & Sept)										
BH16a		Semi Annual (May & Sept)										
BH16b		Semi Annual (May & Sept)										
BH16c		Semi Annual (May & Sept)										

N/A Data not obtained or meter malfunction.

COMMENTS;

FARO WATER QUALITY ICP RESULTS FOR JANUARY 1996

TOTAL (ppm) & DISSOLVED (ppm)

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	<.003	0.02	<.02	<.01	0.053	<.001	<.05	31.0	<.002	<.005	0.011	0.007	0.27	<.02	<.005	7.7	0.02	<.002	2	<.005	<.04	<.02	7	<.02	2.05	0.166	<.005	<.005	<.02	0.01
X3	<.003	0.02	<.02	<.01	0.053	<.001	<.05	31.0	<.002	<.005	0.011	0.007	0.27	<.02	<.005	6.1	0.02	<.002	1	<.005	<.04	<.02	7	<.02	2.05	0.166	<.005	<.005	<.02	0.01
X4 Jan 4	Not decanting																													
X4 Jan 9	Not decanting																													
X4 Jan 20	Not decanting																													
X4 Jan 25	Not decanting																													
X5 Jan 4	<.003	0.60	<.02	<.01	0.036	0.002	<.05	164.9	<.002	<.005	<.005	0.012	1.21	<.02	<.005	28.5	6.43	<.002	34	0.006	<.04	<.02	158	<.02	1.45	0.404	0.011	<.005	<.02	0.27
X5 Jan 9	<.003	0.58	<.02	<.01	0.045	0.002	<.05	173.8	<.002	<.005	<.005	0.007	1.22	<.02	<.005	29.0	6.86	<.002	34	<.005	<.04	<.02	168	<.02	2.70	0.431	0.009	<.005	<.02	0.27
X5 Jan 20	<.003	0.71	0.03	<.01	0.041	0.003	<.05	152.6	0.002	<.005	<.005	0.003	0.81	<.02	<.005	26.7	6.61	<.002	31	0.006	<.04	<.02	148	<.02	1.64	0.456	<.005	<.005	<.02	0.26
X5 Jan 25	<.003	0.62	0.03	<.01	0.034	0.002	<.05	157.5	<.002	0.01	<.005	0.013	0.42	<.02	<.005	29.5	7.15	<.002	37	<.005	<.04	<.02	147	<.02	2.57	0.493	<.005	<.005	<.02	0.23
X9a	<.003	0.09	<.02	<.01	0.132	<.001	<.05	27.3	<.002	<.005	<.005	0.017	0.10	<.02	<.005	30.5	7.25	<.002	38	<.005	<.04	<.02	143	<.02	2.81	0.501	<.005	<.005	<.02	<.01
X10	<.003	0.03	<.02	<.01	0.073	<.001	<.05	32.1	0.002	<.005	0.006	0.008	0.24	<.02	<.005	7.0	0.02	<.002	1	<.005	<.04	<.02	7	<.02	1.92	0.117	<.005	<.005	<.02	0.03
X11	Semi Annual (May & Sept)																													
X12	Semi Annual (May & Sept)																													
X13 Jan 4	<.003	0.74	0.04	<.01	0.109	0.003	<.05	183.6	<.002	<.005	<.005	0.008	2.24	<.02	<.005	32.4	7.42	<.002	38	<.005	<.04	<.02	158	0.03	1.89	0.446	0.010	<.005	<.02	0.02
X13 Jan 9	<.003	0.60	<.02	<.01	0.100	0.003	<.05	184.6	<.002	<.005	<.005	0.007	1.96	<.02	<.005	31.3	7.39	<.002	38	<.005	<.04	<.02	160	<.02	2.96	0.443	0.005	<.005	<.02	0.01
X13 Jan 20	<.003	0.96	<.02	<.01	0.123	0.002	<.05	167.3	<.002	<.005	<.005	0.009	3.28	<.02	<.005	29.4	7.23	<.002	35	0.005	<.04	<.02	129	<.02	2.10	0.484	0.006	<.005	<.02	0.01
X13 Jan 25	<.003	0.65	<.02	<.01	0.113	0.002	<.05	161.6	<.002	<.005	<.005	0.010	2.34	<.02	<.005	30.5	7.25	<.002	38	<.005	<.04	<.02	143	<.02	2.81	0.501	<.005	<.005	<.02	<.01
X14	<.003	0.60	0.04	<.01	0.068	0.002	<.05	143.6	<.002	<.005	<.005	0.017	0.87	<.02	<.005	27.0	5.24	<.002	31	0.008	<.04	<.02	124	<.02	2.52	0.457	0.005	<.005	<.02	0.10
X16a	Semi Annual (May & Sept)																													
X16b	Semi Annual (May & Sept)																													
X17a	Semi Annual (May & Sept)																													
X17b	Semi Annual (May & Sept)																													
X18a	Semi Annual (May & Sept)																													
X18b	Semi Annual (May & Sept)																													
X20	Semi Annual (May & Sept)																													
X22b	Main Pit Water (no safe access)																													
X22c	Main Pit at Point of Discharge																													
X23	<.003	2.29	0.15	<.01	0.08	0.006	<.05	502.50	0.016	0.11	<.005	0.032	0.30	<.02	<.005	288.6	18.03	<.002	46.00	0.296	<.04	<.02	733.00	0.13	3.24	2.910	0.015	0.01	0.03	24.43
X26	Not Pumping																													

FARO WATER QUALITY ICP RESULTS CONTINUED FOR JANUARY 1996

TOTAL (ppm) & DISSOLVED (ppm)

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, Dec)																													
R5	Quarterly (Mar, June, Sept, Dec)																													
R6	Quarterly (Mar, June, Sept, Dec)																													
R7	<.003	0.07	<.02	<.01	0.063	<.001	<.05	33.5	<.002	<.005	<.005	0.009	0.14	<.02	<.005	6.6	0.01	<.002	2	<.005	<.04	<.02	2	<.02	2.48	0.167	<.005	<.005	<.02	0.01
R8	<.003	0.02	<.02	<.01	0.073	<.001	<.05	32.4	<.002	<.005	<.005	0.006	0.21	<.02	<.005	6.5	0.02	<.002	2	<.005	<.04	<.02	1	<.02	2.37	0.163	<.005	<.005	<.02	0.01
R9	<.003	0.02	<.02	<.01	0.063	<.001	<.05	34.7	<.002	<.005	<.005	0.008	0.13	<.02	<.005	7.4	0.01	<.002	2	<.005	<.04	<.02	2	<.02	2.39	0.174	<.005	<.005	<.02	<.01
R10	<.003	0.02	<.02	<.01	0.063	<.001	<.05	36.4	<.002	<.005	<.005	0.005	0.18	<.02	<.005	7.6	0.02	<.002	2	<.005	<.04	<.02	2	<.02	2.44	0.184	<.005	<.005	<.02	0.01
BH1	Frozen																													
BH2	Frozen																													
BH4	Frozen																													
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY DATA

FEBRUARY 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X2	Feb 14	7.39	1.2	377	0.085	<5	26	<.05	<.001	
X3	Feb 14	7.52	1.6	263	* 0.107	<5	22	<.05	<.001	
X4 Weekly	Feb 5	Not Decanting								SEE ATTACHED ICP RESULTS
	Feb 14	Not Decanting								
	Feb 23	Not Decanting								
	Feb 28	Not Decanting								
X5 Weekly	Feb 5	7.26	3.8	1289	Estimate 0.08	5	522	0.66	0.001	
	Feb 14	7.22	3.6	1307	Estimate 0.08	<5	508	0.61	<.001	
	Feb 23	7.1	3.4	1268	Estimate 0.08	<5	559	0.61	<.001	
	Feb 28	6.75	3.5	1141	Estimate 0.08	<5	551	0.59	0.001	
X9a	Feb 14	No sample								
X10	Every second month (Jan, Mar, May, July, Sept, Nov)									
X11	Semi Annual (May & Sept)				N/A					
X12	Semi Annual (May & Sept)				N/A					
X13 Weekly	Feb 5	7.33	3	1314	0.027	9	518	1.01	<.001	
	Feb 14	7.28	3	1330	0.029	7	538	1.03	<.001	
	Feb 23	7.18	1.7	932	0.030	6	620	1.28	0.001	
	Feb 28	6.89	2	1264	0.030	<5	620	1.08	0.001	
X14	Feb 14	7.68	2.2	1207	Frozen	<5	480	0.50	<.001	
X22b	Feb 14	Main Pit Water (no safe access)								
X22c	Feb 14	Main Pit at Point of Discharge								
X23	Feb 14	7.25	2.1	4850	0.0015	5	2597	0.56	<.001	
X26	Feb 14	Not Pumping								

N/A Data not obtained or meter malfunction.

COMMENTS: Sample X3 was taken from an open area within the pumphouse pond, just downstream of water supply wells PW3 and 6. * Flow indicated is the combined flow of the wells into the pond.

FARO WATER QUALITY DATA

CONTINUED FOR FEBRUARY 1996

Site		Date	pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X16a	PEIZOMETERS	Semi Annual (May & Sept)										SEE ATTACHED ICP RESULTS
X16b		Semi Annual (May & Sept)										
X17a		Semi Annual (May & Sept)										
X17b		Semi Annual (May & Sept)										
X18a		Semi Annual (May & Sept)										
X18b		Semi Annual (May & Sept)										
X20		Semi Annual (May & Sept)										
1A	INTERMEDIATE	Semi Annual (May & Sept)										
1B		Semi Annual (May & Sept)										
2A		Semi Annual (May & Sept)										
2B		Semi Annual (May & Sept)										
3		Semi Annual (May & Sept)										

Site		Date	pH	Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Chloride	Acidity pH 4.5	Acidity pH 8.3	Metals
R4	ROSE & ANVIL	Feb 24	7.57	0.4	689	0.21	<5	180	< 05	3.4	<1	4.8	SEE ICP DATA
R5	WATER QUALITY	Feb 24	7.69	0.4	373	R4 & R5 = 1.21	<5	31	< 05	2.8	<1	<1	
R6	STATION	Feb 24	7.72	0.4	371	1.00	<5	20	< 05	2.7	<1	<1	
R7		Feb 14	7.53	2.1	275	N/A	<5	11	< 05	2.7	<1	<1	
R8		Feb 14	7.61	2	278	N/A	<5	11	< 05	N/A	<1	<1	
R9		Feb 14	7.43	1.5	339	N/A	<5	16	< 05	N/A	<1	<1	
R10		Feb 14	7.39	1	341	N/A	<5	17	< 05	8.4	<1	<1	

N/A Data not obtained or meter malfunction.

COMMENTS: All water quality samples taken on the Rose and Anvil Creek were in compliance.

BH SERIES WATER QUALITY DATA FEBRUARY 1996

Site	Date	pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Acidity pH 4.3	Acidity pH 8.3	Metals
BH1	Feb 14	Frozen										SEE ATTACHED ICP RESUTS
BH2	Feb 14	Frozen										
BH4	Feb 14	Frozen										
BH5	Semi Annual (May & Sept)											
BH6	Semi Annual (May & Sept)											
BH7a	Semi Annual (May & Sept)											
BH7b	Semi Annual (May & Sept)											
BH8	Semi Annual (May & Sept)											
BH9	Semi Annual (May & Sept)											
BH10a	Semi Annual (May & Sept)											
BH10b	Semi Annual (May & Sept)											
BH11	Semi Annual (May & Sept)											
BH12a	Semi Annual (May & Sept)											
BH12b	Semi Annual (May & Sept)											
BH13a	Semi Annual (May & Sept)											
BH13b	Semi Annual (May & Sept)											
BH14a	Semi Annual (May & Sept)											
BH14b	Semi Annual (May & Sept)											
BH15a	Semi Annual (May & Sept)											
BH15b	Semi Annual (May & Sept)											
BH16a	Semi Annual (May & Sept)											
BH16b	Semi Annual (May & Sept)											
BH16c	Semi Annual (May & Sept)											

N/A Data not obtained or meter malfunction.

COMMENTS: _____

FARO WATER QUALITY ICP RESULTS FOR FEBRUARY 1996

TOTAL (ppm) & DISSOLVED (ppm)

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	< 003	0 10	< 02	< 01	0 081	0 001	< 04	39 4	< 002	< 005	< 005	< 002	0 32	< 03	< 005	8 8	0 09	< 002	2	< 005	< 04	< 02	10	< 02	2 87	0 119	< 005	< 005	< 02	0 02
X3	< 003	0 03	< 02	< 01	0 053	0 001	< 04	29 4	< 002	< 005	< 005	0 005	0 14	< 03	< 005	5 7	0 02	< 002	<1	< 005	< 04	< 02	8	< 02	2 21	0 156	< 005	< 005	< 02	0 01
X4 Feb 5	Not decanting																													
X4 Feb 14	Not decanting																													
X4 Feb 23	Not decanting																													
X4 Feb 28	Not decanting																													
X5 Feb 5	< 003	0 56	< 02	< 01	0 045	0 002	< 04	171 7	0 002	< 005	0 011	0 007	0 80	< 03	< 005	29 9	6 23	< 002	34	0 005	< 04	< 02	169	< 02	2 68	0 382	< 005	< 005	< 02	0 20
X5 Feb 14	< 003	0 67	< 02	< 01	0 039	0 002	< 04	141 5	< 002	< 005	< 005	< 002	0 83	< 03	< 005	26 9	7 60	< 002	32	< 005	< 04	< 02	160	< 02	2 69	0 445	< 005	< 005	< 02	0 21
X5 Feb 23	< 003	0 54	< 02	< 01	0 053	0 002	< 04	186 5	< 002	< 005	< 005	0 008	0 48	< 03	< 005	34 4	7 19	< 002	43	< 005	< 04	< 02	150	< 02	1 71	0 470	< 005	< 005	< 02	0 22
X5 Feb 28	< 003	0 55	< 02	< 01	0 046	0 002	< 04	122 7	< 002	0 01	< 005	0 012	0 65	< 03	< 005	22 6	6 27	< 002	27	0 008	< 04	< 02	157	< 02	1 29	0 373	< 005	< 005	< 02	0 27
X9a	No sample																													
X10	Every second month (Jan, Mar, May, July, Sept, Nov)																													
X11	Semi Annual (May & Sept)																													
X12	Semi Annual (May & Sept)																													
X13 Feb 5	< 003	0 63	< 02	< 01	0 112	0 002	< 04	186 2	< 002	< 005	< 005	0 004	2 18	< 03	< 005	33 0	6 47	< 002	38	0 012	< 04	< 02	176	< 02	3 10	0 411	< 005	< 005	< 02	< 01
X13 Feb 14	< 003	0 94	< 02	< 01	0 104	0 003	< 04	186 6	< 002	< 005	< 005	0 005	2 58	< 03	< 005	34 8	9 92	< 002	42	< 005	< 04	< 02	182	< 02	3 40	0 574	< 005	< 005	< 02	0 02
X13 Feb 23	< 003	0 62	< 02	< 01	0 113	0 002	< 04	186 5	< 002	< 005	< 005	0 008	0 48	< 03	< 005	36 5	7 30	< 002	43	0 012	< 04	< 02	150	< 02	1 97	0 491	< 005	< 005	< 02	< 01
X13 Feb 28	< 003	0 55	< 02	< 01	0 092	0 002	< 04	140 5	< 002	0 01	< 005	0 003	1 98	< 03	< 005	25 8	7 21	< 002	31	< 005	< 04	< 02	196	< 02	1 71	0 423	< 005	< 005	< 02	0 01
X14	< 003	0 65	< 02	< 01	0 091	0 002	< 04	136 3	< 002	< 005	< 005	0 005	0 78	< 03	< 005	26 5	5 82	< 002	30	< 005	< 04	< 02	154	< 02	2 70	0 443	< 005	< 005	< 02	0 09
X16a	Semi Annual (May & Sept)																													
X16b	Semi Annual (May & Sept)																													
X17a	Semi Annual (May & Sept)																													
X17b	Semi Annual (May & Sept)																													
X18a	Semi Annual (May & Sept)																													
X18b	Semi Annual (May & Sept)																													
X20	Semi Annual (May & Sept)																													
X22b	Main Pit Water (no safe access)																													
X22c	Main Pit at Point of Discharge																													
X23	< 003	2 49	< 02	< 01	0 09	0 007	< 04	491 10	0 006	0 07	< 005	0 023	0 23	< 03	< 005	282 2	19 82	< 002	45 00	0 216	< 04	< 02	814	< 02	3 45	2 839	0 021	< 005	< 02	24 21
X26	Not Pumping																													

FARO WATER QUALITY ICP RESULTS CONTINUED FOR FEBRUARY 1996

TOTAL (ppm) & DISSOLVED (ppm)

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	<.003	0.22	<.02	<.01	0.127	<.001	<.04	97.0	<.002	<.005	<.005	<.002	0.84	<.03	<.005	18.8	0.14	<.002	13	<.005	<.04	<.02	52	<.02	1.49	0.291	0.007	<.005	<.02	0.02
R5	<.003	0.02	<.02	<.01	0.097	<.001	<.04	49.8	<.002	<.005	<.005	<.002	0.19	<.03	<.005	11	<.01	<.002	1	<.005	<.04	<.02	14	<.02	1.28	0.144	<.005	<.005	<.02	<.01
R6	<.003	0.04	<.02	<.01	0.093	<.001	<.04	51.8	<.002	<.005	<.005	<.002	0.15	<.03	<.005	11.6	<.01	<.002	1	<.005	<.04	<.02	18	<.02	1.5	0.15	<.005	<.005	<.02	<.01
R7	<.003	0.04	<.02	<.01	0.070	<.001	<.04	31.2	<.002	<.005	<.005	0.004	0.22	<.03	<.005	6.5	0.02	<.002	1	<.005	<.04	<.02	6	<.02	2.59	0.153	<.005	<.005	<.02	0.02
R8	<.003	0.05	<.02	<.01	0.079	<.001	<.04	34.6	<.002	<.005	<.005	<.002	0.19	<.03	<.005	7.1	0.01	<.002	1	<.005	<.04	<.02	8	<.02	2.74	0.172	<.005	<.005	<.02	<.01
R9	<.003	0.04	<.02	<.01	0.075	<.001	<.04	35.0	<.002	<.005	<.005	<.002	0.16	<.03	<.005	7.4	0.02	<.002	1	<.005	<.04	<.02	6	<.02	2.63	0.174	<.005	<.005	<.02	<.01
R10	<.003	0.07	<.02	<.01	0.073	<.001	<.04	33.6	<.002	<.005	<.005	<.002	0.15	<.03	<.005	7.1	0.02	<.002	1	<.005	<.04	<.02	7	<.02	2.57	0.168	<.005	<.005	<.02	<.01
BH1	Frozen																													
BH2	Frozen																													
BH4	Frozen																													
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY DATA

MARCH 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X2	Mar 12	7.31	1.1	362	0.111	<5	20	0.14	<.001	
X3	Mar 12	7.51	1.5	245	N/A	<5	22	<.05	<.001	
X4 Weekly	Mar 5	Not Decanting								SEE ATTACHED ICP RESULTS
	Mar 12	Not Decanting								
	Mar 21	Not Decanting								
	Mar 30	Not Decanting								
X5 Weekly	Mar 5	7.35	3.9	1133	Estimate 0.80	0% 7	521	0.96	0.001	
	Mar 12	7.56	3.1	1255	Estimate 0.80	" <5	491	0.61	0.001	
	Mar 21	7.33	4.1	1304	Estimate 0.80	" <5	441	0.66	<.001	
	Mar 30	7.1	4	1286	Estimate 0.80	" <5	520	0.66	<.001	
X9a	Mar 12	No sample								
X10	Mar 12	7.76	2	1276	Frozen	<5	50	<.05	0.001	
X11	Mar 12	Semi Annual Sample (May & Sept)			0.0059					
X12	Mar 12	Semi Annual Sample (May & Sept)			0.0032					
X13 Weekly	Mar 5	7.33	1.9	1147	0.030	12	517	1.01	0.002	
	Mar 12	7.11	1.7	1280	0.027	14	503	0.99	0.001	
	Mar 21	7.38	2	1363	0.023	6	465	0.97	0.001	
	Mar 30	7.3	3.2	1287	0.023	5	534	0.94	<.001	
X14	Mar 12	7.56	2.4	1207	N/A	<5	442	0.56	0.001	
X22b	Mar 12	Main Pit Water (no safe access)								
X22c	Mar 12	Main Pit at Point of Discharge								
X23	Mar 22	7.31	2.3	4770	0.0011	<5	2175	0.56	0.002	
				Alkalinity mg/L		Acidity pH 4.5 / pH 8.3				
X26	March	No Sample			Avg 2.3 m/day @ 350 gal/min					

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-002

All data that is indicated in black is not a requirement of the License

COMMENTS;

Sample X9a, although not sampled during this period is a sample taken from the mill, of the tailings going to the Faro pit. This sample is taken on occasion to replace sample X9, tailings line to the tailings pond, which no longer exists.

Site X26 (Zone II) was not pumping during the routine sampling period and due to an oversite a sample was not obtained during the pumping period.

In accordance with the license a monthly flow (calculated or measured) at site X14 is required. Due to extreme glaciation at this site and X10 (for calculated flow) a flow was not obtained for this period. This station does however, have a continuous record for flow, of which the data is presently under review.

FARO WATER QUALITY DATA

CONTINUED FOR MARCH 1996

Site		Date	pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	Metals
X16a	PEIZOMETERS BELOW CROSS		Semi Annual (May & Sept)									SEE ATTACHED ICP RESULTS
X16b			Semi Annual (May & Sept)									
X17a			Semi Annual (May & Sept)									
X17b			Semi Annual (May & Sept)									
X18a			Semi Annual (May & Sept)									
X18b			Semi Annual (May & Sept)									
X20			Semi Annual (May & Sept)									
1A	INTERMEDIATE DUMP BOREHOLES		Semi Annual (May & Sept)									
1B			Semi Annual (May & Sept)									
2A			Semi Annual (May & Sept)									
2B			Semi Annual (May & Sept)									
3			Semi Annual (May & Sept)									

Site		Date	pH	Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L Ammonia	mg/L Cyanide	mg/L Chloride	mg/L Alk	Acidity pH 4.5	Acidity pH 8.3	Metals
R4	ROSE & ANVIL WATER QUALITY STATIONS	Mar 30	7.52	0.4	625	0.116	<5	180	<.05	N/A	4.1	N/A	<1.0	<1.0	SEE ICP DATA
R5		Mar 30	7.77	0.4	381	R4 & R 5 = 0.841	<5	39	<.05	N/A	3.1	N/A	<1.0	<1.0	
R6		Mar 30	7.81	0.4	369	0.73	<5	24	<.05	N/A	3.7	N/A	<1.0	<1.0	
R7		Mar 22	7.82	1.2	272	Frozen	<5	9	<.05	N/A	3.0	N/A	<1.0	<1.0	
R8		Mar 22	7.82	1.2	282	Frozen	<5	9	< 05	N/A	3.2	N/A	<1.0	<1.0	
R9		Mar 12	7.71	2.3	344	Frozen	<5	16	< 05	N/A	N/A	N/A	<1.0	<1.0	
R10		Mar 12	7.47	2.4	347	Frozen	<5	15	< 05	N/A	4.2	N/A	<1.0	<1.0	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL
As indicated in Schedule A of Water Use License IN89-002
All data that is indicated in black is not a requirement of the License

COMMENTS: Due to glaciation at site R7 a monthly flow was not obtained. Data from the continuous flow recording station at this site is presently being reviewed

FARO WATER QUALITY ICP RESULTS FOR MARCH 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License II/89-002

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	< 003	0 13	0 04	N/A	0 074	< 001	< 04	36 8	< 002	< 005	< 005	<.002	0 33	< 02	< 005	7 9	0 07	0 002	2	< 005	< 04	< 02	7	< 03	1 67	0 194	0 010	< 005	< 02	0 02
X3	< 003	0 1[illegible]	0 03	N/A	0 049	[illegible]	< 04	30 9	< 002	< 005	< 005	<.002	0 14	< 03	< 005	6 1	0 02	< 002	2	< 005	< 04	< 02	9	0 04	1 40	0 172	< 005	< 005	< 02	< 01
X4 Mar 5	Not decanting																													
X4 Mar 12	Not decanting																													
X4 Mar 21	Not decanting																													
X4 Mar 30	Not decanting																													
X5 Mar 5	< 003	0 74	< 02	N/A	0 050	0 002	< 04	139 5	< 002	< 005	< 005	0 008	1 16	< 05	< 005	25 7	7 66	< 002	32	< 005	< 04	< 02	166	< 03	1 71	0 444	0 014	< 005	< 03	0 19
X5 Mar 12	0 003	0 64	0 04	N/A	0 050	0 002	< 04	158 5	0 002	< 005	< 005	0 003	0 55	< 02	< 005	29 2	8 35	< 002	34	0 011	< 04	0 01	159	[illegible]	1 85	0 482	< 005	< 005	< 03	0 22
X5 Mar 21	< 003	0 76	< 02	N/A	0 052	0 001	< 04	155 1	< 002	< 005	0 006	0 008	1 70	< 02	< 005	30 3	8 33	0 003	34	0 007	0 19	0 03	141	< 03	1 85	0 470	0 020	0 01	< 03	0 21
X5 Mar 30	< 003	0 54	< 02	N/A	0 052	0 002	< 04	129 3	< 002	< 005	< 005	0 006	0 41	< 02	< 005	24 8	7 17	0 00	29	0 009	0 08	<.02	165	< 03	2 50	0 402	< 005	< 005	< 03	0 19
X9a	No sample																													
X10	< 003	0 16	< 02	N/A	0 076	< 001	< 04	34 6	< 002	< 005	< 005	< 002	0 12	< 02	< 005	7 6	< 01	< 002	<1	< 005	< 04	< 02	17	< 03	0 98	0 123	< 005	< 005	< 02	0 01
X11	Semi Annual (May & Sept)																													
X12	Semi Annual (May & Sept)																													
X13 Mar 5	< 003	0 75	< 02	N/A	0 110	0 002	< 04	147 6	< 002	< 005	< 005	0 003	1 99	< 05	< 005	27 4	7 54	< 002	35	< 005	< 04	< 02	173	< 03	1 99	0 469	< 005	< 005	< 03	< 01
X13 Mar 12	< 003	0 61	0 03	N/A	0 122	0 002	< 04	160 4	< 002	< 005	< 005	0 004	2 67	< 02	< 005	29 4	7 77	< 002	36	0 005	< 04	< 02	152	< 03	2 16	0 482	< 005	< 005	< 02	0 01
X13 Mar 21	< 003	0 61	0 07	N/A	0 113	0 002	< 04	166 7	0 005	< 005	< 005	0 002	2 54	< 02	< 005	31 3	8 47	< 002	37	0 009	0 08	< 02	149	0 03	2 04	0 498	< 005	< 005	< 03	< 01
X13 Mar 30	< 003	0 57	0 03	N/A	0 108	0 002	0 05	142 6	< 002	< 005	< 005	0 009	2 11	< 02	< 005	27 0	7 30	< 002	32	< 005	0 17	< 02	187	< 03	2 76	0 437	< 005	< 005	< 03	< 01
X14	< 003	0 53	0 03	N/A	0 900	0 001	< 04	144 4	< 002	< 005	< 005	<.002	0 74	< 02	< 005	27 3	6 04	< 002	30	< 005	< 04	<.02	136	< 03	1 72	0 455	< 005	< 005	< 02	0 08
X16a	Semi Annual (May & Sept)																													
X16b	Semi Annual (May & Sept)																													
X17a	Semi Annual (May & Sept)																													
X17b	Semi Annual (May & Sept)																													
X18a	Semi Annual (May & Sept)																													
X18b	Semi Annual (May & Sept)																													
X20	Semi Annual (May & Sept)																													
X22b	Main Pit Water (no safe access)																													
X22c	Main Pit at Point of Discharge																													
X23	0 00[illegible]	1 56	0 02	N/A	0 10	0 007	< 04	472 30	0 022	0 10	< 005	0 023	0 40	< 02	< 005	266 8	19 22	< 002	42 47	0 257	0 11	0 02	704	0 03	2 25	2 644	0 020	0 01	< 03	24 15
X26	No Sample																													

FARO WATER QUALITY ICP RESULTS CONTINUED FOR MARCH 1996

TOTAL (ppm)* & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL
As Indicated In Schedule A of Water Use License IN89-002
All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	<.003	0.28	<.02	N/A	0.09	<.001	<.04	60.5	<.002	<.005	<.005	0.009	1.05	<.02	<.005	11.7	0.15	0.003	8	0.009	0.12	<.02	60	<.03	2.11	0.217	0.011	<.005	<.03	0.01
R5	<.003	0.15	<.02	N/A	0.077	<.001	<.04	34.3	<.002	<.005	<.005	0.003	0.17	<.02	<.005	7.5	0.02	0.003	1	0.009	0.15	<.02	12	<.03	2.07	0.119	<.005	<.005	<.03	<.01
R6	<.003	0.13	<.02	N/A	0.075	<.001	0.04	32.8	<.002	<.005	<.005	0.005	0.62	<.02	<.005	7.2	0.01	0.003	<1	0.006	<.04	<.02	10	<.03	2.11	0.114	<.005	<.005	<.03	<.01
R7	<.003	<.05	<.02	N/A	0.059	<.001	<.04	31.9	<.002	<.005	<.005	<.002	0.13	<.02	<.005	6.4	<.01	<.002	1.25	<.005	0.10	<.02	2	<.03	1.47	0.142	<.005	<.005	<.03	0.02
R8	<.003	0.06	<.02	N/A	0.068	<.001	<.04	32.6	<.002	<.005	<.005	<.002	0.09	<.02	<.005	6.6	<.01	<.002	1.76	0.005	0.09	<.02	3	<.03	1.51	0.162	<.005	0.01	<.03	<.01
R9	<.003	0.04	<.02	N/A	0.075	<.001	<.04	35.0	<.002	<.005	<.005	<.002	0.16	<.02	<.005	7.4	0.02	<.002	1	<.005	<.04	<.02	6	<.03	2.63	0.174	<.005	<.005	<.03	<.01
R10	<.003	0.07	<.02	N/A	0.073	<.001	<.04	33.6	<.002	<.005	<.005	<.002	0.15	<.02	<.005	7.1	0.02	<.002	1	<.005	<.04	<.02	7	<.03	2.57	0.168	<.005	<.005	<.03	<.01
BH1	Frozen																													
BH2	Frozen																													
BH4	Dry																													
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY ICP RESULTS FOR APRIL 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-002

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	B	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SE	SI	SR	TI	V	W	ZN
X2	< 003	0 08	0 02	N/A	0 072	< 001	< 04	36 6	< 002	< 005	< 005	0 018	0 17	< 02	< 005	7 70	0 07	< 002	2	0 008	0 12	0 10	4 0	< 03	N/A	2 57	0 185	< 005	< 005	< 03	< 01
X3	< 003	0 07	0 02	N/A	0 053	< 001	< 04	29 6	< 002	< 005	< 005	0 013	0 10	< 02	< 005	5 48	0 05	0 004	1	< 005	< 04	< 02	3 0	< 03	N/A	2 23	0 166	< 005	< 005	< 02	< 01
X4 Apr 9	Not decanting																														
X4 Apr 16	Not decanting																														
X4 Apr 23	< 003	0 50	< 02	0 73	0 067	0 001	< 04	97 3	0 008	0 013	< 005	0 002	5 48	N/A	< 005	18 11	3 91	0 002	7	0 017	< 04	0 08	118 3	0 04	N/A	1 47	0 335	< 005	< 005	< 03	0 77
X4 Apr 29	< 003	0 30	< 02	0 35	0 059	< 001	< 04	64 7	0 005	0 009	< 005	0 007	4 61	N/A	< 005	11 60	2 97	0 005	4	0 011	0 30	0 02	93 1	< 03	N/A	1 11	0 216	0 011	< 005	< 03	4 74
X5 Apr 9	< 003	0 36	< 02	N/A	0 057	0 002	< 04	159 7	< 002	< 005	< 005	0 017	0 57	< 02	< 005	29 56	9 01	< 002	35	< 005	0 18	< 02	179 0	< 03	< 02	2 79	0 480	< 005	< 005	< 03	0 12
X5 Apr 16	< 003	0 57	< 02	1 10	0 048	0 002	< 04	144 5	0 002	< 005	< 005	0 014	0 59	< 02	< 005	28 00	8 46	< 002	32	0 012	0 19	< 02	151 5	< 03	< 02	1 86	0 454	< 005	0 01	< 03	0 14
X5 Apr 23	< 003	0 57	0 02	0 89	0 059	0 002	< 04	151 9	< 002	< 005	< 005	0 002	0 48	< 02	< 005	28 08	8 08	< 002	31	0 009	< 04	0 03	146 7	< 03	< 02	2 72	0 467	< 005	0 01	< 03	0 12
X5 Apr 29	< 003	0 49	< 02	0 54	0 055	0 002	< 04	149 5	< 002	< 005	< 005	0 003	0 39	< 02	< 005	28 20	8 32	< 002	31	0 010	0 37	< 02	143 1	< 03	< 02	2 41	0 477	< 005	< 005	< 03	0 29
X9a	No sample																														
X10	Every Second Month (Jan, Mar, May, July, Sept & Nov)																														
X11	Semi Annual (May & Sept)																														
X12	Semi Annual (May & Sept)																														
X13 Apr 9	< 003	0 40	< 02	N/A	0 137	0 002	< 04	162 4	< 002	< 005	< 005	0 018	4 12	< 02	< 005	29 99	7 88	< 002	37	< 005	< 04	< 02	186 0	< 03	N/A	3 09	0 491	< 005	< 005	< 03	< 01
X13 Apr 16	< 003	0 55	< 02	1 08	0 107	0 002	< 04	148 6	< 002	< 005	< 005	0 011	2 32	< 02	< 005	28 30	7 52	< 002	34	< 005	0 16	< 02	149 2	< 03	N/A	2 03	0 465	< 005	< 005	< 03	< 01
X13 Apr 23	< 003	0 71	< 02	0 96	0 117	0 002	< 04	164 4	< 002	< 005	< 005	< 002	2 27	< 02	< 005	29 96	8 41	< 002	32	0 018	< 04	< 02	158 2	< 03	< 02	2 89	0 496	< 005	< 005	< 03	0 01
X13 Apr 29	< 003	0 57	0 03	0 60	0 120	0 002	< 04	170 7	< 002	< 005	< 005	0 004	2 28	< 02	< 005	31 40	8 40	< 002	35	0 026	0 26	< 02	158 5	< 03	< 02	2 70	0 503	< 005	< 005	< 03	0 01
X14	< 003	0 35	< 02	N/A	0 095	0 002	< 04	147 7	< 002	< 005	< 005	0 019	0 68	< 02	< 005	28 04	6 21	< 002	31	0 008	0 23	0 06	170 0	< 03	N/A	2 62	0 463	< 005	< 005	< 03	0 02
X16a	Semi Annual (May & Sept)																														
X16b	Semi Annual (May & Sept)																														
X17a	Semi Annual (May & Sept)																														
X17b	Semi Annual (May & Sept)																														
X18a	Semi Annual (May & Sept)																														
X18b	Semi Annual (May & Sept)																														
X20	Semi Annual (May & Sept)																														
X22b	Main Pit Water (no safe access)																														
X22c	Main Pit at Point of Discharge																														
X23	< 003	2 08	< 02	N/A	0 459	0 005	< 04	368 0	0 009	0 05	< 005	0 080	4 09	< 02	< 005	200 07	14 61	< 002	32	0 170	< 04	2 03	711 0	< 03	N/A	2 86	2 136	0 034	< 005	< 03	21 84
X26	< 003	1 14	< 02	N/A	0 095	0 005	< 04	422 1	0 039	0 420	< 005	0 021	38 60	< 05	< 005	143 50	11 37	< 002	29	1 058	0 55	< 02	547 0	< 03	N/A	2 60	2 474	0 001	< 005	< 03	> 50

FARO WATER QUALITY ICP RESULTS CONTINUED FOR APRIL 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License #89-002

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	AU	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, & Dec)																													
R5	Quarterly (Mar, June, Sept, & Dec)																													
R6	Quarterly (Mar, June, Sept, & Dec)																													
R7	<.003	0.11	<.02	N/A	0.068	<.001	<.04	30.8	<.002	<.005	<.005	0.017	1.58	<.05	<.005	6.2	0.01	0.014	2	0.008	0.11	<.02	5	<.03	2.47	0.160	0.014	0.007	<.03	<.01
R8	<.003	0.10	<.02	N/A	0.076	<.001	<.04	32.3	<.002	<.005	<.005	0.013	0.14	<.05	<.005	6.6	0.01	0.003	2	0.007	<.04	<.02	6	<.03	2.49	0.165	<.006	0.006	<.03	<.01
R9	<.003	0.08	<.02	N/A	0.073	<.001	<.04	33.8	<.002	<.005	<.006	0.010	0.08	<.05	<.005	6.9	0.01	0.007	2	<.005	0.18	<.02	7	<.03	2.60	0.173	<.006	0.005	<.03	<.01
R10	<.003	0.07	<.02	N/A	0.069	<.001	<.04	32.6	<.002	<.005	<.005	0.013	0.11	<.05	<.005	6.8	0.01	0.008	2	0.007	0.12	<.02	4	<.03	2.46	0.169	<.005	0.008	<.03	<.01
BH1	Frozen																													
BH2	Frozen																													
BH4	Dry																													
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY DATA

MAY 1996

NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	mg/L Cyanide	Metals
X2	May 13	7.60	3.5	119	N/A	7	6.0	<.05	<.001	SEE ATTACHED ICP RESULTS
X3	May 13	7.56	2.5	140	N/A	<5	9	<.05	<.001	
X4 Weekly	May 6	7.53	7.0	532	Estimate 0.085	5	N/A	0.17	0.126	
	May 13	7.40	7.0	156	Estimate 0.085	<5	59.2	< 05	<.001	
	May 21	6.41	N/A	746	Estimate 0.088	7	384.2	0.20	0.198	
	May 27	6.8	6.0	855	Estimate 0.088	<5	416	0.31	0.165	
X5 Weekly	May 6	7.4	4.5	1133	Estimate 0.070	<5	483.0	0.54	<.001	
	May 13	7.81	4.5	1286	Estimate 0.070	<5	370	0.57	<.001	
	May 21	7.23	N/A	1125	Estimate 0.070	<5	505.4	0.44	<.001	
	May 27	7.2	6.0	1118	Estimate 0.070	<5	476	0.57	0.006	
	May 29	7.4	5.6	1310	Estimate 0.071	7	544	0.72	0.001	
X9a		No Sample								
X10	May 13	8.05	4.0	156	0.978	6	56.2	< 05	< 001	
X 10	May 29	7.59	2.9	76.2	4.75	7	4	< 05	0.002	
X11	May 6				0.0059					
Semi-Annual & Weekly Flow	May 13	7.28	8.0	1466	0.0059	8	717.3	1.03	< 001	
	May 21				0.0058					
	May 27				0.0082					
X12	May 6				0.0032					
Semi Annual & Weekly Flow	May 13	7.32	5.0	1077	0.0032	<5	370.0	0.78	<.001	
	May 21				0.0032					
	May 27				0.0036					
X13 Weekly	May 6	7.35	10.5	1287	0.031	7	N/A	0.95	<.001	
	May 13	7.4	8.0	1259	0.031	7	561	0.93	<.001	
	May 21	7.25	6	1278	0.031	8	569.1	0.80	< 001	
	May 27	7.2	6.0	1220	0.031	6	498	0.93	0.001	
	May 29	7.4	5.5	1455	0.031	7	544	0.72	0.001	
X14	May 15	7.8	3	269	1.291	10	55	0.05	<.001	
X14	May 29	7.9	2.2	128.6	4.992	6	31	<.05	0.007	
X22b		Main Pit Water (no safe access)								
X22c		Main Pit at Point of Discharge								
X23	May 13	7.3	5	2345.1	0.0016	<5	2345.1	0.74	< 001	
				Alkalinity mg/L		Acidity pH 4.5	Acidity pH 8.3			
X26	May 15	6.93	3	N/A	Avg 2.4 hr/day @ 350 gal/min	N/A	N/A	1480	1.98	<.001

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 3RD MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License N89-001

All data that is indicated in black is not a requirement of the License

COMMENTS: Flow data for site X14 varied sgnificantly between May 15 and May 29. This data was varied with the data downloaded from the continuous flow station at this site.

FARO WATER QUALITY DATA

CONTINUED FOR MAY 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Diss. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16a	PEIZOMETERS BELOW CROSS VALLEY DAM	May 30	7.60	7.86	5.0	396	5.37	3.38	190	33.1	<.05	<1	3	147	144	Pumped dry, sample taken from tubing	SEE ATTACHED ICP RESULTS
X16b		May 30	7.80	8.12	6.0	425	28.99	3.86	204	28.8	<.05	<1	<1	173	164		
X17a		May 30	7.82	8.04	3.0	481	6.06	2.35	231	36.0	<.05	<1	2	202	189		
X17b		May 30	7.25	7.71	4.0	815	24.80	2.90	394	99.4	<.05	<1	20	363	353		
X18a		May 30	7.60	7.82	2.0	990	9.29	4.47	478	390.0	0.11	<1	9	228	425		
X18b		May 30					10.70	0.83								Tubing could not be installed, frozen. Four inches water at 0.83 SWL. Tubing wrapped & at site	
X20		May 30														* Tubing left in at all sites & covered in plastic	
1A	INTERMEDIATE DUMP BOREHOLES	June 13	6.63	6.82	N/A	1754	12.8	4.25	878	1217	<.05	<1	65	316	1390	Pumped dry, waited recharge	
1B		June 13	6.54	6.7	N/A	1439	5.37	4.42	727	937	<.05	<1	57	184	903	Pumped dry, waited recharge 30 m n	
2A		June 13	6.41	6.68	N/A	1222	8.04	4.89	609	808	<.05	<1	23	69	517		
2B		June 13	6.08	N/A	N/A	N/A	10.6	3.25	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Pumped dry, waited recharge 30 m n. (sm sample)	
3		June 13	6.05	6.15	N/A	1343	6.56	2.88	753	1371	0.15	<1	81	97	1335		
																* Tubing left in at all sites & covered in plastic	

Site		Date	pH	Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	ROSE & ANVIL WATER QUALITY STATIONS	Quarterly (Mar, June, Sept, & Dec)												SEE ICP DATA
R5		Quarterly (Mar, June, Sept, & Dec)												
R6,		Quarterly (Mar, June, Sept, & Dec)												
R7		May 15	6.86	3.0	87	N/A	8	3	<.05	<1	2.8	41	3.9	
R8		May 15	6.90	3.0	88	N/A	N/A	3	N/A	<1	7.2	39	4.3	
R9		May 15	7.04	1.0	96	N/A	N/A	5	N/A	<1	7.6	44	4.9	
R10		May 15	7.83	N/A	96	N/A	7	5	<.05	<1	4.8	41	3.9	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

BH SERIES WATER QUALITY DATA

May 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH_3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	May 28	6.27	6.52	N/A	376	5.18	3.34	53	0.09	142	<1	78	Waterra valve full of silt during pumping Tubing cleaned and sample obtained after recharge	SEE ATTACHED ICP RESULTS
BH2	May 28	6.46	6.66	2.0	618	5.55	4.70	246	<.05	83	<1	38	Tubing taken out to thaw, frozen	
BH4	May 28					3.20	Dry						No sample, dry	
BH5	May 28	5.30	5.84	3.0	642	8.33	2.42	239	0.85	145	<1	299		
BH6	May 28	5.83	6.2	2.5	371	6.55	3.5	110	<.05	90	<1	95		
BH7A	May 28	6.16	6.62	3.5	221	9.00	5.23	43	<.05	108	<1	48	Both A and B very silty and orange in color	
BH7B	May 28	6.51	6.69	5.0	218	6.78	5.54	25	<.05	118	<1	41		
BH8	May 28	5.73	N/A	6.0	N/A	20.90	18.90	N/A	N/A	N/A	N/A	N/A	Minimal recharge, could not bring up water Only a 250 ml sample could be obtained from tubing	
BH9	May 28					N/A	N/A						No sample, tubing stuck therefore probably still frozen	
BH10A	May 28	5.6	5.98	4	681	34.17	7.36	172	0.09	224	<1	288	Replaced waterra valve at site A Site B pumped	
BH10B	May 28	5.29	5.8	4	852	52.92	7.60	245	0.09	342	<1	608	dry, therefore returned to site later to obtain sample Site A was marked as deep on piezometer	
BH11	May 28					N/A	N/A						Could not pull tubing up, Stuck Probably frozen	
BH12A	June 6					N/A	2.9						Could not pull tubing up at A or B	
BH12B	June 6					N/A	2.3						SWL measured, but no water, therefore frozen	
BH13A	June 6					N/A	4.43						Could not pull tubing up at A or B	
BH13B	June 6					N/A	4.59						SWL measured, but no water, therefore frozen	
BH14A	June 6					N/A	N/A						Could not pull tubing up at A or B Probably	
BH14B	June 6					N/A	N/A						frozen	
BH15A	May 28	6.9	7.36	5.0	885	13.70	6.94	305	<.05	244	<1	17	Site A, waterra valve replaced Very difficult to raise water, only small sample taken from tubing	
BH15B	May 28												Site B destroyed	
BH15C	May 28	6.13	6.79	6.0	675	N/A	N/A	73	0.31	354	<1	76	as destroyed Difficult to obtain sample, very heavy Difficult to obtain sample at site C Tubing very	
BH16A	June 5					N/A	N/A						y, possibly water beside tube y still frozen this site was frozen in 94	
BH16B	June 5					N/A	N/A						mediately after drilling	
BH16C	June 5					N/A	N/A							

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001.

All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY ICP RESULTS FOR MAY 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License MN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SE	SI	SR	TI	V	W	ZN
X2	< 003	0 25	< 02	033	< 001	< 04	14 6	< 002	< 005	< 005	0.050	1 66	NA	< 005	3 06	0 07	004	<1	< 005	0 25	< 02	2	< 03	NA	1 51	078	012	< 01	< 03	0 04
X3	< 003	0 17	< 02	050	< 001	< 04	17 0	< 002	< 005	< 005	0.011	0 55	NA	< 005	3 54	0 05	< 002	<1	< 005	0 05	< 02	2	< 03	NA	1 47	060	< 005	< 01	< 03	0 03
X4 May 6	< 003	0 34	< 02	064	< 001	< 04	62 2	< 002	005	< 005	0.007	2 35	NA	008	11 6	3 10	< 002	4	006	0 09	< 02	56	< 03	NA	1 09	201	< 005	< 005	< 03	4 33
X4 May 13	< 003	< 05	< 02	064	< 001	< 04	12 1	< 002	< 005	< 005	0.014	0 22	NA	< 005	1 58	0 56	< 002	<1	< 005	0 07	< 02	13	< 03	NA	0 86	042	< 005	< 01	< 03	0 46
X4 May 21	< 003	0 48	< 02	034	< 001	< 04	85 6	006	007	< 005	0.031	2 94	< 1	< 005	18 6	3 86	< 002	5	< 005	0 20	< 02	131	0 03	< 02	0 27	286	< 005	< 005	< 03	6 10
X4 May 27	< 003	0 46	< 02	029	002	< 04	111 8	005	010	< 005	0.007	2 19	< 02	< 005	23 2	4 40	< 002	9	006	0 19	< 02	131	< 03	NA	0 41	387	006	< 005	< 03	5 46
X5 May 6	< 003	0 65	< 02	061	002	< 04	170 8	< 002	< 005	< 005	0.008	0 44	< 1	< 005	31 6	8 54	< 002	35	006	0 13	< 02	142	< 03	< 02	2 73	503	< 005	< 005	< 03	0 35
X5 May 13	< 003	0 49	< 02	061	002	< 04	152 3	< 002	009	< 005	0.024	0 19	< 1	< 005	28 78	7 82	004	32	007	0 05	< 02	154	< 03	< 02	2 09	468	< 005	< 01	< 03	0 39
X5 May 21	< 003	0 67	< 02	044	001	< 04	149 4	< 002	009	< 005	0.004	0 28	< 1	< 005	27 5	7 59	< 002	29	< 005	< 04	< 02	169	< 03	< 02	1 50	457	< 005	< 005	< 03	0 31
X5 May 27	< 003	0 91	< 02	051	002	< 04	150 9	< 002	< 005	< 005	0.006	1 19	< 0001	< 005	28 1	6 65	< 002	30	< 005	0 26	< 02	135	< 03	< 02	1 64	400	023	< 005	< 03	0 39
X5 May 29	< 003	1 01	< 02	057	005	< 04	167 7	< 002	< 005	< 005	0.008	0 19	< 02	< 005	32 1	9 13	< 002	35	013	0 06	< 02	188	< 03	n/a	1 65	513	< 005	< 005	< 03	0 65
X9a	No sample																													
X10 May 13	< 003	0 22	< 02	047	< 001	< 04	19 0	< 002	< 005	< 005	0.015	0 51	< 1	< 005	4 58	< 01	< 002	<1	< 005	0 09	< 02	8	< 03	< 02	1 49	066	< 005	< 01	< 03	0 03
X10 May 29	< 003	0 24	< 02	030	< 001	< 04	9 6	< 002	< 005	< 005	< 002	0 60	< 0001	< 005	2 2	0 05	< 002	<1	< 005	< 04	< 02	1	< 03	< 02	0 37	046	< 005	006	< 03	0 01
X11	< 003	1 07	< 02	111	003	< 04	195 3	003	023	006	0 039	4 02	NA	018	36 20	11 18	< 002	37	031	0 43	0 02	300	0 03	NA	2 34	595	028	0 01	< 03	0 04
X12	< 003	0 48	< 02	103	001	< 04	133 7	< 002	< 005	< 005	0.010	0 80	NA	< 005	24 59	6 97	< 002	30	004	0 19	< 02	127	< 03	NA	2 22	390	< 005	< 01	< 03	0 02
X13 May 6	< 003	0 70	0 03	127	002	< 04	193 5	< 002	< 005	< 005	0.008	2 67	< 1	< 005	35 0	9 47	003	40	013	0 11	< 02	146	< 03	< 02	3 06	555	< 005	< 005	< 03	0 01
X13 May 13	< 003	0 56	< 02	113	002	0 04	178 5	006	< 005	< 005	0.018	2 50	< 1	< 005	32 68	9 13	002	37	012	0 06	< 02	175	0 04	< 02	2 41	530	< 005	0 01	< 03	0 01
X13 May 21	< 003	0 80	0 03	107	002	< 04	170 6	< 002	< 005	< 005	0.023	2 46	< 1	< 005	31 4	8 53	< 002	35	016	0 12	0 02	195	< 03	< 02	1 84	515	< 005	< 005	< 03	0 01
X13 May 27	< 003	0 62	< 02	108	002	< 04	174 9	< 002	< 005	< 005	0.008	3 35	< 0001	< 005	32 5	8 15	< 002	36	< 005	0 19	< 02	148	< 03	< 02	2 08	532	< 005	< 005	< 03	0 02
X13 May 29	< 003	1 08	< 02	124	008	< 04	180 8	< 002	< 005	< 005	0.006	3 08	< 0001	< 005	34 0	9 27	< 002	38	010	0 11	< 02	180	< 03	< 02	1 99	550	< 005	< 005	< 03	0 01
X14 May 15	< 003	0 41	< 02	051	< 001	< 04	29 2	< 002	< 005	< 005	0.015	1 17	< 1	< 005	5 85	0 74	< 002	3	< 005	0 06	< 02	19	< 03	< 02	1 77	102	007	< 005	< 03	0 05
X14 May 29	< 003	0 27	< 02	032	< 001	< 04	14 9	< 002	< 005	< 005	< 002	0 59	< 02	< 005	3 2	0 28	004	<1	< 005	< 04	< 02	10	< 03	NA	0 45	063	< 005	< 005	< 03	0 04
X16A	< 003	0 25	< 02	0 006	< 001	< 04	41 3	< 002	< 005	< 005	0 005	0 57	< 02	0 006	9 8	0 04	< 002	2	< 005	< 04	< 02	11	< 03	NA	0 75	0 129	< 005	< 005	< 03	0 01
X16B	< 003	0 28	< 02	0 113	0 001	< 04	45 5	< 002	< 005	< 005	< 002	0 08	< 02	< 005	12 3	< 01	< 002	2	< 005	< 04	< 02	10	< 03	NA	0 87	0 158	< 005	< 005	< 03	< 01
X17A	< 003	0 29	< 02	0 113	0 002	< 04	51 1	< 002	< 005	< 005	0 003	< 01	< 02	< 005	14 9	< 01	< 002	2	< 005	< 04	< 02	10	< 03	NA	0 90	0 159	< 005	< 005	< 03	< 01
X17B	< 003	0 58	< 02	0 355	0 009	< 04	96 4	< 002	< 005	< 005	0 006	0 29	< 02	< 005	27 2	0 36	< 002	13	< 005	< 04	< 02	27	< 03	NA	1 38	0 516	< 005	< 005	< 03	< 01
X18A	< 003	0 73	< 02	0 193	0 005	< 04	118 9	< 002	< 005	< 005	0 011	1 97	< 02	< 005	30 9	0 22	< 002	32	0 005	0 04	< 02	132	< 03	NA	1 44	0 679	< 005	< 005	< 03	< 01
X18B	Possibly frozen																													
X20	Collapsed or frozen																													
X22B	Main Pit Water (no safe access)																													
X22C	Main Pit at Point of Discharge																													
X23	009	1 43	< 02	092	005	0 05	407 0	051	108	< 005	0.032	0 55	NA	< 005	237 75	17 50	< 002	37	255	< 04	< 02	740	< 03	NA	2 39	2 312	016	0 01	< 01	23.40
X26	< 003	1 20	< 02	101	004	< 04	451 3	028	409	< 005	0.014	34.64	N/A	< 005	133 81	10.93	< 002	24	1 028	0 17	< 02	477	< 01	N/A	2 42	2 205	< 005	< 005	< 01	62.50

FARO WATER QUALITY ICP RESULTS CONTINUED FOR MAY 1996

TOTAL (ppm) & DISSOLVED

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As Indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SE	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, & Dec)																													
R5	Quarterly (Mar, June, Sept, & Dec)																													
R6	Quarterly (Mar, June, Sept, & Dec)																													
R7	<.003	0.31	<.02	.031	<.001	<.04	10.2	<.002	<.005	<.005	0.045	1.72	N/A	<.005	1.71	0.03	<.002	<1	<.005	0.09	<.02	1	<.03	N/A	1.67	.052	.012	<.005	<.03	0.02
R8	<.003	0.19	<.02	.031	<.001	<.04	9.7	<.002	<.005	<.005	.018	0.62	N/A	<.005	1.84	0.03	<.002	<1	<.005	<.04	<.02	2	<.03	N/A	1.61	.048	<.005	<.005	<.03	0.02
R9	<.003	0.24	<.02	.030	<.001	<.04	11.2	<.002	<.005	<.005	.040	0.69	N/A	<.005	2.11	0.05	<.002	<1	<.005	<.04	<.02	2	<.03	N/A	2.08	.057	<.005	<.005	<.03	0.02
R10	<.003	0.09	<.02	.033	<.001	<.04	11.8	<.002	<.005	<.005	.019	0.54	N/A	<.005	2.22	0.03	<.002	<1	<.005	0.06	<.02	2	<.03	N/A	1.48	.060	<.005	<.005	<.03	0.02
BH1	<.003	0.28	<.02	0.064	<.001	<.04	38.8	0.003	0.007	<.005	0.009	0.88	<.02	<.005	6.8	2.43	<.002	4	<.005	<.04	<.02	16	<.03	N/A	1.40	0.208	<.005	<.005	<.03	0.88
BH2	<.003	0.43	<.02	0.072	0.002	<.04	64.1	0.010	<.005	<.005	0.007	0.24	<.02	<.005	20.0	<.01	<.002	4	0.035	<.04	<.02	73	<.03	N/A	0.93	0.345	<.005	<.005	<.03	4.19
BH4	Dry																													
BH5	<.003	0.41	<.02	0.045	0.003	<.04	86.2	0.002	0.020	<.005	0.004	19.95	<.02	<.005	24.7	2.16	<.002	10	0.021	0.11	<.02	72	<.03	N/A	3.16	0.339	<.005	<.005	<.03	4.25
BH6	<.003	0.23	<.02	0.038	0.002	<.04	34.2	0.005	0.037	<.005	0.003	5.06	<.02	<.005	12.0	3.07	<.002	4	0.022	<.04	<.02	38	<.03	N/A	1.93	0.210	<.005	<.005	<.03	3.89
BH7A	<.003	0.16	<.02	0.026	0.002	<.04	27.8	0.003	<.005	<.005	0.002	0.00	<.02	<.005	9.4	0.02	<.002	3	<.005	<.04	<.02	15	<.03	N/A	1.11	0.125	<.005	<.005	<.03	0.83
BH7B	<.003	0.25	<.02	0.020	0.005	<.04	31.0	0.005	<.005	<.005	0.006	0.09	<.02	<.005	7.0	0.02	<.002	3	<.005	<.04	0.03	9	<.03	N/A	1.01	0.167	<.005	<.005	<.03	0.47
BH8	<.003	2.85	<.02	0.132	0.014	<.04	228.6	0.307	0.337	<.005	0.041	392.70	<.02	0.076	114.0	8.60	<.002	25	0.277	0.52	0.15	792	0.21	N/A	1.68	1.148	0.006	<.005	<.03	>50
BH9	Frozen																													
BH10A	<.003	0.51	<.02	0.033	0.003	<.04	74.2	0.003	0.017	<.005	0.007	28.54	<.02	<.005	27.5	1.03	<.002	10	0.038	0.15	0.04	62	<.03	N/A	3.80	0.452	<.005	<.005	<.03	4.32
BH10B	<.003	0.87	<.02	0.130	0.005	<.04	108.0	<.002	0.014	<.005	0.006	36.63	<.02	<.005	34.8	1.27	<.002	14	0.039	0.16	<.02	83	<.03	N/A	4.76	0.646	<.005	<.005	<.03	3.03
BH11	Frozen																													
BH12A	Frozen																													
BH12B	Frozen																													
BH13A	Frozen																													
BH13B	Frozen																													
BH14A	Frozen																													
BH14B	Frozen																													
BH15A	<.003	0.76	<.02	0.054	0.004	<.04	129.6	<.002	<.005	<.005	0.015	<.01	<.02	<.005	42.7	0.52	0.003	21	<.005	<.04	<.02	112	<.03	N/A	1.42	0.616	<.005	<.005	0.19	0.04
BH15B	Frozen																													
BH15C	<.003	0.61	<.02	0.046	0.003	<.04	98.5	<.002	<.005	<.005	0.009	8.24	<.02	<.005	27.4	0.57	<.002	7	<.005	0.34	<.02	25	<.03	N/A	5.78	0.388	<.005	<.005	<.03	0.14
BH16A	Frozen																													
BH16B	Frozen																													
BH16C	Frozen																													
1A	<.003	0.66	<.02	0.062	0.013	<.04	343.7	<.002	<.005	<.005	0.012	0.13	<.02	<.005	128.8	0.29	<.002	14	<.005	<.04	<.02	28	<.03	N/A	2.64	1.184	0.006	<.005	<.03	0.10
1B	<.003	0.43	<.02	0.045	0.009	<.04	256.4	<.002	<.005	<.005	0.010	0.12	<.02	<.005	63.5	1.46	<.002	29	<.005	<.04	<.02	294	<.03	N/A	1.93	0.841	<.005	<.005	<.03	0.05
2A	<.003	0.34	<.02	0.083	0.007	<.04	213.7	<.002	<.005	<.005	0.015	0.17	<.02	<.005	66.0	1.55	<.002	8	<.005	<.04	<.02	273	<.03	N/A	1.04	0.846	<.005	<.005	<.03	0.04
2B	<.003	0.13	<.02	0.048	0.005	<.04	129.8	<.002	<.005	<.005	0.008	4.90	<.02	<.005	46.7	1.14	<.002	6	<.005	<.04	<.02	117	<.03	N/A	2.76	0.55	<.005	<.005	<.03	0.15
3	<.003	0.55	<.02	0.104	0.012	<.04	129.8	<.002	<.005	<.005	0.006	4.90	<.02	<.005	46.7	1.14	<.002	6	<.005	<.04	<.02	117	<.03	N/A	2.76	0.55	<.005	<.005	<.03	0.15

FARO WATER QUALITY DATA

JUNE 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	mg/L Cyanide	Metals
X2	June 11	7.57	4.0	110	N/Req	<5	8.0	<.05	<.001	SEE ATTACHED ICP RESULTS
X3	June 11	7.50	5.5	107	N/Req	<5	9	<.05	<.001	
X4 Weekly	June 4	7.06	9.5	967	N/A	<5	460	0.22	0.185	
	June 11	7.60	10.0	1002	0.018	<5	417	0.21	0.140	
	June 21	7.23	11.0	925	0.010	<5	514	0.20	0.023	
	June 26	7.74	15.0	957	0.001	<5	557	0.21	0.121	
X5 Weekly	June 4	Not decanting								
	June 9	N/A	N/A	1280	N/A	<5	447	0.45	0.006	
	June 11	Not decanting								
	June 21	Not decanting								
	June 26	Not decanting								
X9a	June 11	No Sample								
X10	June 9	N/A	N/A	103	N/A	<5	12	< 05	< 001	
X10	June 11	8.24	6.0	124	2.606	<5	63	<.05	<.001	
X11	June 4	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0135					
	June 11				0.0123					
	June 21				0.0126					
	June 26				0.0119					
X12	June 4	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0011					
	June 11				0.0052					
	June 21				0.0008					
	June 26				0.0000					
X13 Weekly	June 4	7.4	5.0	1292	0.0326	7	542	0.74	< 001	
	June 11	7.1	5.0	1328	0.0349	<5	117	0.72	< 001	
	June 21	7.26	7.0	1209	0.0393	<5	592	0.72	< 001	
	June 26	7.11	7.0	1265	0.0393	<5	690	0.01	0.006	
X14	June 9	N/A	N/A	171	N/A	<5	31	< 05	0.002	
X14	June 11	8.01	5.0	208	1.835	<5	89	<.05	0.002	
X22b	June 21	7.72	N/A	1076	Avg 35,000 m³/day	N/A	731	1.38	4.900	
X22c	Main Pit at Point of Discharge									
X23	June 11	7.08	6.0	3680	0.04	<5	2197	0.60	0.002	
				Alkalinity mg/L		Acidity pH 4.5	Acidity pH 8.3			
X26	June 11	No Sample			Avg 2.4 m³/day @ 350 g/L/min					

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License #MV-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

The Victaulic valve on the syphon discharge line at site X5 was closed off at 9:00 AM on May 30 when one of the daily samples taken at this site indicated a zinc concentration of 0.54 mg/L zinc. The June 9 samples for site X5, X10 (upstream of X5) and X14 (downstream of X5) were taken at 10:30 AM after the Victaulic coupling failed, therefore reinitiating the syphon action of the line. To stop the discharge, the syphon line was pulled out of the Polishing Pond at noon. The discharge that occured was treated as a spill, and reported to the Spill Line prior to receiving the in-house zinc analysis which indicated site X5 was actually in compliance at the time the sample was taken.

Bioassays were taken at site X13 on July 26. Results indicated >100% survival and results are included within this report.

FARO WATER QUALITY DATA (FARO)

CONTINUED FOR JUNE 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16a	PEIZOMETERS BELOW CROSS DAM VALLEY		Semi Annual (May & Sept)														SEE ATTACHED ICP RESUTS
X16b			Semi Annual (May & Sept)														
X17a			Semi Annual (May & Sept)														
X17b			Semi Annual (May & Sept)														
X18a			Semi Annual (May & Sept)														
X18b			Semi Annual (May & Sept)														
X20			Semi Annual (May & Sept)														
1A	INTERMEDIATE DUMP BOREHOLES		Semi Annual (May & Sept)														
1B			Semi Annual (May & Sept)														
2A			Semi Annual (May & Sept)														
2B			Semi Annual (May & Sept)														
3			Semi Annual (May & Sept)														

Site		Date	pH		Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	ROSE & ANVIL WATER QUALITY STATIONS	Quarterly (Mar, June, Sept, & Dec)													SEE ICP DATA
R5		Quarterly (Mar, June, Sept, & Dec)													
R6		Quarterly (Mar, June, Sept, & Dec)													
R7		June 13	8.05	7.59	N/A	104	0.900	<5	5	<.05	<1	<1	55	2.5	
R8		June 13	7.77	7.69	N/A	93	N/Req.	<5	5	<.05	<1	<1	46	3.5	
R9		June 13	7.42	7.61	N/A	108	N/Req.	<5	8	<.05	<1	1	48	4.2	
R10		June 13	7.83	7.68	N/A	104	N/Req.	<5	9	<.05	<1	1	48	45	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS; Sites R4, R5, and R6, which are accessed via helicopter were not sampled this period, so that the sampling could coincide with the bethic invertebrate study to be done in July.

BH SERIES WATER QUALITY DATA

FARO

June 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH_3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	June 13	6.45	N/A	N/A	453	5.18	3.90	83	<.05	131	<1	77		SEE ATTACHED ICP RESULTS
BH2	June 13	6.48	N/A	N/A	632	5.55	4.87	251	<.05	78	<1	27		
BH4	June 13	Dry												
BH5	Semi Annual (May & Sept)													
BH6	Semi Annual (May & Sept)													
BH7A	Semi Annual (May & Sept)													
BH7B	Semi Annual (May & Sept)													
BH8	Semi Annual (May & Sept)													
BH9	Semi Annual (May & Sept)													
BH10A	Semi Annual (May & Sept)													
BH10B	Semi Annual (May & Sept)													
BH11	Semi Annual (May & Sept)													
BH12A	Semi Annual (May & Sept)													
BH12B	Semi Annual (May & Sept)													
BH13A	Semi Annual (May & Sept)													
BH13B	Semi Annual (May & Sept)													
BH14A	Semi Annual (May & Sept)													
BH14B	Semi Annual (May & Sept)													
BH15A	Semi Annual (May & Sept)													
BH15B	Semi Annual (May & Sept)													
BH15C	Semi Annual (May & Sept)													
BH16A	Semi Annual (May & Sept)													
BH16B	Semi Annual (May & Sept)													
BH16C	Semi Annual (May & Sept)													

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As Indicated In Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY ICP RESULTS FOR JUNE 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SE	SI	SR	TI	V	W	ZN
X2 June 11	< 003	0 07	< 02	0 032	< 001	< 04	13 9	< 002	< 005	< 005	< 002	1 57	< 02	0 011	2 9	0 02	0 003	<1	< 005	< 04	< 02	2	< 03	NA	1 84	0 069	0 036	0 01	< 03	0 02
X3 June 11	< 003	< 05	< 02	0 030	< 001	< 04	13 6	< 002	< 005	< 005	< 002	0 38	< 02	< 005	2 7	0 02	0 003	<1	< 005	< 04	< 02	3	< 03	NA	1 63	0 072	0 006	0 008	< 03	< 01
X4 June 4	< 003	0 17	< 02	0 041	0 002	< 04	117 2	0 008	0 008	< 005	0 009	2 12	< 0001	< 005	24 8	5 15	< 002	10	0 21	< 04	< 02	160	< 03	< 02	0 38	0 398	0 012	< 005	< 03	5 02
X4 June 11	< 003	< 05	< 02	0 077	0 007	< 04	123 7	< 002	< 005	< 005	0 001	0 63	< 02	< 005	26 1	5 35	< 002	11	0 028	< 04	< 02	129	< 03	NA	1 48	0 426	0 010	< 005	< 03	5 72
X4 June 21	< 003	< 05	< 02	0 043	0 003	< 04	123 5	0 005	0 009	< 005	0 003	1 35	< 02	< 005	25 9	4 50	0 003	10	0 009	0 17	0 03	179	< 03	NA	1 49	0 421	< 005	< 005	< 03	4 90
X4 June 28	< 003	< 05	< 02	0 043	0 008	< 04	127 4	0 011	0 031	0 007	0 002	0 28	< 02	< 005	27 4	5 52	< 002	10	0 029	0 17	< 02	186	< 03	NA	2 55	0 442	< 005	< 005	< 03	5 64
X5 June 4	Not Decanting																													
X5 June 9	< 003	< 05	< 02	0 010	0 009	< 04	158 2	< 002	< 005	< 005	0 019	0 27	< 02	< 005	30 3	9 23	< 002	31	0 018	< 04	< 02	153	< 03	NA	2 59	0 477	< 005	< 005	< 03	0 45
X5 June 11	Not Decanting																													
X5 June 21	Not Decanting																													
X5 June 28	Not Decanting																													
X9a	No sample																													
X10 June 9	< 003	< 05	< 02	0 032	0 001	< 04	12 8	0 002	< 005	< 005	< 002	0 32	< 02	< 005	2 9	< 01	< 002	<1	< 005	0 05	< 02	4	< 03	NA	1 62	0 066	< 005	0 009	< 03	0 02
X10 June 11	< 003	< 05	< 02	0 036	< 001	< 04	15 8	< 002	< 005	< 005	< 002	0 32	< 02	< 005	3 5	< 01	< 002	<1	< 005	< 04	< 02	12	< 03	NA	1 62	0 079	< 005	0 006	< 03	< 01
X11	Semi Annual Sample (May & Sept)																													
X12	Semi Annual Sample (May & Sept)																													
X13 June 4	< 003	0 33	< 02	0 119	0 008	< 04	179 0	< 002	< 005	< 005	0 005	2 71	< 0001	< 005	33 6	9 36	< 002	38	< 005	< 04	< 02	183	< 03	< 02	2 10	0 562	< 005	< 005	< 03	< 01
X13 June 11	< 003	< 05	< 02	0 111	0 009	< 04	174 0	< 002	< 005	< 005	0 003	2 55	< 02	< 005	31 9	8 84	< 002	36	< 005	< 04	< 02	141	< 03	NA	2 89	0 524	0 009	< 005	< 03	0 01
X13 June 21	< 003	0 09	< 02	0 057	0 009	< 04	181 7	< 002	< 005	< 005	< 002	2 87	< 02	< 005	33 9	8 25	< 002	36	< 005	< 04	< 01	201	< 03	NA	3 04	0 564	< 005	< 005	< 03	0 02
X13 June 26	< 003	< 05	< 02	0 046	0 008	< 04	189 8	< 002	0 038	< 005	< 002	3 01	< 02	< 005	35 0	10 07	< 002	37	0 014	0 19	< 02	225	< 03	< 02	7 15	0 576	< 005	< 005	< 03	0 01
X14 June 9	< 003	< 05	< 02	0 037	0 001	< 04	21 7	< 002	0 007	0 005	0 005	0 33	< 0001	< 005	4 6	0 43	< 002	2	< 005	< 04	< 02	11	< 03	< 02	1 66	0 001	< 005	0 008	< 03	0 04
X14 June 11	< 003	< 05	< 02	0 042	< 001	< 04	22 2	< 002	< 005	0 005	0 009	0 38	< 0001	< 005	4 8	0 29	< 002	2	< 005	< 04	< 02	10	< 03	< 02	1 71	0 008	0 005	0 007	< 03	0 02
X16A	Semi Annual Sample (May & Sept)																													
X16B	Semi Annual Sample (May & Sept)																													
X17A	Semi Annual Sample (May & Sept)																													
X17B	Semi Annual Sample (May & Sept)																													
X18A	Semi Annual Sample (May & Sept)																													
X18B	Semi Annual Sample (May & Sept)																													
X20	Semi Annual Sample (May & Sept)																													
X22B	< 003	< 05	< 02	0 020	0 005	< 04	135 2	0 012	0 041	< 005	0 009	0 18	< 02	< 005	50 3	4 19	0 004	22	0 155	0 10	0 11	240	< 03	NA	1 67	0 234	< 005	< 005	< 03	7 80
X22C	Main P t at Point of Discharge																													
X23	< 003	0 71	< 02	0 061	0 024	< 04	496 1	< 002	0 074	< 005	0 034	0 31	< 02	< 005	293 2	21 92	< 002	46	0 272	< 04	< 02	745	< 03	NA	3 35	2 506	0 019	< 005	< 03	30 45
X26																														

FARO WATER QUALITY ICP RESULTS CONTINUED FOR JUNE 1996

TOTAL (ppm) & DISSOLVED

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As Indicated In Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SE	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, & Dec)																													
R5	Quarterly (Mar, June, Sept, & Dec)																													
R6	Quarterly (Mar, June, Sept, & Dec)																													
R7	<.003	<.05	<.02	.034	<.001	<.04	13.2	<.002	< 005	<.005	0.002	0.87	<.02	<.005	2.6	<.01	<.002	<1	<.005	<.04	<.02	3	<.03	N/A	0.76	0.060	< 005	< 005	<.03	<.01
R8	<.003	<.05	<.02	.030	<.001	0.04	12.2	<.002	<.005	<.005	0.009	0.48	<.02	<.006	2.3	0.01	<.002	<1	<.005	<.04	<.02	3	<.03	N/A	0.84	0.060	<.006	<.006	<.03	0.01
R9	<.003	<.05	<.02	.035	<.001	0.05	13.5	<.002	<.006	<.005	<.002	0.28	<.02	<.005	3.0	<.01	<.002	<1	<.005	<.04	<.02	3	<.03	N/A	0.87	0.069	<.005	<.005	<.03	0.01
R10	<.003	<.05	<.02	.030	<.001	<.04	13.2	<.002	0.006	<.005	0.019	0.28	<.02	<.006	2.9	<.01	<.002	<1	<.005	<.04	<.02	2	<.03	N/A	0.95	0.066	<.005	0.006	<.03	0.01
BH1	<.003	< 05	0.03	0.060	0.002	< 04	42.3	0 004	0 009	<.005	0.006	0.12	< 02	< 005	10.2	1.69	< 002	10	<.005	< 04	< 02	28	< 03	N/A	1 80	0.245	< 005	< 005	< 03	0.82
BH2	< 003	0.06	< 02	0 059	0.009	< 04	69.4	0.006	< 005	< 005	0.009	0.13	< 02	<.005	22.2	0.02	< 002	5	0.026	<.04	<.02	71	<.03	N/A	1.15	0.392	<.005	<.006	<.03	4.06
BH4	Dry																													
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH15c	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY DATA

JULY 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	My/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3-N	mg/L Cyanide	Metals
X2	July 17	7.47	6.0	1120	2 247	<5	109	<.05	<.001	
X3	July 17	7.76	9.0	114	0.162	<5	11	<.06	<.001	
X4 Weekly	July 2	7.64	12.0	950	N/A	<5	544	0.22	0.022	SEE
	July 8	7.73	16.5	840	3.5 Usec	<5	564	0 28	0.056	
	July 15	7.37	12.0	969	13.0 Usec	<5	526	0.32	0 088	
	July 22	7 58	5 5	916	12 0 Usec	<5	545	0.30	0.076	ATTACHED
	July 29	7.53	10.0	981	10.0 Usec	<6	506	0.25	0.077	
X5 Weekly	July 2 – 29	Not Decanting								
X10	July 17	7.78	7.5	133	3 3526	<5	12	<.05	< 001	ICP
X11	July 2	Weekly Flow &	Semi Annual Sample (May & Sept)		0 0149					
	July 8				0 0149					
	July 15				0 0179					
	July 22				0 0149					
	July 29				0.0213					
X12	July 2	Weekly Flow &	Semi Annual Sample (May & Sept)		0 0068					RESULTS
	July 8				0.0077					
	July 15				0 0077					
	July 22				0 0044					
	July 29				0 0068					
X13 Weekly	July 2	7 28	5.0	1320	0 0439	5	686	0.71	<.001	
	July 8	7.20	6.5	1259	0 0486	6	572	0.79	< 001	
	July 15	7.39	4.5	1260	0.0635	7	582	1.09	<.001	
	July 22	7.41	7.0	1028	0.0439	<5	526	0.76	< 001	
	July 29	7.08	7.0	1060	0.0534	5	530	0 80	0.001	
X14	July 17	7.55	7.0	183	3.3935	<5	28	< 05	< 001	
X22b	July 17	7.30	11.0	1150	Avg 0.40 @ 25% solids	18	686	1.30	4 000	
X22c	Main Pit at Point of Discharge									
X23	July 17	6.64	7.0	3210	1.45 Usec	<5	2687	0.60	0.001	
				Alkalinity mg/L		Acidity pH 4.5	Acidity pH 8.3			
X26	July 15	N/A	N/A	478	Avg of 2.0 for day	<1	230	1737	1.91	<.001

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL
As indicated in Schedule A of Water Use License IN89-001
All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY DATA

CONTINUED FOR JULY 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16a	PEIZOMETERS BELOW CROSS DAM		Semi Annual (May & Sept)														SEE ATTACHED ICP RESULTS
X16b			Semi Annual (May & Sept)														
X17a			Semi Annual (May & Sept)														
X17b			Semi Annual (May & Sept)														
X18a			Semi Annual (May & Sept)														
X18b			Semi Annual (May & Sept)														
X20			Semi Annual (May & Sept)														
1A	INTERMEDIATE BOREHOLES		Semi Annual (May & Sept)														
1B			Semi Annual (May & Sept)														
2A			Semi Annual (May & Sept)														
2B			Semi Annual (May & Sept)														
3			Semi Annual (May & Sept)														
		-															

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	ROSE & ANVIL WATER QUALITY STATIONS	July 30	8.15		9.7	282	2.379	<5	N/A	<.05	N/A	N/A	101	N/A	SEE ICP DATA
R5		July 30	8.22		8.2	272	4.960	<5	N/A	<.05	N/A	N/A	121	N/A	
R6		July 30	8.24		7.9	271	2.786	<5	N/A	<.05	N/A	N/A	125	N/A	
R7		July 17	7.65		5.0	112	1.597	<5	4	<.05	<1	2	55	<1	
R8		July 17	7.68		5.0	55	N/Req.	<5	3	<.05	<1	3	23	N/A	
R9		July 17	7.22		N/A	117	N/Req.	<5	7	<.05	<1	2	55	<1	
R10		July 17	N/A		N/A	117	N/Req.	<5	7	<.05	<1	2	54	N/A	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

BH SERIES WATER QUALITY DATA

July 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH_3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	July 17	6.70	N/A	N/A	1166	5.18	N/A	847	0.12	72	<1	92		SEE ATTACHED ICP RESULTS
BH2	July 17	6.43	N/A	4.0	567	5.55	N/A	242	<.05	103	<1	36		
BH4	July 17	3.60	N/A	6.0	2820	3.20	N/A	2159	3.30	<5	578	1042		
BH5	Semi Annual (May & Sept)													
BH6	Semi Annual (May & Sept)													
BH7A	Semi Annual (May & Sept)													
BH7B	Semi Annual (May & Sept)													
BH8	Semi Annual (May & Sept)													
BH9	Semi Annual (May & Sept)													
BH10A	Semi Annual (May & Sept)													
BH10B	Semi Annual (May & Sept)													
BH11	Semi Annual (May & Sept)													
BH12A	Semi Annual (May & Sept)													
BH12B	Semi Annual (May & Sept)													
BH13A	Semi Annual (May & Sept)													
BH13B	Semi Annual (May & Sept)													
BH14A	Semi Annual (May & Sept)													
BH14B	Semi Annual (May & Sept)													
BH15A	Semi Annual (May & Sept)													
BH15B	Semi Annual (May & Sept)													
BH15C	Semi Annual (May & Sept)													
BH16A	Semi Annual (May & Sept)													
BH16B	Semi Annual (May & Sept)													
BH16C	Semi Annual (May & Sept)													

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As Indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY ICP RESULTS FOR JULY 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	< 003	0 20	< 02	0 037	< 001	< 04	13 8	< 002	< 005	< 005	<.002	0 46	< 02	< 005	2 8	0 03	0 007	<1	< 005	0 08	< 02	10	< 03	4 16	0 006	< 005	< 005	< 03	0 09
X3	< 003	< 05	< 02	0 017	< 001	< 04	14 3	< 002	< 005	< 005	<.002	0 17	< 02	< 005	2 6	0 01	0 009	<1	< 005	0 06	< 02	6	< 03	3 77	0 071	< 005	< 005	< 03	<.01
X4 July 2	< 003	0 16	< 02	0 161	0 012	< 04	144 6	< 002	0 015	< 005	0 010	1 06	< 02	< 005	30 5	6 13	0 002	12	0 013	0 16	< 02	160	< 03	3 18	0 469	0 028	< 005	< 03	6 15
X4 July 8	< 003	< 05	< 02	0 066	0 005	< 04	134 1	0 007	0 012	< 005	<.002	0 20	< 02	< 005	27 7	5 63	< 002	10	< 005	0 15	< 02	168	< 03	2 36	0 453	< 005	< 005	< 03	5 93
X4 July 15	< 003	< 05	< 02	0 024	0 005	< 04	114 7	0 003	0 014	< 005	< 002	0 12	< 02	< 005	24 5	5 00	0 008	9	0 018	0 32	< 02	184	< 03	2 39	0 399	< 005	< 005	0 03	5 64
X4 July 22	< 003	< 05	< 02	0 057	0 007	< 04	129 1	0 004	< 005	< 005	0 008	0 49	< 02	< 005	26 3	5 47	< 002	11	< 005	0 07	0 02	176	< 03	2 42	0 423	< 005	< 005	< 03	6 14
X4 July 29	< 003	0 06	< 02	0 065	0 008	< 04	129 6	0 011	0 008	< 005	0 013	0 55	< 02	< 005	27 4	5 42	0 004	11	0 009	< 04	0 03	172	< 03	2 73	0 437	< 005	< 005	< 03	6 11
X5 July 2 - 29	Not Decanting																												
X10	< 003	< 05	< 02	0 112	< 001	< 04	16 0	< 002	< 005	< 005	< 002	0 19	< 02	< 002	3 5	0 02	0 005	<1	< 005	0 05	< 02	4	< 03	3 64	0 075	< 005	< 005	< 03	0 03
X11	Semi Annual Sample (May & Sept)																												
X12	Semi Annual Sample (May & Sept)																												
X13 July 2	< 003	0 24	< 02	0 150	0 009	< 04	212 4	< 002	< 005	< 005	<.002	3 29	< 02	< 005	39 9	11 23	< 002	44	0 007	< 04	< 02	212	< 03	8 64	0 647	0 006	< 005	< 03	0 01
X13 July 8	< 003	0 08	< 02	0 069	0 007	< 04	184 6	< 002	< 005	< 005	<.002	2 73	< 02	< 005	33 7	9 32	< 002	36	< 005	0 17	< 02	182	< 03	6 89	0 549	< 005	< 005	< 03	< 01
X13 July 15	< 003	< 05	< 02	0 115	0 008	< 04	150 9	< 002	< 005	< 005	<.002	2 28	< 02	< 005	28 1	7 87	0 003	29	< 005	0 36	< 02	186	< 03	6 30	0 400	< 005	< 005	< 03	< 01
X13 July 22	< 003	< 05	< 02	0 098	0 008	< 04	165 0	< 002	< 005	< 005	<.002	2 62	< 02	< 005	29 9	8 10	< 002	34	< 005	< 04	< 02	171	< 03	6 37	0 473	< 005	< 005	< 03	0 01
X13 July 29	< 003	0 07	< 02	0 101	0 010	< 04	177 8	< 002	0 008	< 005	0 007	2 70	< 02	< 005	33 2	9 40	0 002	37	0 005	< 04	< 02	180	< 03	6 26	0 542	< 005	< 005	< 03	0 01
X14	< 003	< 05	< 02	0 023	< 001	< 04	21 7	< 002	< 005	< 005	< 002	0 27	< 02	< 005	4 5	0 22	0 003	<1	< 005	< 04	< 02	13	< 03	3 92	0 050	< 005	< 005	< 03	0 02
X16A	Semi Annual Sample (May & Sept)																												
X16B	Semi Annual Sample (May & Sept)																												
X17A	Semi Annual Sample (May & Sept)																												
X17B	Semi Annual Sample (May & Sept)																												
X18A	Semi Annual Sample (May & Sept)																												
X18B	Semi Annual Sample (May & Sept)																												
X20	Semi Annual Sample (May & Sept)																												
X22B	0 004	< 05	0 04	< 002	0 009	< 04	163	0 014	0 054	< 005	0 014	0 05	< 02	< 005	58 8	5 49	0 014	30	0 179	0 20	0 11	412	0 69	3 23	0 275	< 005	< 005	0 04	8 56
X22C	Main Pit at Point of Discharge																												
X23	<.003	0 40	< 02	0 093	0 017	< 04	495	0 008	0 116	< 005	0 018	0 32	< 02	< 005	283 7	20 02	0 008	44	0 311	< 04	< 02	1296	< 03	7 01	2 809	0 008	0 005	0 11	28 61
X26	0 005	0 50	0 04	< 002	0 015	< 04	480	0 028	0 524	< 005	0 022	9 84	< 02	< 005	189 2	12 84	0 011	31	1 249	0 39	0 04	837	0 11	5 83	2 735	0 009	< 005	< 03	63 82

FARO WATER QUALITY ICP RESULTS CONTINUED FOR JULY 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As Indicated In Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	B	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	<.003	0.05	< 02	N/A	0.048	< 001	< 04	36.6	< 002	< 005	< 005	0.004	0 02	< 02	< 005	7.5	0 12	< 002	3	< 005	< 04	< 02	5	< 03	3 02	0.152	< 005	< 005	< 03	0 02
R5	<.003	< 05	< 02	N/A	0 047	< 001	< 04	35 9	< 002	< 005	< 005	< 002	0 02	< 02	< 005	9 1	0 03	< 002	1	< 005	0.10	< 02	1	< 03	2 71	0 123	< 005	< 005	< 03	< 01
R6	<.003	< 05	< 02	N/A	0 056	< 001	< 04	37 9	< 002	< 005	< 005	0.004	0 05	< 02	< 005	9 8	0 02	< 002	1	0 009	0.09	< 02	1	< 03	2 98	0 125	< 005	< 005	< 03	< 01
R7	<.003	< 05	< 02	0 04	0 068	0 002	< 04	12 6	< 002	< 005	< 005	< 002	0 21	< 02	< 005	2 2	0 02	< 002	<1	< 005	< 04	< 02	1	< 03	3 75	0 052	< 005	< 005	< 03	< 01
R8	<.003	< 05	< 02	0 01	0 004	< 001	< 04	4 9	< 002	< 005	< 005	0 009	0 14	< 02	< 005	1 0	< 01	< 002	<1	< 005	< 04	< 02	<1	< 03	6 22	0 027	< 005	< 005	< 03	0 04
R9	<.003	< 05	< 02	0 05	0 022	< 001	< 04	13 4	< 002	< 005	< 005	< 002	0 23	< 02	< 005	2 6	0 01	< 002	<1	< 005	0 05	< 02	3	< 03	4 16	0 061	< 005	< 005	< 03	0 01
R10	<.003	< 05	< 02	0 03	0 018	< 001	< 04	13 0	< 002	0 006	< 005	0 019	0 22	< 02	< 005	2 7	0 01	< 002	<1	< 005	< 04	< 02	<1	< 03	4 15	0 064	< 005	0 006	< 03	< 01
BH1	0 007	0 19	0 06	3 22	0 126	0 007	< 04	204 5	0 053	0 052	< 005	0 011	0 07	< 02	< 005	54 6	6 38	0 010	8	0 145	0 28	0 08	483	0 11	11 93	0 882	0 005	< 005	0 17	29 92
BH2	<.003	0 06	< 02	0 70	0 052	0 001	< 04	51 5	0 003	< 005	< 005	0 003	0 11	< 02	< 005	17 1	0 04	0 005	3	0 018	0 15	< 02	101	< 03	5 08	0 298	< 005	< 005	< 03	4 18
BH4	0 005	112 5	0 11	6 65	0 028	0 036	< 04	257 6	0 09	0 491	< 005	0 770	5 39	< 02	0 105	51 7	6 84	0 013	8	0 506	0 29	0 08	964	0 09	32 19	0 951	0 009		0 15	41 26
BH5	Semi Annual (May & Sept)																													
BH6	Semi Annual (May & Sept)																													
BH7a	Semi Annual (May & Sept)																													
BH7b	Semi Annual (May & Sept)																													
BH8	Semi Annual (May & Sept)																													
BH9	Semi Annual (May & Sept)																													
BH10a	Semi Annual (May & Sept)																													
BH10b	Semi Annual (May & Sept)																													
BH11	Semi Annual (May & Sept)																													
BH12a	Semi Annual (May & Sept)																													
BH12b	Semi Annual (May & Sept)																													
BH13a	Semi Annual (May & Sept)																													
BH13b	Semi Annual (May & Sept)																													
BH14a	Semi Annual (May & Sept)																													
BH14b	Semi Annual (May & Sept)																													
BH15a	Semi Annual (May & Sept)																													
BH15b	Semi Annual (May & Sept)																													
BH15c	Semi Annual (May & Sept)																													
BH16a	Semi Annual (May & Sept)																													
BH16b	Semi Annual (May & Sept)																													
BH16c	Semi Annual (May & Sept)																													
1A	Semi Annual (May & Sept)																													
1B	Semi Annual (May & Sept)																													
2A	Semi Annual (May & Sept)																													
2B	Semi Annual (May & Sept)																													
3	Semi Annual (May & Sept)																													

FARO WATER QUALITY DATA

AUGUST 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3-N	mg/L Cyanide	Metals
X2	August 15	7.82	5.0	146	1.024	<5	11	<.05	<.001	SEE ATTACHED ICP RESULTS
X3	August 15	7.86	7.0	138	* 1.233	<5	12	<.05	<.001	
X4 Weekly	August 5	7.47	13.0	923	15.0 L/sec	<5	N/A	0.25	0.057	
	August 12	7.96	13.0	939	14.0 L/sec	<5	554	0.19	0.059	
	August 20	7.53	12.0	885	13.0 L/sec	<5	536	0.14	0.058	
	August 27	7.90	13.0	921	15.0 L/sec	<5	451	0.26	0.073	
X5 Weekly	August 01 -- 21	Not Decanting								
	August 27	7.11	9.5	1148	0.091	<5	499	0.50	0.002	
X10	August 15	Every Second Month (Jan, Mar,May,July, Sept,Nov)								
X11	August 5	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0196					
	August 12				0.0231					
	August 20				0.0231					
X12	August 5	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0068					
	August 12				0.0077					
	August 20				0.0077					
X13 Weekly	August 5	6.99	4.5	1158	0.0534	5	N/A	0.81	0.007	
	August 12	7.40	6.0	1168	0.0635	6	563	0.71	0.005	
	August 20	6.99	8.0	1168	0.0534	5	530	0.65	<.001	
	August 27	7.19	6.0	1125	0.0534	6	446	1.24	0.002	
X14	August 15	7.99	8.0	273	1.2430	<5	58	0.07	<.001	
X22B	August 15	7.78	N/A	1109	Avg 0.40 @ 25% solids	<5	678	0.07	5.000	
X22C	Main Pit at Point of Discharge									
X23	August 15	6.64	7.0	3210	1.73 L/sec	<5	2520	0.45	0.002	
				Alkalinity mg/L		Acidity pH 4.5	Acidity pH 8.3			
X26	August 15	No Sample								

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As Indicated in Schedule A of Water Use License IN89-001
All data that is indicated in black is not a requirement of the License

COMMENTS:

* X3 flow done downstream of Stevens Recorder in the Rose Creek diversion canal and is a combination of flow from the Pump-House Pond and the partial flow from the North Fork of Rose Creek.

Syphon discharge from the Polishing Pond (X5) began on August 22. Prior depth sampling of the pond indicated zinc concentrations were well within limits. In-House analysis of sypon discharge was 0.27 Zn on August 22.

FARO WATER QUALITY DATA

CONTINUED FOR AUGUST 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.6	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16a	PEIZOMETERS BELOW CROSS VALLEY DAM		Semi Annual (May & Sept)														SEE ATTACHED ICP RESULTS
X16b			Semi Annual (May & Sept)														
X17a			Semi Annual (May & Sept)														
X17b			Semi Annual (May & Sept)														
X18a			Semi Annual (May & Sept)														
X18b			Semi Annual (May & Sept)														
X20			Semi Annual (May & Sept)														
1A	INTERMEDIATE DUMP BOREHOLES		Semi Annual (May & Sept)														
1B			Semi Annual (May & Sept)														
2A			Semi Annual (May & Sept)														
2B			Semi Annual (May & Sept)														
3			Semi Annual (May & Sept)														

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	M^3/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.6	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	ROSE & ANVIL WATER QUALITY STATIONS	Quarterly (Mar, June, Sept. & Dec)													SEE ICP DATA
R5		Quarterly (Mar, June, Sept. & Dec)													
R6		Quarterly (Mar, June, Sept. & Dec)													
R7		August 14		7.50	4.5	140	0.736	<5	8	<.05	<1	1	75	1.68	
R8		August 14		7.27	5.0	135	N/Req.	<5	7	N/A	<1	1	72	N/A	
R9		August 14		7.39	5.0	145	N/Req.	<5	10	<.05	<1	2	76	1.76	
R10		August 14		7.26	5.0	138	N/Req.	<5	9	N/A	<1	2	75	N/A	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS;

BH SERIES WATER QUALITY DATA

AUGUST 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH_3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	August 14	5.96	N/A	7.0	1166	5.18	3.80	266	<.05	137	<1	46		SEE ATTACHED ICP RESULTS
BH2	August 14	6.7	N/A	7.0	567	5.55	4.94	128	<.05	117	<1	36		
BH4	August 14	3.96	N/A	6.0	2820	3.20	2.66	454	0.44	<1	16	278		
BH5	Semi Annual (May & Sept)													
BH6	Semi Annual (May & Sept)													
BH7A	Semi Annual (May & Sept)													
BH7B	Semi Annual (May & Sept)													
BH8	Semi Annual (May & Sept)													
BH9	Semi Annual (May & Sept)													
BH10A	Semi Annual (May & Sept)													
BH10B	Semi Annual (May & Sept)													
BH11	Semi Annual (May & Sept)													
BH12A	Semi Annual (May & Sept)													
BH12B	Semi Annual (May & Sept)													
BH13A	Semi Annual (May & Sept)													
BH13B	Semi Annual (May & Sept)													
BH14A	Semi Annual (May & Sept)													
BH14B	Semi Annual (May & Sept)													
BH15A	Semi Annual (May & Sept)													
BH15B	Semi Annual (May & Sept)													
BH15C	Semi Annual (May & Sept)													
BH16A	Semi Annual (May & Sept)													
BH16B	Semi Annual (May & Sept)													
BH16C	Semi Annual (May & Sept)													

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As Indicated In Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS: Analysis of the monthly samples taken at the BH 1, 2 and 4 piezometers, have indicated some significant variances in numerous parameters over the past several sampling periods.

FARO WATER QUALITY ICP RESULTS FOR AUGUST 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	<.003	0.05	<.02	0.038	0.004	<.04	20.1	<.002	<.005	<.005	0.002	0.20	<.02	<.005	4.2	0.03	<.002	<1	<.005	<.04	<.02	4	<.03	2.95	0.970	<.005	<.005	<.03	0.01
X3	<.003	0.05	<.02	0.028	<.001	<.04	16.9	<.002	<.005	<.005	<.002	0.13	<.02	<.005	3.5	0.01	<.002	<1	<.005	<.04	0.02	4	<.03	2.05	0.088	<.005	<.005	<.03	<.01
X4 August 6	<.003	0.05	0.03	0.100	0.006	<.04	127.7	0.011	0.015	<.005	0.010	1.23	<.02	<.005	26.9	5.42	<.002	11	0.014	0.36	<.02	172	<.03	2.26	0.442	<.005	<.005	<.03	5.77
X4 August 12	<.003	0.05	0.03	0.096	0.005	<.04	127.0	0.007	0.009	<.005	0.024	0.17	<.02	<.005	26.8	4.31	<.002	11	0.029	0.30	0.03	184	<.03	2.26	0.441	<.005	<.005	<.03	5.32
X4 August 20	<.003	0.05	0.03	0.038	0.007	<.04	129.2	0.009	0.012	<.005	0.008	0.20	<.02	<.005	26.6	5.40	<.002	11	0.032	<.04	<.02	175	<.03	2.45	0.434	<.005	<.005	<.03	5.71
X4 August 27	<.003	0.05	<.02	0.071	0.006	<.04	127.6	0.007	0.007	<.005	0.003	0.17	<.02	<.005	27.5	4.30	<.002	7	0.007	0.21	0.02	144	<.03	2.80	0.441	<.005	<.005	<.03	4.99
X5 August 01 - 21	Not Decanting																												
X5 August 27	<.003	0.05	<.02	0.081	0.005	<.04	161.3	<.002	<.005	<.005	<.002	0.32	<.02	<.005	31.8	7.73	<.002	30	<.005	0.17	<.02	159	<.03	5.63	0.482	<.005	<.005	<.03	0.16
X10	Every Second Month (Jan, Mar, May, July, Sept, Nov)																												
X11	Semi Annual Sample (May & Sept)																												
X12	Semi Annual Sample (May & Sept)																												
X13 August 6	<.003	0.05	0.04	0.136	0.007	<.04	167.7	<.002	<.005	<.005	0.01	2.50	<.02	<.005	31.2	8.74	<.002	34	0.008	0.25	<.02	179	<.03	6.73	0.505	0.006	<.005	<.03	0.02
X13 August 12	<.003	0.05	0.02	0.100	0.007	<.04	166.2	<.002	<.005	<.005	0.008	2.44	<.02	<.005	30.8	6.91	0.003	34	0.006	0.30	<.02	188	<.03	6.67	0.502	<.005	<.005	<.03	<.01
X13 August 20	<.003	<.05	0.02	0.099	0.007	<.04	160.2	<.002	<.005	<.005	0.005	2.43	<.02	<.005	29.9	8.18	<.002	33	0.014	<.04	<.02	172	<.03	6.84	0.483	<.005	<.005	<.03	0.02
X13 August 27	<.003	0.05	<.02	0.127	0.007	<.04	162.3	<.002	0.006	<.005	<.002	2.27	<.02	<.005	31.3	6.58	0.003	37	<.005	0.07	0.03	145	<.03	7.24	0.491	<.005	<.005	<.03	0.01
X14	<.003	0.05	<.02	0.045	0.001	<.04	33.4	<.002	<.005	<.005	<.002	0.30	<.02	<.005	7.0	0.52	<.002	3	<.005	0.13	<.02	16	<.03	2.52	0.140	<.005	<.005	<.03	0.03
X16A	Semi Annual Sample (May & Sept)																												
X16B	Semi Annual Sample (May & Sept)																												
X17A	Semi Annual Sample (May & Sept)																												
X17B	Semi Annual Sample (May & Sept)																												
X18A	Semi Annual Sample (May & Sept)																												
X18B	Semi Annual Sample (May & Sept)																												
X20	Semi Annual Sample (May & Sept)																												
X22B	<.003	0.05	<.02	0.047	0.005	<.04	130.2	0.012	0.040	<.005	0.045	0.15	<.02	<.005	46.0	3.77	0.006	27	0.111	<.04	0.22	208	0.06	1.38	0.231	<.005	<.005	<.03	4.08
X22C	Main Pit at Point of Discharge																												
X23	<.003	0.34	<.02	0.083	0.018	<.04	473.4	0.021	0.122	<.005	0.022	0.15	<.02	<.005	282.3	17.98	<.002	45	0.294	<.04	<.02	842	0.03	6.26	2.745	0.016	<.005	<.03	28.86
X26	No Sample																												

FARO WATER QUALITY ICP RESULTS CONTINUED FOR AUGUST 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As Indicated In Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, & Dec)																												
R5	Quarterly (Mar, June, Sept, & Dec)																												
R6	Quarterly (Mar, June, Sept, & Dec)																												
R7	<.003	0.05	<.02	0.066	0.005	<.04	18.2	<.002	<.005	<.005	0.002	0.22	<.02	<.005	3.8	0.01	<.02	<1	<.005	<.04	<.02	3	<.03	3.90	0.087	<.005	<.005	<.03	<.01
R8	<.003	0.05	<.02	0.040	<.001	<.04	16.8	<.002	<.005	<.005	<.002	0.23	<.02	<.005	3.5	0.02	.030	1	<.005	<.04	<.02	3	<.03	3.94	0.080	<.005	<.005	<.03	<.01
R9	<.003	0.05	<.02	0.039	<.001	<.04	18.3	<.002	<.005	<.005	<.002	0.14	<.02	<.005	4.0	0.01	.020	<1	<.005	<.04	<.02	3	<.03	4.03	0.090	<.005	<.005	<.03	<.01
R10	<.003	0.05	<.02	0.092	<.001	<.04	17.8	<.002	<.005	<.005	<.002	0.14	<.02	<.005	3.9	0.01	<.02	<1	<.005	<.04	<.02	3	<.03	3.96	0.088	<.005	<.005	<.03	<.01
BH1	<.003	0.05	<.02	0.069	0.003	<.04	66.2	0.010	<.005	<.005	0.009	0.01	<.02	<.005	16.7	1.60	< 02	6	0.025	0.18	0.02	55	0.03	6.83	0.339	<.005	<.005	<.03	3.49
BH2	<.003	0.05	<.02	0.080	<.001	<.04	48.3	0.005	<.005	<.005	<.002	0.02	<.02	<.005	14.7	<.01	<.02	4	0.014	0.10	<.02	38	<.03	4.66	0.281	<.005	<.005	<.03	2.77
BH4	<.003	17.88	<.02	0.065	0.007	<.04	70.8	0.023	0.085	<.005	0.183	0.49	<.02	0.019	17.8	0.91	<.02	5	0.089	<.04	0.04	150	0.05	10.12	0.341	<.005	<.005	<.03	7.87
BH5	Semi Annual (May & Sept)																												
BH6	Semi Annual (May & Sept)																												
BH7a	Semi Annual (May & Sept)																												
BH7b	Semi Annual (May & Sept)																												
BH8	Semi Annual (May & Sept)																												
BH9	Semi Annual (May & Sept)																												
BH10a	Semi Annual (May & Sept)																												
BH10b	Semi Annual (May & Sept)																												
BH11	Semi Annual (May & Sept)																												
BH12a	Semi Annual (May & Sept)																												
BH12b	Semi Annual (May & Sept)																												
BH13a	Semi Annual (May & Sept)																												
BH13b	Semi Annual (May & Sept)																												
BH14a	Semi Annual (May & Sept)																												
BH14b	Semi Annual (May & Sept)																												
BH15a	Semi Annual (May & Sept)																												
BH15b	Semi Annual (May & Sept)																												
BH15c	Semi Annual (May & Sept)																												
BH16a	Semi Annual (May & Sept)																												
BH16b	Semi Annual (May & Sept)																												
BH16c	Semi Annual (May & Sept)																												
1A	Semi Annual (May & Sept)																												
1B	Semi Annual (May & Sept)																												
2A	Semi Annual (May & Sept)																												
2B	Semi Annual (May & Sept)																												
3	Semi Annual (May & Sept)																												

FARO WATER QUALITY DATA

SEPTEMBER 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	mg/L Cyanide	Metals
X2	September 11	7.91	4.0	144	1.2211	2	11	<.05	<.001	
X3	September 11	7.95	5.0	148	1.1594	<5	12	<.05	<.001	S
X4 Weekly	September 3	N/A	N/A	485	0.0429	<5	513	0.20	0.076	E
	September 9	7.55	8.0	878	0.0429	2	550	0.15	0.022	E
	September 16	7.60	8.0	1042	0.0429	<5	561	0.13	0.024	
	September 24	7.90	7.0	890	0.0434	<5	593	0.29	0.049	A
	September 30	7.70	2.9	899	0.0385	<5	560	0.19	0.052	T
X5 Weekly	September 3	N/A	N/A	1102	0.0910	<5	321	0.47	0.002	T
	September 9	7.29	9.0	1090	0.0910	1	549	0.23	<.001	A
	September 16	7.59	8.5	1064	0.0910	<5	464	0.21	0.005	C
	September 24	8.04	8.0	887	0.0910	<5	469	0.20	0.000	H
	September 30	8.05	4.0	910	0.0910	<5	471	0.53	0.002	E
X10	September 10	8.08	5.0	165	1.349	<5	9	<.05	<.001	D
X11	September 9	7.15	5.5	1014	0.0164	3	418	0.44	<.001	
	September 16				N/A					I
	September 24				0.0250					C
	September 30				0.0244					P
X12	September 9	7.15	5.5	1014	0.0164	3	418	0.44	<.001	
	September 16				N/A					R
	September 24				0.0086					E
	September 30				0.0086					S
X13 Weekly	September 3	N/A	N/A	1166	0.0534	6	481	1.30	0.002	U
	September 9	7.29	5.0	1135	0.0534	7	557	0.25	<.001	L
	September 16	7.26	5.0	1261	0.0534	5	539	0.62	<.001	T
	September 24	7.48	5.0	1078	0.0698	8	631	0.52	<.001	S
	September 30	N/A	N/A	N/A	0.0604	N/A	N/A	N/A	N/A	
X14	September 9	7.73	5.0	329	2.0370	1	74	<.05	<.001	
X22B	September 12	N/A	N/A	1111	Avg 0.40 @ 25% solids	<5	741	1.11	0.120	
X22C	Main Pit at Point of Discharge									
X23	September 9	7.13	5.5	3720	0.0011	8	2656	0.58	<.001	
						Acidity				
				Alkalinity mg/L		pH 4.5	pH 8.3			
X26	September 9	6.17	3.0	443	N/A	4	261	1535	1.30	<.001

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL
As indicated in Schedule A of Water Use License N89-001
All data that is indicated in black is not a requirement of the License

COMMENTS:

X3 flow done downstream of Stevens Recorder in the Rose Creek diversion canal
All of the results for site X13, September 30 were not obtained due to a broken sample container
The quarterly bioassay samples taken at sites X5 and X13 on September 24 both reported > 100% survival

FARO WATER QUALITY DATA

CONTINUED FOR SEPTEMBER 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	M³/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	RAVENSBOROUGH LAKE WATER QUALITY	September 4	8.10	8.00	5.6	297	3.108	<5	35	<.05	NA	NA	95	NA	SEE ATTACHED ICP DATA
R5		September 4	7.96	8.14	4.8	271	5.770	<5	18	<.05	NA	NA	119	NA	
R6		September 4	7.95	8.17	4.8	266	7.662	<5	17	<.05	NA	NA	126	NA	
R7		September 16	7.50		4.5	110	0.735	7	5	<.05	<1	2	57	NA	
R8		September 16	7.27		5.0	98	NAReq	5	5	<.05	<1	2	49	NA	
R9		September 16	7.39		5.0	109	NAReq	<5	6	<.05	<1	2	54	NA	
R10		September 16	7.26		5.0	104	NAReq	5	7	<.05	<1	2	54	NA	

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Cyanide	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16A	PIEZOMETER TRENCH	September 26	6.97	8.18	5.0	327	5.37	3.57	0.010	26	<.05	<1	2	147	134		SEE ATTACHED ICP RESULTS
X16D		September 27	7.57	8.22	3.3	381	28.99	3.92	<.001	19	<.05	<1	2	172	NA	Tubing fell in approx. 2m. Flow 1 in. installed along side. Difficult to pump.	
X17A		September 26	7.20	7.96	3.2	384	8.06	2.15	<.001	25	<.05	<1	<1	184	183		
X17B		September 26	7.07	7.70	3.3	680	24.80	3.08	<.001	88	<.05	<1	16	409	185		
X18A	TRENCH SAMPLES	September 26	6.68	8.00	2.2	912	9.29	4.11	<.001	400	<.05	<1	<1	240	454		
X18B		September 26	6.68	8.13	2.8	909	10.70	3.78	0.012	424	<.05	<1	12	224	480		
X19		September 27	7.41	8.10	3.3	571	9.79	6.85	0.033	105	1.21	<1	13	227	NA	Two piezometers at site. Both approximately same depth. One sampled. Water very black with lots of organics. Very strong smell. Site capped.	
X20		September 26					3.40									Site not located	
X21A-96	BEMSLAKE	September 26					9.22	4.39									
X21B-96	CDANKHMEDIUM	September 26	6.66	7.15	3.5	1200	15.43	4.49	NA	767	0.97	<1	36	202	593		
X21C-96		September 26	7.58	7.84	3.3	383	30.18	4.54	NA	12	0.38	<1	7	178	148	Color fluctuated from very black to clear.	
P81-4		September 27					11.10 Below ground	NA								Dry.	
P81-4		September 27	6.77	8.33	4.0	235	26.80 Below ground	12.40	NA	680	1.130	<1	142	97	NA	The new tubing installed just prior to sampling date was found broken approx. 5m down. New one installed along side	
X24A-96 NORTH	PIEZOMETER SAMPLES	September 26	6.53	7.70	3.4	1364	5.88	3.27	NA	835	<.05	<1	59	315	818		
X24B-96 NORTH		September 27	6.75	7.56	NA	1350	10.80	3.25	NA	758	0.40	<1	50	332	NA	Wetsuit valve replaced twice Sep 26. Returned Sep 27 replaced valve and took sample. Very dry.	
X24C-96 NORTH	COMBUSTIBLES	September 26	6.47	7.55	2.9	1492	15.87	3.12	NA	1005	0.13	<1	72	383	988		
X24D-96 NORTH		September 26	6.49	7.33	3.3	1005	28.22	3.05	NA	1048	<.05	<1	79	394	1102	Separate hole from A,B & C.	
X25A-96 SOUTH	BASEMENT	September 26	6.78	8.06	3.0	780	9.85	2.53	NA	269	2.10	<1	15	230	336	Below rd. Dam South.	
X25B-96 SOUTH		September 26	7.04	7.89	2.7	1058	19.80	2.40	NA	468	<.05	<1	10	277	478	Below rd. Dam South	
1A	IN THE RAMP DIATE	September 27	6.57	7.8	2.4	1548	12.80	4.05	NA	1269	<.05	<1	83	344	NA	Broken at ground.	
1B		September 27	NA	7.8	NA	1259	5.37	2.57	NA	921	0.01	<1	24	70	NA		
2A	DUMP BORE HOLES	September 27	6.44	7.5	2.4	1521	8.04	4.41	NA	1367	0.01	2	48	121	NA		
2B		September 27	6.54	7.2	2.4	708	10.80	3.19	NA	771	0.02	<1	51	109	NA		
3		September 27	6.38	6.9	3.5	1402	6.58	2.47	NA	876	0.06	<1	93	105	NA		
Above Rock Drain 96-6		September 25	NA	8.00	2.3	538	20.85	12.76	NA	108	<.05	<1	114	228	NA		
Main Rock Dump 96-7		September 27	7.39	7.66	2.5	1227	9.90	5.24	NA	662	<.05	<1	15	160	NA		
Old Faro Cr. Channel 96-8A		September 26	8.31	7.44	4.5	5430	4.87	3.52	NA	2278	<.05	<1	102	464	2011	Silty and orange in color. Very difficult to filter.	
96-8B		September 26	8.30	7.71	3.4	7300	9.30	3.09	NA	2578	0.08	<1	173	702	2305	Silty and orange in color. Very difficult to filter.	

NA Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License 9111-111

All data that is indicated in black is not a requirement of the License

BH SERIES WATER QUALITY DATA

SEPTEMBER 1996

PIEZOMETE

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	September 12	6.18	N/A	7.0	1166	5.18	4.19	164	<.05	117	<1	64		SEE ATTACHED ICP RESULTS
BH2	September 12	6.62	N/A	4.5	567	5.55	4.94	162	<.05	106	<1	38		
BH4	September 12	6.66	5.00	6.0	2820	3.20	2.66	214	<.05	19	17	266		
BH5	September 12	5.53	N/A	3.5	575	8.33	2.78	184	<.05	160	<1	279		
BH6	September 25	6.09	6.35	4.5	451	6.55	3.43	125	<.05	82	<1	43	Very silty and orange in color.	
BH7A	September 25	6.03	7.16	3.5	216	9.00	5.33	34	<.05	99	<1	30	Very silty and orange in color.	
BH7B	September 25	N/A	7.22	4.0	234	6.78	5.63	15	<.05	118	<1	32	Problem pH meter. About an 8 inch slug of orange colored silt pumped from tube.	
BH8	September 25	4.74	2.70	4.5	8300	20.90	16.61	2656	0.05	<5	353	1470		
BH9	September 25					N/T	N/T						No SWL taken (180 ft 1 inch line) Unable to raise water after 10 min. pumping	
BH10A	September 25	6.17	6.67	3.5	611	34.17	N/T	226	<.05	197	<1	21	No SWL taken (34.2 ft 1 inch line). Tubing snapped off during pumping	
BH10B	September 25	N/A	7.10	4.0	847	52.92	N/T	247	<.05	333	<1	620	No SWL taken (52.92 ft 1 inch line) 2 ft tubbing snapped off during pumping. Site pumped dry.	
BH11	September 25												Unable to raise water, no sample.	
BH12A	September 25	7.29	7.86	3.1	1080	2.85	2.39	538	<.05	197	<1	18		
BH12B	September 25	7.31	7.80	2.7	1020	8.05	2.45	466	<.05	227	<1	17		
BH13A	September 27					3.64	3.50						Tubing missing. New one installed. Minimal water, no sample	
BH13B	September 27	7.01	7.62	2.5	990	4.25	2.76	384	<.05	95	<1	24	Tubing missing. New one installed. Very silty	
BH14A	September 25	6.92	7.53	3.3	1498	6.22	3.02	883	<.05	318	<1	41		
BH14B	September 25	7.03	7.47	3.1	1560	10.00	3.64	732	<.05	344	<1	51		
BH15A	September 25					N/A							Unable to raise water. No sample taken from tubing	
BH15B	September 25					N/A							This site distroyed	
BH15C	September 25					N/A							Tubing very heavy, water possibly reports beside tube. Unable to obtain sample.	
BH16A	September 25					N/A							Unable to raise water, Possibly still frozen.	
BH16B	September 25					N/A							Unable to raise water, Possibly still frozen.	
BH16C	September 25					N/A							Unable to raise water, Possibly still frozen.	

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY ICP RESULTS FOR SEPTEMBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL
As indicated in Schedule A of Water Use License #N89-001
All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	< 003	0 05	< 02	0 073	< 001	< 04	21 2	< 002	< 005	< 005	<.002	0 21	< 02	< 005	4 2	0 03	< 002	2	< 005	< 04	< 02	5	< 03	4 78	0 098	< 005	< 005	< 03	0 01
X3	< 003	0 05	< 02	0 098	0 002	< 04	22 8	< 002	< 005	< 005	0 003	0 50	< 02	< 005	4 7	0 02	< 002	2	< 005	0 10	< 02	8	< 03	4 86	0 110	< 005	< 005	0 03	0 01
X4 Sep 3	< 003	0 25	< 02	0 007	0 007	< 04	141 1	0 010	< 005	< 005	0 006	0 03	< 02	< 005	32 0	5 42	< 002	9	< 005	0 13	< 02	175	< 03	3 77	0 482	< 005	< 005	< 03	4 78
X4 Sep 9	< 003	0 05	< 02	0 091	0 010	< 04	140 2	0 004	< 005	< 005	0 006	0 31	< 02	< 005	27 0	5 39	0 004	4	0 038	< 04	< 02	179	< 03	2 73	0 444	< 005	< 005	< 03	5 81
X4 Sep 16	< 003	0 05	<.02	0 117	0 004	<.04	124 4	< 002	0 010	< 005	0 010	0 70	< 02	< 005	25 8	4 44	0 002	10	0 011	0 07	< 02	178	< 03	2 45	0 420	< 005	< 005	< 03	5 27
X4 Sep 24	< 003	0 05	< 02	0 078	0 003	<.04	145 2	0 009	0 012	0 005	0 027	0 09	< 02	< 005	29 5	5 28	< 002	17	0 034	< 04	< 02	180	< 03	2 68	0 473	< 005	< 005	< 03	6 45
X4 Sep 30	< 003	0 05	< 02	0 089	0 009	< 04	144 2	0 003	0 006	< 005	0 011	0 06	< 002	< 005	28 5	3 84	< 002	16	0 015	< 04	< 02	188	< 03	2 70	0 393	< 005	< 005	< 03	5 40
X5 Sep 3	< 003	0 35	< 02	0 040	0 007	< 04	171 2	< 002	< 005	< 005	0 005	0 52	< 02	< 005	34 0	9 17	< 002	36	< 005	< 04	< 02	107	< 03	5 68	0 495	< 005	< 005	< 03	0 22
X5 Sep 9	< 003	0 05	< 02	0 770	0 007	< 04	144 8	< 002	< 005	< 005	0 011	0 18	< 02	< 005	26 9	8 02	0 003	35	< 005	0 13	< 02	167	< 03	5 07	0 441	< 005	< 005	< 03	0 13
X5 Sep 16	< 003	0 05	< 02	0 094	0 005	< 04	128 5	< 002	< 005	< 005	0 006	0 41	< 02	< 005	22 3	4 22	0 003	35	< 005	0 08	< 02	155	< 03	4 07	0 400	< 005	< 005	< 03	0 11
X5 Sep 24	< 003	0 05	< 02	0 110	0 003	< 04	139 2	< 002	< 005	0 008	0 024	0 30	< 02	< 005	23 0	4 15	< 002	33	0 022	< 04	< 02	143	< 03	3 88	0 430	< 005	< 005	< 03	0 17
X5 Sep 30	< 003	0 05	< 02	0 054	0 005	< 04	147 9	< 002	< 005	< 005	0 006	0 33	< 02	< 005	22 4	4 58	< 002	31	< 005	0 17	< 02	163	< 03	4 12	0 370	< 005	< 005	< 03	0 15
X10	< 003	0 05	< 02	0 139	0 003	< 04	22 4	< 002	< 005	< 005	0 002	0 93	< 02	< 005	5 2	0 02	< 002	1	0 005	0 05	< 02	4	< 03	4 22	0 109	< 005	< 005	< 03	0 03
X11	< 003	0 05	< 02	0 150	0 008	< 04	139 9	< 002	< 005	0 008	0 005	1 30	< 02	< 005	28 2	6 13	< 002	37	0 017	0 04	< 02	139	< 03	0 89	0 428	< 005	< 005	< 03	0 02
X12	< 003	0 07	< 02	0 172	0 009	< 04	183 6	< 002	< 005	< 005	0 007	3 40	< 02	< 005	34 9	11 06	0 003	31	0 015	0 06	< 02	211	< 03	7 70	0 573	< 005	< 005	0 06	0 01
X13 Sep 3	< 003	0 35	< 02	0 108	0 008	< 04	185 6	<.002	< 005	< 005	0 003	0 02	< 02	< 005	37 0	8 80	< 002	38	< 005	< 04	<.02	159	< 03	8 41	0 554	< 005	< 005	< 03	0 01
X13 Sep 9	< 003	0 05	< 02	0 125	0 007	< 04	180 5	<.002	<.005	< 005	0 007	1 85	< 02	< 005	30 6	8 26	< 002	42	< 005	< 04	< 02	177	< 03	7 08	0 499	< 005	< 005	< 03	< 01
X13 Sep 13	< 003	0 05	< 02	0 188	0 008	< 04	158 0	< 002	< 005	< 005	0 009	2 33	< 02	< 005	29 3	6 73	< 002	33	0 018	< 04	< 02	175	< 03	8 07	0 475	< 005	< 005	< 03	0 02
X13 Sep 24	< 003	0 10	< 02	0 130	0 008	< 04	189 7	0 005	< 005	0 008	0 023	2 52	< 02	<.005	34 3	8 35	< 002	51	0 014	< 04	< 02	189	< 03	7 15	0 566	< 005	< 005	< 03	0 04
X13 Sep 30	< 003	0 05	0 02	0 087	0 007	< 04	198 4	< 002	< 005	< 005	0 012	2 80	< 02	< 005	32 3	8 53	< 002	54	< 005	< 04	< 02	213	< 03	7 58	0 490	< 005	< 005	< 03	0 02
X14	< 003	0 05	< 02	0 058	0 001	< 04	35 5	< 002	< 005	< 005	<.002	0 34	< 02	< 005	7 50	0 85	< 002	31	< 005	0 00	<.02	25	< 03	4 20	0 148	< 005	< 005	< 03	0 04
X16A	<.003	0.05	<.02	0.078	<.001	<.04	40.8	<.002	<.005	<.005	0.003	0.023	0.38	<.02	<.005	9.2	0.01	<.002	6	<.005	<.04	<.02	8	<.03	3.69	0.136	<.005	<.005	<.03	0.01	0.19
X16B	<.003	0.05	<.02	0.138	0.002	<.04	43.8	<.002	<.005	<.005	<.002	N/A	0.07	<.02	<.005	12.0	0.02	<.002	8	<.005	0.05	<.02	8	<.03	4.27	0.155	<.005	<.005	<.03	0.02	N/A
X17A	<.003	0.05	<.02	0.110	<.001	<.04	46.3	<.002	<.005	<.005	0.004	0.110	4.00	<.02	<.005	13.5	<.01	<.002	6	<.005	0.08	<.02	8	<.03	3.64	0.154	<.005	<.005	<.03	<.01	0.49
X17B	<.003	0.05	<.02	0.155	0.003	<.04	47.2	<.002	<.005	<.005	0.005	0.066	0.43	<.02	<.005	13.5	0.15	<.002	10	0.005	0.08	<.02	21	<.03	4.50	0.244	<.005	<.005	<.03	<.01	0.16
X18A	<.003	0.06	<.02	0.211	0.005	<.04	136.0	<.002	<.005	<.005	0.009	0.013	3.15	<.02	<.005	32.6	0.15	<.002	32	<.005	0.21	<.02	143	<.03	6.58	0.628	<.005	<.005	<.03	0.01	<.01
X18B	<.003	0.13	<.02	0.161	0.006	<.04	137.4	<.002	0.006	<.005	<.005	0.067	0.22	<.02	<.005	33.2	0.64	<.002	29	0.008	0.25	<.02	141	<.03	6.84	0.596	<.005	<.005	<.03	0.02	0.21
X19	<.003	0.05	<.02	0.186	0.004	<.04	70.9	<.002	<.005	<.005	0.018	N/A	0.26	<.02	<.005	20.4	0.81	<.002	18	0.008	<.04	<.02	39	<.03	4.49	0.236	0.008	<.005	<.03	0.02	N/A
X20																													
X21A																													
X21B	<.003	0.05	<.02	0.090	0.008	<.04	178.3	<.002	<.005	<.005	0.007	9.89	<.02	<.005	42.0	10.56	<.002	<1	<.005	0.18	<.02	261	<.03	8.35	0.525	<.005	<.005	<.03	0.13
X21C	<.003	0.05	<.02	0.112	0.002	<.04	46.7	<.002	<.005	<.005	<.002	0.05	<.02	<.005	8.4	0.22	<.002	9	<.005	0.05	<.02	3	<.03	4.01	0.261	<.005	<.005	<.03	<.01
X22B	< 003	0 13	< 02	0 077	0 008	< 04	183 8	0 013	0 049	< 005	0 045	0 08	< 02	< 005	58 5	5 05	0 019	43	0 059	0 25	0 03	250	< 03	2 35	0 294	0 018	< 005	< 03	4 01
X22C	Main Pit at Point of Discharge																												
X23	0 010	0 59	< 02	0 144	0 010	<.04	472 1	<.002	0 005	< 005	0 025	0 58	< 02	0 012	285 5	19 69	< 002	42	0 259	< 04	< 02	894	< 03	8 41	2 800	0 009	0 008	0 13	27 41
X24A	<.003	0.13	<.02	0.102	0.012	<.04	256.3	<.002	<.005	<.005	0.015	0.04	<.02	<.005	50.6	14.40	<.002	60	0.032	0.09	<.02	281	<.03	9.37	0.854	<.005	<.005	<.03	0.02
X24B	<.003	0.60	<.02	0.120	0.014	<.04	256.8	<.002	0.010	<.005	0.034	9.19	<.02	<.005	50.5	20.90	<.002	60	0.041	0.06	<.02	217	<.03	18.65	0.773	0.259	<.005	<.03	0.04
X24C	<.003	0.26	<.02	0.089	0.012	<.04	311.9	<.002	0.011	<.005	0.013	0.08	<.02	<.005	59.8	12.98	<.002	<1	0.051	0.12	<.02	350	<.03	9.49	1.072	<.005	<.005	<.03	0.02
X24D	<.003	0.24	<.02	0.032	0.010	<.04	302.9	<.002	<.005	<.005	0.007	<.01	<.02	<.005	62.8	0.92	<.002	<1	<.005	0.22	<.02	371	<.03	7.85	1.120	<.005	<.005	<.03	0.01
X25A	<.003	0.09	<.02	0.108	0.008	<.04	100.7	<.002	0.020	<.005	0.009	0.05	<.02	<.005	24.2	5.68	<.002	25	<.005	0.13	<.02	91	<.03	7.10	0.295	<.005	<.005	<.03	0.03
X25B	<.003	<.05	<.02	0.058	0.006	<.04	151.5	<.002	<.005	<.005	0.007	<.01	<.02	<.005	28.4	0.11	<.002	<1	<.005	0.18	<.02	154	<.03	5.82	0.400	<.005	<.005	<.03	0.01
X26	0.012	0.40	<.02	0.123	0.011	<.04	430.4	0.024	0.34	<.006	0.021	26.66	<.02	0.021	127.3	9.27	0.002	29	0.773	0.04	0.02	581	<.03	6.66	2.086	<.006	<.006	0.26	51.78

FARO WATER QUALITY ICP RESULTS CONTINUED FOR SEPTEMBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License #B89-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	<.003	<.05	<.02	0.066	<.001	<.04	35.6	<.0005	<.005	<.005	0.0153	0.35	<.02	<.005	7.6	0.27	<.002	20	<.005	0.10	<.005	9	<.02	4.75	0.146	<.005	<.005	<.03	0.026
R5	<.003	<.05	<.02	0.072	<.001	<.04	35.6	<.0005	<.005	<.005	0.0110	0.27	<.02	<.005	9.2	0.05	<.002	12	<.005	0.04	<.005	3	<.02	4.76	0.123	<.005	<.005	<.03	0.009
R6	<.003	<.05	<.02	0.072	<.001	<.04	35.0	<.0005	<.005	<.005	0.0031	0.29	<.02	<.005	9.5	0.01	<.002	11	<.005	0.09	<.005	1	<.02	4.36	0.120	<.005	<.005	<.03	0.006
R7	<.003	0.05	<.02	0.085	<.001	<.04	14.3	<.002	<.005	<.005	<.002	0.49	<.02	<.005	2.7	<.01	<.002	1	<.005	<.04	<.02	1	<.03	4.84	0.065	<.005	<.005	<.03	<.01
R8	<.003	0.05	<.02	0.086	<.001	<.04	11.9	<.002	<.005	<.005	0.002	0.48	<.02	<.005	2.3	0.02	<.002	1	.005	<.04	<.02	1	<.03	5.29	0.058	<.005	<.005	<.03	0.02
R9	<.003	0.05	<.02	0.125	.003	<.04	15.2	<.002	<.005	<.005	<.002	0.61	<.02	<.005	3.1	0.03	<.002	1	.023	<.04	<.02	1	<.03	5.48	0.078	<.005	<.005	<.03	0.03
R10	<.003	0.05	<.02	0.100	.002	<.04	15.0	<.002	<.005	<.005	<.002	0.61	<.02	<.005	2.9	0.03	<.002	1	.018	<.04	<.02	1	<.03	5.33	0.079	<.005	<.005	<.03	0.02
BH1	<.003	0.05	<.02	0.007	0.004	<.04	84.5	0.006	0.012	<.005	0.009	0.06	<.02	<.005	15.9	2.25	<.002	8	0.016	<.04	<.02	80	<.03	5.06	0.306	<.005	<.005	<.03	2.30
BH2	<.003	0.05	<.02	0.011	0.003	<.04	56.3	0.009	<.005	<.005	0.005	0.21	<.02	<.005	16.5	0.01	<.002	6	0.021	<.04	<.02	35	<.03	3.85	0.318	<.005	<.005	<.03	3.78
BH4	<.003	0.05	<.02	0.003	0.002	<.04	52.8	0.010	0.013	<.005	0.008	0.04	<.02	<.005	14.0	0.44	<.002	5	0.027	<.04	<.02	72	<.03	5.31	0.282	<.005	<.005	<.03	3.98
BH5	<.003	0.05	<.02	0.018	0.002	<.04	70.2	0.007	0.015	<.005	<.002	0.04	<.02	<.005	25.1	1.74	<.002	16	<.005	0.15	<.02	86	<.03	9.51	0.391	<.005	<.005	<.03	3.75
BH6	<.003	0.07	<.02	0.051	0.002	<.04	47.4	0.007	0.038	<.005	0.016	8.10	<.02	<.005	16.8	3.7	<.002	10	0.038	<.04	<.02	73	<.03	7.98	0.284	<.005	<.005	<.03	5.16
BH7A	<.003	0.05	<.02	0.025	<.001	<.04	27.4	<.002	<.005	<.005	0.003	0.08	<.02	<.005	9.1	<.01	<.002	5	<.005	<.04	<.02	16	<.03	4.70	0.113	<.005	<.005	<.03	0.85
BH7B	<.003	0.05	<.02	0.006	<.001	<.04	33.2	<.002	<.005	<.005	0.004	0.06	<.02	<.005	7.5	<.01	<.002	7	<.005	<.04	<.02	24	<.03	5.06	0.181	<.005	<.005	<.03	0.62
BH8	0.015	0.23	0.29	0.152	0.021	<.04	285.0	0.550	0.308	<.005	0.114	4.61	<.02	0.154	147.3	10.18	<.002	50	0.425	0.54	0.18	1015	0.16	8.27	1.357	<.005	0.010	<.03	228.00
BH9																													
BH10A	<.003	0.10	<.02	0.067	0.002	<.04	72.5	0.004	<.005	<.005	0.008	31.46	<.02	<.005	27.0	1.09	<.002	16	0.023	0.10	<.02	83	<.03	12.70	0.450	<.005	<.005	<.03	3.96
BH10B	<.003	0.41	<.02	0.111	0.006	<.04	122.3	0.004	<.005	<.005	0.015	40.27	<.02	<.005	41.9	1.05	<.002	24	0.044	0.11	<.02	109	<.03	20.29	0.791	<.005	<.005	<.03	3.89
BH11																													
BH12A	<.003	0.15	<.02	0.056	0.004	<.04	162.8	<.002	<.005	<.005	0.014	0.23	<.02	<.005	72.1	<.01	<.002	11	0.014	<.04	<.02	205	<.03	8.19	0.816	<.005	<.005	<.03	0.06
BH12B	<.003	0.22	<.02	0.060	0.005	<.04	194.5	<.002	<.005	<.005	0.010	0.03	<.02	<.005	38.5	0.76	<.002	11	<.005	<.04	<.02	185	<.03	5.43	0.815	<.005	<.005	<.03	<.01
BH13A																													
BH13B	<.003	0.05	<.02	0.020	0.003	<.04	145.0	<.002	<.005	<.005	<.002	0.51	<.02	<.005	44.4	0.47	<.002	19	0.005	<.04	<.02	140	<.03	6.14	0.720	<.005	<.005	<.03	<.01
BH14A	<.003	0.62	<.02	0.080	0.012	<.04	238.0	<.002	<.005	<.005	0.015	0.38	<.02	<.005	102	0.01	<.002	31	0.014	0.11	<.02	342	<.03	8.44	1.763	0.006	<.005	<.03	0.01
BH14B	<.003	0.77	<.02	0.072	0.009	<.04	313.7	<.002	<.005	<.005	0.011	0.15	<.02	<.005	94.7	0.02	<.002	21	<.005	<.04	<.02	291	<.03	7.07	1.688	<.005	<.005	<.03	0.03
BH15A																													
BH15B																													
BH15C																													
BH16A																													
BH16B																													
BH16C																													
1A	<.003	0.43	<.02	0.049	0.011	<.04	327.6	<.002	<.005	<.005	0.006	<.01	<.02	<.005	130.9	0.29	0.430	17	0.049	<.04	<.02	417	<.03	8.81	1.156	0.008	<.005	<.03	0.12
1B	<.003	0.52	<.02	0.046	0.010	<.04	219.0	<.002	<.005	<.005	0.010	0.98	<.02	<.005	52.0	0.02	<.002	57	0.006	<.04	<.02	293	<.03	8.08	0.730	0.008	<.005	<.03	<.01
2A	<.003	0.87	<.02	0.086	0.012	<.04	353.9	<.002	<.005	0.007	0.039	0.10	<.02	<.005	104.0	0.81	<.002	18	0.008	<.04	<.02	458	<.03	6.45	1.357	0.017	0.006	<.03	0.07
2B	<.003	0.46	<.02	0.102	0.003	<.04	214.1	<.002	<.005	<.005	0.090	8.68	<.02	<.005	77.8	1.15	<.002	14	<.005	<.04	<.02	283	<.03	8.33	0.762	<.005	<.005	<.03	0.14
3	<.003	0.21	<.02	0.094	0.008	<.04	247.6	<.002	<.005	<.005	<.002	24.45	<.02	<.005	104.8	1.56	<.002	21	<.005	<.04	<.02	314	<.03	7.77	1.035	<.005	<.005	<.03	0.08
96-6	<.003	0.06	<.02	0.059	0.003	<.04	67.4	0.003	<.005	<.005	0.008	3.51	<.02	<.005	22.7	0.31	<.002	10	0.031	<.04	<.02	52	<.03	10.32	0.304	<.005	<.005	<.03	0.64
96-7	<.003	0.91	<.02	0.104	0.008	<.04	256.5	<.002	<.005	<.005	<.002	1.88	<.02	<.005	48.8	0.21	<.002	17	<.005	<.04	<.02	240	<.03	8.32	0.644	0.028	<.005	<.03	<.01
96-8A	<.003	0.48	<.02	0.088	0.010	<.04	486.8	<.002	<.005	<.005	0.012	0.08	<.02	<.005	236.5	1.94	<.002	37	0.103	<.04	0.03	776	<.03	8.30	2.348	<.005	<.005	<.03	16.10
96-8B	<.003	1.08	<.02	0.186	0.025	<.04	632.3	<.002	<.005	<.005	0.026	0.40	<.02	<.005	232.6	9.28	<.002	47	0.046	0.10	0.65	842	0.31	10.37	2.202	0.016	<.005	<.03	2.37
P81-4 SHALLOW																													
P81-4 DEEP	<.003	1.09	<.02	0.085	0.016	<.04	148.1	<.002	0.03	<.005	0.033	108.63	<.02	<.005	34.6	20.64	<.002	81	0.036	<.04	<.02	205	<.03	10.63	0.370	0.027	<.005	<.03	0.45

FARO WATER QUALITY DATA

OCTOBER 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M³/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	mg/L Cyanide	Metals
X2	October 21	7.58	0	192	Frozen	<5	16	<.05	0.048	
X3	October 21	7.60	0	173	Frozen	<5	16	<.05	<.001	S
X4 Weekly	October 7	7.55	N/A	1011	0.0214	<5	554	0.18	0.057	E
	October 15	7.84	3.5	798	0.0429	<5	460	0.26	0.039	E
	October 21	7.00	2.5	852	0.0429	<5	496	0.23	<.001	
	October 29	7.91	0	843	0.0309	<5	450	0.21	0.027	A
X6 Weekly	October 7	7.89	4.1	1203	0.0910	<5	457	0.26	0.005	T
	October 15	7.83	3.0	848	0.0910	<5	395	0.35	<.001	A
	October 21	7.34	2.0	874	0.0910	<5	437	0.33	<.001	C
	October 29	8.09	0	876	0.0910	<5	378	0.42	<.001	H
X10	October 21	7.84	0	208	Frozen	<5	20	<.05	<.001	D
X11	October 7	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0244					
	October 15				0.0244					I
	October 21				0.0214					C
	October 29				0.0201					P
X12	October 7	Weekly Flow &	Semi Annual Sample (May & Sept)		0.0083					
	October 15				0.0083					R
	October 21				0.0083					E
	October 29				0.0083					S
X13 Weekly	October 7	7.48	5.1	1166	0.0613	N/A	N/A	N/A	N/A	U
	October 15	7.43	4.5	955	0.0613	<5	500	0.06	0.014	L
	October 21	7.13	0.5	983	0.0613	7	390	0.70	<.001	T
	October 29	7.43	0	972	0.0531	<5	422	0.01	<.001	S
X14	October 21	7.47	0	519	Oct 2, 1.523	<5	126	0.11	<.001	
X22B	October 21	N/A	N/A	981	Avg 0.40 @ 25% solids	<5	631	0.87	3.589	
X22C	Main Pit at Point of Discharge									
X23	October 21	6.88	0	6300	1.5 L/sec	<5	2407	0.37	<.001	
						Acidity				
				Alkalinity mg/L		pH 4.5	pH 8.3			
X28	October 31	6.60	N/A	379	N/A	<1	8	1840	N/A	N/A	

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS; Due to an oversite the request for several parameters were overlooked at weekly site X13, on October 7.

SEE ATTACHED ICP RESULTS

FARO WATER QUALITY DATA

CONTINUED FOR OCTOBER 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	M³/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Metals
R4	RWS	Quarterly (Mar, June, Sept. & Dec.)													SEE ICP DATA
R5	SEEP	Quarterly (Mar, June, Sept. & Dec.)													
R6		Quarterly (Mar, June, Sept. & Dec.)													
R7	QUARRY	October 24	8.82		0.0	173	Continuous	<3	10	< .05	<1	1	82	1.76	
R8	ANVIL	October 24	8.88		0.0	171	N/Flow	<3	9	< .05	<1	1	78	N/A	
R9		October 24	8.86		0.0	186	N/Flow	<3	14	< .05	<1	1	72	1.81	
R10		October 24	8.88		0.0	186	N/Flow	<3	14	< .05	<1	2	74	N/A	

Site		Date	In-Situ pH	Lab pH	Temp. oC	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Cyanide	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16A	PEEL	Semi Annual (May & Sept)					5.37										SEE ATTACHED ICP RESULTS
X16B		Semi Annual (May & Sept)					28.99										
X17A	ZONE	Semi Annual (May & Sept)					8.06										
X17B	MEC	Semi Annual (May & Sept)					24.60										
X18A	TRE	Semi Annual (May & Sept)					9.29										
X18B	ROSS	Semi Annual (May & Sept)					10.70										
X19		Semi Annual (May & Sept)					9.79										
X20		Semi Annual (May & Sept)					3.40										
X21A-96	SEEP	Semi Annual (May & Sept)					9.22										
X21B-96	CBL	Semi Annual (May & Sept)					15.43										
X21C-96	HKJ	Semi Annual (May & Sept)					30.18										
P81-4	MDG	Semi Annual (May & Sept)					11.10 Below ground										
P81-4	HT	Semi Annual (May & Sept)					28.80 Below ground										
X24A-96 NORTH	PHI	Semi Annual (May & Sept)					5.68										
X24B-96 NORTH	IJ	Semi Annual (May & Sept)					10.80										
X24C-96 NORTH	OADA	Semi Annual (May & Sept)					15.87										
X24D-96 NORTH	MBAM	Semi Annual (May & Sept)					28.22										
X25A-96 SOUTH	EEM	Semi Annual (May & Sept)					9.85										
X25B-96 SOUTH	SEH	Semi Annual (May & Sept)					19.80										
1A	INDU	Semi Annual (May & Sept)					12.80										
1B	STRE	Semi Annual (May & Sept)					5.37										
2A	AMPH	Semi Annual (May & Sept)					8.04										
2B	EDIA	Semi Annual (May & Sept)					10.80										
3	TE	Semi Annual (May & Sept)					6.56										
Above Rock Dam 96-6		Semi Annual (May & Sept)					20.85										
Main Rock Dump 96-7		Semi Annual (May & Sept)					9.90										
Org Faro Cr. Channel 96-8A		Semi Annual (May & Sept)					4.87										
96-8B		Semi Annual (May & Sept)					9.30										

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN88-001

All data that is indicated in black is not a requirement of the License

BH SERIES WATER QUALITY DATA

OCTOBER 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	October 24	5.86	N/A	N/A	492	5.18	N/A	131	N/A	145	<1	41	Not enough sample for CN and NH3.	SEE ATTACHED ICP RESULTS
BH2	October 24	5.88	N/A	N/A	764	5.55	N/A	472	<.05	122	<1	33		
BH4	October 24	4.62	N/A	N/A	748	3.20	N/A	458	0.43	<1	14	251		
BH5	Semi Annual (May & Sept)					8.33								
BH6	Semi Annual (May & Sept)					6.55								
BH7A	Semi Annual (May & Sept)					9.00								
BH7B	Semi Annual (May & Sept)					6.78								
BH8	Semi Annual (May & Sept)					20.90								
BH9	Semi Annual (May & Sept)					N/T								
BH10A	Semi Annual (May & Sept)					34.17								
BH10B	Semi Annual (May & Sept)					52.92								
BH11	Semi Annual (May & Sept)													
BH12A	Semi Annual (May & Sept)					2.85								
BH12B	Semi Annual (May & Sept)					8.05								
BH13A	Semi Annual (May & Sept)					3.64								
BH13B	Semi Annual (May & Sept)					4.25								
BH14A	Semi Annual (May & Sept)					6.22								
BH14B	Semi Annual (May & Sept)					10.00								
BH15A	Semi Annual (May & Sept)													
BH15B	Semi Annual (May & Sept)													
BH15C	Semi Annual (May & Sept)													
BH16A	Semi Annual (May & Sept)													
BH16B	Semi Annual (May & Sept)													
BH16C	Semi Annual (May & Sept)													

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS;

FARO WATER QUALITY ICP RESULTS FOR OCTOBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License INSB-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	<.003	0.17	<.02	0.075	0.005	<.04	29.5	<.002	<.005	<.005	0.049	0.27	<.02	<.005	8.1	0.08	<.002	4	<.005	<.04	<.02	5	<.03	5.60	0.144	<.005	<.005	<.03	0.09
X3	<.003	0.05	<.02	0.070	<.001	<.04	27.0	<.002	<.005	<.005	0.027	0.44	<.02	<.005	5.3	0.03	<.002	4	<.005	<.04	<.02	5	<.03	4.88	0.141	<.005	<.005	<.03	0.07
X4 Oct 7	<.003	0.05	<.02	0.070	0.000	<.04	142.6	<.002	0.000	<.005	0.009	0.15	<.02	<.005	27.3	5.02	<.002	19	0.009	0.13	<.02	160	<.03	2.47	0.417	<.005	<.005	<.03	5.60
X4 Oct 15	<.003	0.05	<.02	0.051	0.007	<.04	130.8	0.002	0.020	<.005	0.032	0.11	<.02	<.005	28.9	4.70	<.002	16	0.018	0.23	<.02	154	<.03	2.47	0.460	<.005	<.005	<.03	5.30
X4 Oct 21	<.003	0.05	<.02	0.051	0.004	<.04	143.8	0.000	0.040	<.005	0.032	0.45	<.02	<.005	30.5	5.45	<.002	20	0.037	0.19	0.02	187	<.03	2.73	0.493	<.005	<.005	<.03	5.86
X4 Oct 29	<.003	0.05	<.02	0.074	0.005	<.04	134.3	0.008	0.023	<.005	0.028	1.25	<.02	<.005	29.0	5.10	<.002	17	0.018	0.27	<.02	154	<.03	2.93	0.468	<.005	<.005	<.03	4.93
X6 Oct 7	<.003	0.05	<.02	0.009	0.003	<.04	141.5	<.002	<.005	<.005	0.009	0.23	<.02	<.005	22.3	4.33	<.002	33	<.005	<.04	<.02	139	<.03	4.22	0.393	<.005	<.005	<.03	0.18
X6 Oct 15	<.003	0.05	<.02	0.037	0.008	<.04	143.2	<.002	0.014	<.005	0.026	0.18	<.02	<.005	25.2	4.53	<.002	34	<.005	0.11	<.02	135	<.03	4.45	0.451	<.005	<.005	<.03	0.20
X6 Oct 21	<.003	0.05	<.02	0.055	0.005	<.04	152.8	<.002	0.027	<.005	0.038	0.43	<.02	<.005	28.0	5.08	<.002	38	0.013	0.23	<.02	146	<.03	4.82	0.495	<.005	<.005	<.03	0.30
X6 Oct 29	<.003	0.05	0.02	0.048	0.004	<.04	135.2	0.002	0.017	<.005	0.025	0.65	<.02	<.005	24.2	4.98	<.002	33	<.005	0.22	<.02	128	<.03	4.81	0.429	<.005	<.005	<.03	0.22
X10	<.003	0.05	<.02	0.046	<.001	<.04	29.8	<.002	<.005	<.005	0.024	0.08	<.02	<.005	6.9	0.03	<.002	4	<.005	<.04	<.02	5	<.03	4.52	0.143	<.005	<.005	<.03	0.08
X11	Semi Annual (May & Sept)																												
X12	Semi Annual (May & Sept)																												
X13 Oct 7	<.003	0.05	<.02	0.190	0.008	<.04	175.7	<.002	<.005	<.005	<.002	0.00	<.02	<.005	31.1	7.17	<.002	75	<.005	<.04	<.02	188	<.03	7.76	0.495	<.005	<.005	<.03	0.01
X13 Oct15	<.003	0.05	<.02	0.130	0.007	<.04	185.7	<.002	0.028	<.005	0.028	2.52	<.02	<.005	34.1	7.61	<.002	47	0.007	0.24	<.02	153	<.03	6.82	0.557	<.005	<.005	<.03	0.02
X13 Oct 21	<.003	0.05	<.02	0.099	0.005	<.04	154.2	<.002	0.025	<.005	0.034	2.08	<.02	<.005	29.3	6.43	<.002	44	0.009	0.10	<.02	131	<.03	6.60	0.470	<.005	<.005	<.03	0.03
X13 Oct 29	<.003	0.05	<.02	0.130	0.006	<.04	161.0	<.002	0.014	<.005	0.027	3.55	<.02	<.005	30.7	6.83	<.002	47	<.005	0.28	<.02	130	<.03	7.20	0.499	<.005	<.005	<.03	0.02
X14	<.003	0.05	<.02	0.071	0.003	<.04	83.8	<.002	<.005	<.005	0.030	0.84	<.02	<.005	12.80	1.44	<.002	13	<.005	0.15	<.02	34	<.03	4.60	0.236	<.005	<.005	<.03	0.09
X15A	Semi Annual Sample (May & Sept)																												
X15B	Semi Annual Sample (May & Sept)																												
X17A	Semi Annual Sample (May & Sept)																												
X17B	Semi Annual Sample (May & Sept)																												
X18A	Semi Annual Sample (May & Sept)																												
X18B	Semi Annual Sample (May & Sept)																												
X19	Semi Annual Sample (May & Sept)																												
X20	Semi Annual Sample (May & Sept)																												
X21A	Semi Annual Sample (May & Sept)																												
X21B	Semi Annual Sample (May & Sept)																												
X21C	Semi Annual Sample (May & Sept)																												
X22B	<.003	0.05	<.02	0.037	0.004	<.04	128.9	0.01	0.043	<.005	0.047	0.24	<.02	<.005	45.1	3.28	0.019	37	0.077	0.29	<.02	178	<.03	2.86	0.241	0.018	<.005	<.03	3.33
X22C	Main Pit s' Point of Discharge																												
X23	< 003	0.07	<.02	0.098	0.018	<.04	531.8	0.22	0.212	< 005	0.049	0.88	<.02	< 005	315.7	18.49	< 002	57	0.272	<.04	<.02	8 23	<.03	8.42	3.039	0 012	0 008	<.03	28.19
X24A	Semi Annual Sample (May & Sept)																												
X24B	Semi Annual Sample (May & Sept)																												
X24C	Semi Annual Sample (May & Sept)																												
X24D	Semi Annual Sample (May & Sept)																												
X25A	Semi Annual Sample (May & Sept)																												
X25B	Semi Annual Sample (May & Sept)																												
X26	0.023	0.84	0.03	0.062	0.018	<.04	445.1	0.032	0.598	0.014	0.031	45.99	<.02	0.024	188.1	12.64	0.004	44	1.148	0.12	0.08	808	0.10	7.23	2.406	0.018	0.022	<.03	66.80

FARO WATER QUALITY ICP RESULTS CONTINUED FOR OCTOBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN93-001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept, & Dec)																												
R5	Quarterly (Mar, June, Sept, & Dec)																												
R6	Quarterly (Mar, June, Sept, & Dec)																												
R7	Quarterly (Mar, June, Sept, & Dec)																												
R8	<.003	0.06	<.02	0.039	<.001	<.04	23.8	<.002	<.005	<.005	0.025	0.40	<.02	<.005	4.8	0.04	<.002	4	.008	0.11	<.02	3	<.03	5.29	0.114	<.005	<.005	<.03	0.02
R9	<.003	0.06	<.02	0.043	<.001	<.04	25.0	<.002	<.005	<.005	0.022	0.31	<.02	<.005	5.0	0.02	.003	4	<.005	0.10	<.02	2	<.03	4.92	0.123	<.005	<.005	<.03	0.03
R10	<.003	0.06	<.02	0.059	<.001	<.04	27.7	<.002	<.005	<.005	0.038	0.13	0.02	<.005	5.7	0.02	<.002	4	<.005	<.04	<.02	2	<.03	5.87	0.134	<.005	<.005	<.03	0.03
BH1	<.003	0.14	<.02	0.068	0.002	<.04	63.0	<.002	0.010	<.005	0.006	0.18	<.02	<.005	14.7	1.13	<.002	10	0.006	<.04	<.02	38	<.03	7.14	0.306	<.005	<.005	<.03	0.62
BH2	<.003	0.06	<.02	0.145	0.003	<.04	121.3	0.031	<.005	<.005	0.007	0.46	<.02	<.005	41.0	0.10	<.002	10	0.106	0.27	<.02	161	<.03	7.17	0.669	<.005	<.005	<.03	12.26
BH4	<.003	2.09	<.02	0.058	0.008	<.04	120.0	0.027	0.111	<.005	0.029	0.16	<.02	<.005	27.8	1.11	<.002	9	0.122	0.22	0.03	166	<.03	9.41	0.575	<.005	<.005	<.03	10.12
BH5	Semi Annual (May & Sept)																												
BH6	Semi Annual (May & Sept)																												
BH7A	Semi Annual (May & Sept)																												
BH7B	Semi Annual (May & Sept)																												
BH8	Semi Annual (May & Sept)																												
BH9	Semi Annual (May & Sept)																												
BH10A	Semi Annual (May & Sept)																												
BH10B	Semi Annual (May & Sept)																												
BH11	Semi Annual (May & Sept)																												
BH12A	Semi Annual (May & Sept)																												
BH12B	Semi Annual (May & Sept)																												
BH13A	Semi Annual (May & Sept)																												
BH13B	Semi Annual (May & Sept)																												
BH14A	Semi Annual (May & Sept)																												
BH14B	Semi Annual (May & Sept)																												
BH15A	Semi Annual (May & Sept)																												
BH15B	Semi Annual (May & Sept)																												
BH15C	Semi Annual (May & Sept)																												
BH16A	Semi Annual (May & Sept)																												
BH16B	Semi Annual (May & Sept)																												
BH16C	Semi Annual (May & Sept)																												
1A	Semi Annual (May & Sept)																												
1B	Semi Annual (May & Sept)																												
2A	Semi Annual (May & Sept)																												
2B	Semi Annual (May & Sept)																												
3	Semi Annual (May & Sept)																												
98-6	Semi Annual (May & Sept)																												
98-7	Semi Annual (May & Sept)																												
98-8A	Semi Annual (May & Sept)																												
98-8B	Semi Annual (May & Sept)																												
P81-4 SHALLOW	Semi Annual (May & Sept)																												
P81-4 DEEP	Semi Annual (May & Sept)																												

FARO WATER QUALITY DATA

NOVEMBER 1996
NORMAL OPERATIONS

Site	Date	pH	Temp. °C	us/cm Conductivity	M^3/Sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	mg/L Cyanide	Metals
X2	November 21	7.44	0	202	N/A	<5	27	0.01	<.001	
X3	November 20	8.20	0	177	N/A	<5	21	0.02	<.001	S
X4 Weekly	November 4	N/A	N/A	934	0.031	<5	568	0.19	0.069	E
	November 12	7.50	0	997	0.028	<5	531	0.12	0.054	E
	November 20	7.61	0	893	0.024	<5	550	0.12	0.039	
X5 Weekly	November 4	7.71	0	997	0.070	<5	476	0.25	<.001	T
	November 12	7.33	0	961	0.070	<5	498	0.21	0.007	A
	November 20	7.50	0	954	0.070	<5	509	0.02	<.001	C
	November 25	7.13	0	947	0.070	<5	469	0.23	<.001	H
X10	November 21	Every Second Month (Jan, Mar, May, July, Sept, Nov.)								D
X11	November 4	Monthly Flow & Semi Annual Sample (May & Sept)			0.020					
	November 12				0.020					I
	November 20				0.020					C
	November 25				0.020					P
X12	November 4	Monthly Flow & Semi Annual Sample (May & Sept)			0.008					
	November 12				0.008					R
	November 20				0.008					E
	November 25				0.008					S
X13 Weekly	November 4	7.37	0	1164	0.053	6	509	0.67	0.005	U
	November 12	7.49	0	1098	0.053	<5	475	0.45	0.015	L
	November 20	7.42	0	999	0.061	6	498	0.58	<.001	T
	November 25	7.17	0	773	0.052	<5	501	0.55	0.006	S
X14	November 20	7.60	0	605	Continuous	<5	268	0.17	<.001	
X22B	November 21	7.51	2.0	1038	Avg 0.46 @ 25% solids	<5	636	0.82	1.060	
X22C	Main Pit at Point of Discharge									
X23	November 21	7.17	0	5956	1.5 L/sec	<5	2684	0.20	< 001	
				Alkalinity mg/L		Acidity pH 4.5	Acidity pH 8.3			
X28	November 21	Not pumping								

N/A Data not obtained or meter malfunction.

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS; Syphon discharge discontinued at site X4 on the afternoon of November 20

FARO WATER QUALITY DATA

CONTINUED FOR NOVEMBER 1996

Site		Date	In-Situ pH	Lab pH	Temp. °C	uS/cm Conductivity	M³/sec. Flow	mg/L NFR Susp. Solids	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Chloride	Comments	Metals
R4	WATER QUALITY AT AUGUSTINE SEEPAGE AND ANVIL CREEK	Quarterly (Mar, June, Sept, & Dec)														SEE ICP DATA
R5		Quarterly (Mar, June, Sept, & Dec)														
R6		Quarterly (Mar, June, Sept, & Dec)														
R7		November 21	7.30		0	273	Continuous	6	5	0.01	<1	4	82	0.05		
R8		November 21	7.77		0	N/A	N/Req	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No analysis due to leaking sample bottle	
R9		November 21	7.56		0	279	N/Req	6	17	0.01	<1	4	72	0.06		
R10		November 21	7.65		0	103	N/Req	<5	13	0.01	<1	1	74	0.06		

Site		Date	In-Situ pH	Lab pH	Temp. °C	uS/cm Conductivity	[m] Depth	[m] SWL	mg/L Cyanide	mg/L Sulphate	mg/L NH_3 - N	Acidity pH 4.5	Acidity pH 8.3	mg/L Alkalinity	mg/L Hardness	Comments	Metals
X16A		Semi Annual (May & Sept)					5.37										
X16B	PEEL ZONE COMPLEX TEARS	Semi Annual (May & Sept)					28.99										SEE ATTACHED ICP RESULTS
X17A	BELOW CROWN ASSESSMENT	Semi Annual (May & Sept)					6.06										
X17B		Semi Annual (May & Sept)					24.80										
X18A		Semi Annual (May & Sept)					9.29										
X18B		Semi Annual (May & Sept)					10.70										
X19		Semi Annual (May & Sept)					9.79										
X20		Semi Annual (May & Sept)					3.40										
X21A-96	SEEP COMBINED WITH SEEP	Semi Annual (May & Sept)					9.22										
X21B-96		Semi Annual (May & Sept)					15.43										
X21C-96		Semi Annual (May & Sept)					30.18										
P81-74		Semi Annual (May & Sept)					11.10 Below ground										
P81-74		Semi Annual (May & Sept)					26.60 Below ground										
X22A-96 NORTH	PIT EAST ZONE	Semi Annual (May & Sept)					5.88										
X22B-96 NORTH		Semi Annual (May & Sept)					10.80										
X22C-96 NORTH	DAM BACKFILL	Semi Annual (May & Sept)					15.87										
X22D-96 NORTH		Semi Annual (May & Sept)					28.22										
X26A-96 SOUTH	SEEP FROM SEEP	Semi Annual (May & Sept)					9.85										
X26B-96 SOUTH		Semi Annual (May & Sept)					19.80										
1A	JUNCTION BOREHOLES	Semi Annual (May & Sept)					12.80										
1B		Semi Annual (May & Sept)					5.37										
2A		Semi Annual (May & Sept)					8.04										
2B		Semi Annual (May & Sept)					10.80										
3		Semi Annual (May & Sept)					6.56										
Above Rock Drain 96-6		Semi Annual (May & Sept)					20.85										
Main Rock Dump 96-7		Semi Annual (May & Sept)					9.90										
Old Faro Cr Channel 96-8A		Semi Annual (May & Sept)					4.87										
96-8B		Semi Annual (May & Sept)					9.30										

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License N88-001

All data that is indicated in black is not a requirement of the License

BH SERIES WATER QUALITY DATA

NOVEMBER 1996

PIEZOMETERS ON THE NORTH FORK OF ROSE CREEK

Site	Date	In-Situ pH	Lab pH	Temp. °C	us/cm Conductivity	(m) Depth	(m) SWL	mg/L Sulphate	mg/L NH3-N	mg/L Alkalinity	Acidity pH 4.5	Acidity pH 8.3	Comments	Metals
BH1	November 21	Frozen												SEE ATTACHED ICP RESULTS
BH2	November 21	Frozen												
BH4	November 21	Frozen												
BH5	Semi Annual (May & Sept)					8.33								
BH6	Semi Annual (May & Sept)					6.55								
BH7A	Semi Annual (May & Sept)					9.00								
BH7B	Semi Annual (May & Sept)					6.78								
BH8	Semi Annual (May & Sept)					20.90								
BH9	Semi Annual (May & Sept)					N/T								
BH10A	Semi Annual (May & Sept)					34.17								
BH10B	Semi Annual (May & Sept)					52.92								
BH11	Semi Annual (May & Sept)													
BH12A	Semi Annual (May & Sept)					2.85								
BH12B	Semi Annual (May & Sept)					8.05								
BH13A	Semi Annual (May & Sept)					3.64								
BH13B	Semi Annual (May & Sept)					4.25								
BH14A	Semi Annual (May & Sept)					6.22								
BH14B	Semi Annual (May & Sept)					10.00								
BH15A	Semi Annual (May & Sept)													
BH15B	Semi Annual (May & Sept)													
BH15C	Semi Annual (May & Sept)													
BH16A	Semi Annual (May & Sept)													
BH16B	Semi Annual (May & Sept)													
BH16C	Semi Annual (May & Sept)													

N/A Data not obtained or meter malfunction.

MONTHLY QUARTERLY SEMI ANNUAL

As Indicated in Schedule A of Water Use License IN89-001

All data that is indicated in black is not a requirement of the License

COMMENTS:

FARO WATER QUALITY ICP RESULTS FOR NOVEMBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL
As indicated in Schedule A of Water Use License #48-001
All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
X2	< 003	<.05	< 02	0 07	< 001	< 04	30 1	< 002	< 005	<.005	<.002	0 20	< 02	< 005	6 3	0 04	< 002	2	< 005	< 04	< 02	5	< 03	3 72	0 147	< 005	< 005	< 03	0 06
X3	< 003	<.05	< 02	0 053	< 001	< 04	26 9	< 002	< 005	< 005	<.002	0 14	< 02	< 005	5 4	0 03	< 002	1	< 005	< 04	< 02	6	< 03	3 00	0 141	< 005	< 005	< 03	0 04
X4 Nov 4	< 003	0 05	< 02	0 076	0 005	< 04	138 8	0 004	0 01	< 005	0 009	0 22	< 02	< 005	29 0	5 23	< 002	19	0 016	< 04	< 02	183	< 03	2 57	0 469	< 005	< 005	< 03	5 35
X4 Nov 12	< 003	0 05	< 02	0 03	0 010	< 04	135 9	0 006	0 021	< 005	0 010	0 27	< 02	< 005	29 6	5 15	< 002	19	< 005	< 04	< 02	175	< 03	2 56	0 482	< 005	< 005	< 03	5 53
X4 Nov 20	< 003	< 05	< 02	0 06	0 005	< 04	136 2	0 009	0 014	< 005	0 005	1 46	< 02	< 005	28 8	5 12	< 002	17	0 024	0 09	< 02	177	< 03	1 45	0 473	< 005	< 005	< 03	5 59
X5 Nov 4	< 003	0 05	< 02	0 035	0 005	< 04	144 0	< 002	< 005	< 005	0 006	0 40	< 02	< 005	25 3	5 52	< 002	37	< 005	< 04	< 02	154	< 03	4 46	0 446	< 005	< 005	< 03	0 17
X5 Nov 12	< 003	0 05	< 02	0 036	0 006	< 04	149 3	< 002	0 011	< 005	0 009	0 46	< 02	< 005	27 3	5 89	< 002	42	< 005	0 11	< 02	155	< 03	4 68	0 483	< 005	< 005	< 03	0 18
X5 Nov 20	< 003	< 05	< 02	0 08	0 006	< 04	149 3	< 002	0 009	0 005	0 007	0 55	< 02	< 005	28 9	5 97	< 002	37	0 024	< 04	< 02	165	< 03	3 78	0 473	< 005	< 005	< 03	0 10
X5 Nov 25	< 003	0 05	< 02	0 052	0 008	< 04	140 5	< 002	< 005	< 005	0 005	0 47	< 02	< 005	25 2	5 47	< 002	39	< 005	< 04	< 02	160	< 03	3 41	0 447	< 005	< 005	< 03	0 17
X10	Every Second Month (Jan, Mar May, July, Sept Nov)																												
X11	Semi Annual (May & Sept)																												
X12	Semi Annual (May & Sept)																												
X13 Nov 4	< 003	0 05	< 02	0 102	0 006	< 04	166 0	< 002	0 005	< 005	0 007	2 12	< 02	< 005	30 9	7 94	< 002	50	< 005	< 04	< 02	159	< 03	6 85	0 497	< 005	< 005	< 03	< 01
X13 Nov 12	< 003	0 05	< 02	0 119	0 007	< 04	155 9	< 002	0 015	< 005	0 008	2 12	< 02	< 005	29 9	6 58	< 002	52	< 005	< 04	< 02	154	< 03	6 69	0 494	< 005	< 005	< 03	0 01
X13 Nov 20	< 003	< 05	< 02	0 14	0 005	< 04	159 6	< 002	< 002	< 005	< 002	2 23	< 02	< 005	30 2	6 95	< 002	45	< 005	< 04	< 02	162	< 03	5 01	0 501	< 005	< 005	< 03	0 02
X13 Nov 25	< 003	0 05	< 02	0 113	0 007	< 04	161 2	< 002	< 005	< 005	0 004	2 53	< 02	< 005	30 7	6 67	< 002	51	< 005	< 04	< 02	171	< 03	5 77	0 521	< 005	< 005	< 03	0 01
X14	< 003	< 05	< 02	0 07	0 001	< 04	99 0	< 002	< 005	< 005	< 002	1 35	< 02	< 005	19 20	2 99	< 002	24	< 005	< 04	< 02	88	< 03	3 57	0 336	< 005	< 005	< 03	0 10
X15A	Semi Annual Sample (May & Sept)																												
X15B	Semi Annual Sample (May & Sept)																												
X17A	Semi Annual Sample (May & Sept)																												
X17B	Semi Annual Sample (May & Sept)																												
X18A	Semi Annual Sample (May & Sept)																												
X18B	Semi Annual Sample (May & Sept)																												
X19	Semi Annual Sample (May & Sept)																												
X20	Semi Annual Sample (May & Sept)																												
X21A	Semi Annual Sample (May & Sept)																												
X21B	Semi Annual Sample (May & Sept)																												
X21C	Semi Annual Sample (May & Sept)																												
X22B	< 003	< 05	0 04	0 050	0 003	< 04	130 3	0 006	0 320	< 005	0 023	0 16	< 02	< 005	45 3	3 23	0 003	40	0 094	< 04	0 02	213	< 03	1 76	0 257	0 018	< 005	< 03	3 70
X22C	Main Pit at Point of Discharge																												
X23	0 031	0 19	< 02	0 12	0 016	0 12	478 5	0 011	0 119	0 005	0 021	0 17	< 02	< 005	297 5	18 73	< 002	58	0 287	< 04	< 02	895	< 03	6 71	2 831	0 007	< 005	< 03	24 87
X24A	Semi Annual Sample (May & Sept)																												
X24B	Semi Annual Sample (May & Sept)																												
X24C	Semi Annual Sample (May & Sept)																												
X24D	Semi Annual Sample (May & Sept)																												
X25A	Semi Annual Sample (May & Sept)																												
X25B	Semi Annual Sample (May & Sept)																												
X26																													

FARO WATER QUALITY ICP RESULTS CONTINUED FOR NOVEMBER 1996

TOTAL (ppm) & DISSOLVED (ppm)

WEEKLY MONTHLY 2ND MONTH QUARTERLY SEMI ANNUAL

As indicated in Schedule A of Water Use License INAC 001

All data that is indicated in black is not a requirement of the License

Site	AG	AL	AS	BA	BE	BI	CA	CD	CO	CR	CU	FE	HG	LA	MG	MN	MO	NA	NI	P	PB	S	SB	SI	SR	TI	V	W	ZN
R4	Quarterly (Mar, June, Sept. & Dec.)																												
R5	Quarterly (Mar, June, Sept. & Dec.)																												
R6	Quarterly (Mar, June, Sept. & Dec.)																												
R7	< 003	< 05	< 02	< 001	< 001	< 04	29 2	< 002	< 005	< 005	0 025	0 12	< 02	< 005	5 8	< 01	< 002	2	< 005	< 04	< 02	3	< 03	4 00	0 137	< 005	< 005	< 03	0 01
R8	< 003	< 05	< 02	0 003	< 001	< 04	29 3	< 002	< 005	< 005	0 025	0 19	< 02	< 005	6 0	0 04	< 002	2	< 005	< 04	< 02	2	< 03	4 12	0 142	< 005	< 005	< 03	< 01
R9	< 003	< 05	< 02	0 003	< 001	< 04	33 1	< 002	< 005	< 005	0 022	0 14	< 02	< 005	6 9	0 02	< 002	2	< 005	< 04	< 02	2	< 03	4 49	0 016	< 005	< 005	< 03	0 01
R10	< 003	< 05	< 02	0 003	< 001	< 04	30 8	< 002	< 005	< 005	0 036	0 15	< 02	< 005	6 4	0 02	< 002	2	< 005	< 04	< 02	5	< 03	4 16	0 149	< 005	< 005	< 03	< 01
BH1	Frozen																												
BH2	Frozen																												
BH4	Frozen																												
BH5	Semi Annual (May & Sept)																												
BH6	Semi Annual (May & Sept)																												
BH7A	Semi Annual (May & Sept)																												
BH2B	Semi Annual (May & Sept)																												
BH8	Semi Annual (May & Sept)																												
BH9	Semi Annual (May & Sept)																												
BH10A	Semi Annual (May & Sept)																												
BH10B	Semi Annual (May & Sept)																												
BH11	Semi Annual (May & Sept)																												
BH12A	Semi Annual (May & Sept)																												
BH12B	Semi Annual (May & Sept)																												
BH13A	Semi Annual (May & Sept)																												
BH13B	Semi Annual (May & Sept)																												
BH14A	Semi Annual (May & Sept)																												
BH14B	Semi Annual (May & Sept)																												
BH15A	Semi Annual (May & Sept)																												
BH15B	Semi Annual (May & Sept)																												
BH15C	Semi Annual (May & Sept)																												
BH16A	Semi Annual (May & Sept)																												
BH16B	Semi Annual (May & Sept)																												
BH16C	Semi Annual (May & Sept)																												
1A	Semi Annual (May & Sept)																												
1B	Semi Annual (May & Sept)																												
2A	Semi Annual (May & Sept)																												
2B	Semi Annual (May & Sept)																												
3	Semi Annual (May & Sept)																												
96-6	Semi Annual (May & Sept)																												
96-7	Semi Annual (May & Sept)																												
96-8A	Semi Annual (May & Sept)																												
96-8B	Semi Annual (May & Sept)																												
P81-4 SHALLOW	Semi Annual (May & Sept)																												
P81-4 DEEP	Semi Annual (May & Sept)																												

FARO WATER QUALITY DATA FOR DECEMBER 1996

NORMAL OPERATIONS

STATION: X2, N Fork of Rose Creek u/s of mine access road

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.4	0	274		6	13	0.11	<.001

STATION: X3, S Fork Rose Creek at the pumphouse reservoir

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.48	0	261		<5	21	<0.05	<.001

STATION: X4, Intermediate Dam decant

No Flow

STATION: X5, Cross Valley Dam decant

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L	BIOASSAY LC50
Dec-2-96	7.09	0	1075	0.07	<5	455	0.49	<.001	100%
Dec-11-96	7.18	0	1021	0.07	7	176	0.21	<.001	
Dec-19-96	7.11	1.5	1256	0.07	<5	486	0.24	<.001	
Dec-23-96	7.4	0	1259	0.07	<5	436	0.73	<.001	
Dec-30-96	7.41	0	1269	0.07	<5	434	0.55	<.001	

STATION: X10, Rose Creek Diversion Channel below weirs

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.75	0	364		6	40	<0.05	<.001

STATION: X11, Seepage from north toe of Cross Valley Dam

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.23	0	1725	0.010	6	706	0.89	<.001

STATION: X12, Seepage from south toe of Cross Valley Dam

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.15	0	1174	0.0083	7	388	0.75	<.001

STATION: X13, Combined seepage from Cross Valley Dam

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L	BIOASSAY LC50
Dec-2-96		0	1423	0.0520	7	522	0.96	<.001	100%
Dec-11-96	7.36	0	1053	0.0453	<5	164	0.68	<.001	
Dec-19-96	7.23	0	1427	0.0453	8	513	0.84	<.001	
Dec-23-96	7.31	0	1355	0.0453	7	470	0.97	<.001	
Dec-30-96	7.27	0	1483	0.0453	<5	433	0.87	<.001	

STATION: X14, Rose Cr downstream of the diversion channel

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.61	0	1136	0.2441	<5	392	0.5	<.001

STATION: X22B, Faro Pit water while filling with tailings

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.51	0	1333	avg 0.43	7	679	0.49	<.001

STATION: X23, Old Faro Creek channel at toe of waste dumps

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	CN-T mg/L
Dec-19-96	7.23	0	1725	0.01	6	706	0.89	<.001

STATION: X26, Zone II Pit water (from production well)
Not pumping

STATION: RA Rose Creek upstream of Anvil Creek
Four times per/year

ANV... RANGE MINING CORPORATION

STATION: R5 Anvil Creek downstream of Rose Creek
Four times per/year

STATION: R5 Anvil Creek upstream of Rose Creek
Four times per/year

STATION: R7, N Fork of Rose Creek above Faro Ck Diversion

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	ACID4.5 mg/L	ACID8.3 mg/L	ALK-T mg/L	CL-T mg/L
Dec-19-96	7.42	0	255	contiuous	<5	19	<0.05	<1	4	69	1.8

STATION: R8, N Fork of Rose Creek 900 m below Faro Ck Div.

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	ACID4.5 mg/L	ACID8.3 mg/L	ALK-T mg/L	CL-T mg/L
Dec-19-96	7.37	0	257	0.2342	<5	16	<0.05	<1	3	68	1.9

STATION: R9, N Fork of Rose Creek adjacent BH1 and BH2

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	ACID4.5 mg/L	ACID8.3 mg/L	ALK-T mg/L	CL-T mg/L
Dec-19-96	7.15	0	271		<5	18	<0.05	<1	3	69	1.7

STATION: R10, North Fork of Rose Creek u/s of rock drain

Date	PH-F pH unit	TEMP deg C	COND-L µS/cm	FLOW m3/sec	TSS mg/L	SO4-T mg/L	NH3-N mg/L	ACID4.5 mg/L	ACID8.3 mg/L	ALK-T mg/L	CL-T mg/L
Dec-19-96	7.24	0	273		<5	15	<0.05	<1	<1	71	2.2

ANVIL RANGE MINING

FARO WATER QUALITY ICP DATA FOR DECEMBER 1996

NORMAL OPERATIONS

STN	DATE	AG-D mg/L	AG-T mg/L	AL-D mg/L	AL-T mg/L	AS-D mg/L	AS-T mg/L	BA-D mg/L	BA-T mg/L	BE-D mg/L	BE-T mg/L	BI-D mg/L	BI-T mg/L	CA-D mg/L	CA-T mg/L	CD-D mg/L	CD-T mg/L
X2	Dec-19-96		< 0.003		0.14		< 0.02		0.112		0.002		< 0.04		36.3		0.002
X3	Dec-19-96		< 0.003		0.05		< 0.02		0.081		0.001		< 0.04		34.2		0.002
X5	Dec-2-96		< 0.003		0.05		< 0.02		0.047		0.006		< 0.04		142.5		0.004
X5	Dec-11-96		< 0.003		1.39		< 0.02		0.124		0.006		< 0.04		147.0		< 0.002
X5	Dec-19-96		< 0.003		0.21		0.10		0.075		0.007		< 0.04		162.2		< 0.002
X5	Dec-23-96		< 0.003		0.10		< 0.02		0.054		0.005		< 0.04		177.2		< 0.002
X5	Dec-30-96		< 0.003		0.08		< 0.02		0.034		< 0.001		< 0.04		181.5		< 0.002
X10	Dec-19-96		< 0.003		0.07		< 0.02		0.120		0.003		< 0.04		48.2		< 0.002
X11	Dec-19-96		< 0.003		0.26		0.15		0.142		0.012		< 0.04		244.1		< 0.002
X12	Dec-19-96		< 0.003		0.24		0.06		0.159		0.009		< 0.04		149.9		< 0.002
X13	Dec-2-96		< 0.003		0.05		< 0.02		0.083		0.006		< 0.04		169.3		< 0.002
X13	Dec-11-96		< 0.003		1.43		< 0.02		0.176		0.005		< 0.04		151.8		< 0.002
X13	Dec-19-96		< 0.003		0.28		0.02		0.140		0.008		< 0.04		193.3		< 0.002
X13	Dec-23-96		< 0.003		0.05		< 0.02		0.110		0.005		< 0.04		207.5		< 0.002
X13	Dec-30-96		< 0.003		0.05		< 0.02		0.105		< 0.001		< 0.04		194.8		< 0.002
X14	Dec-19-96		< 0.003		0.20		< 0.02		0.097		0.006		< 0.04		153.4		< 0.002
X22B	Dec-19-96		< 0.003		0.40		< 0.02		0.274		0.006		< 0.04		153.0		0.006
X23	Dec-19-96		< 0.003		0.05		< 0.02		0.126		0.022		< 0.04		547.5		0.007
R7	Dec-19-96		< 0.003		0.03		< 0.02		0.137		< 0.001		< 0.04		37.1		< 0.002
R8	Dec-19-96		< 0.003		0.05		< 0.02		0.081		< 0.001		< 0.04		36.5		< 0.002
R9	Dec-19-96		< 0.003		0.05		< 0.02		0.088		< 0.001		< 0.04		36.9		< 0.002
R10	Dec-19-96		< 0.003		0.05		< 0.02		0.086		< 0.001		< 0.04		37.9		< 0.002

STN	DATE	CO-D mg/L	CO-T mg/L	CR-D mg/L	CR-T mg/L	CU-D mg/L	CU-T mg/L	FE-D mg/L	FE-T mg/L	HG-D mg/L	HG-T mg/L	LA-D mg/L	LA-T mg/L	MG-D mg/L	MG-T mg/L	MN-D mg/L	MN-T mg/L
X2	Dec-19-96		< 0.005		< 0.005		0.005		0.43		< 0.02		< 0.005		7.8		0.05
X3	Dec-19-96		< 0.005		< 0.005		< 0.002		0.18		< 0.02		< 0.005		7.2		0.04
X5	Dec-2-96		< 0.005		< 0.005		0.005		0.30		< 0.02		< 0.005		25.8		5.50
X5	Dec-11-96		< 0.005		< 0.005		0.009		0.33		< 0.02		< 0.005		27.3		7.11
X5	Dec-19-96		0.007		< 0.005		0.010		0.66		< 0.02		< 0.005		29.5		6.76
X5	Dec-23-96		< 0.005		< 0.005		0.009		0.88		< 0.02		< 0.005		31.4		5.37
X5	Dec-30-96		< 0.005		< 0.005		0.003		1.01		< 0.02		< 0.005		31.9		6.23
X10	Dec-19-96		< 0.005		< 0.005		0.007		0.16		< 0.02		< 0.005		12.3		0.01
X11	Dec-19-96		0.009		< 0.005		0.020		3.65		< 0.02		< 0.005		45.6		12.38
X12	Dec-19-96		< 0.005		< 0.005		0.006		1.90		< 0.02		< 0.005		27.8		5.69
X13	Dec-2-96		< 0.005		< 0.005		0.005		2.06		< 0.02		< 0.005		31.8		6.99
X13	Dec-11-96		< 0.005		< 0.005		0.007		1.54		< 0.02		< 0.005		29.5		7.44
X13	Dec-19-96		< 0.005		< 0.005		0.007		2.87		< 0.02		< 0.005		36.0		8.51
X13	Dec-23-96		< 0.005		< 0.005		0.015		2.59		< 0.02		< 0.005		38.8		6.62
X13	Dec-30-96		< 0.005		< 0.005		0.008		2.00		< 0.02		< 0.005		36.0		6.94
X14	Dec-19-96		< 0.005		0.007		0.005		0.99		< 0.02		< 0.005		29.0		5.41
X22B	Dec-19-96		0.029		< 0.005		0.032		2.33		< 0.02		< 0.005		52.9		3.78
X23	Dec-19-96		0.116		< 0.005		0.030		0.24		< 0.02		< 0.005		339.0		19.65
R7	Dec-19-96		< 0.005		< 0.005		0.002		0.14		< 0.02		< 0.005		7.3		0.02
R8	Dec-19-96		< 0.005		0.010		< 0.002		0.15		< 0.02		< 0.005		7.2		0.01
R9	Dec-19-96		< 0.005		0.008		< 0.002		0.13		< 0.02		< 0.005		7.4		0.02
R10	Dec-19-96		< 0.005		0.007		0.006		0.11		< 0.02		< 0.005		7.7		0.01

STN	DATE	MO-D mg/L	MO-T mg/L	NA-D mg/L	NA-T mg/L	NI-D mg/L	NI-T mg/L	P-D mg/L	P-T mg/L	PB-D mg/L	PB-T mg/L	S-D mg/L	S-T mg/L	SB-D mg/L	SB-T mg/L	SI-D mg/L	SI-T mg/L
X2	Dec-19-96		< 0.002		5		0.006		0.09		0.05		6		< 0.03		4.50
X3	Dec-19-96		< 0.002		4		< 0.005		< 0.04		< 0.02		6		< 0.03		3.60
X5	Dec-2-96		< 0.002		37		0.011		0.06		< 0.02		153		< 0.03		3.50
X5	Dec-11-96		< 0.002		34		0.014		0.06		< 0.02		152		< 0.03		3.40
X5	Dec-19-96		0.004		33		0.028		0.17		< 0.02		161		< 0.03		3.80
X5	Dec-23-96		0.007		36		0.008		0.07		< 0.02		144		< 0.03		5.70
X5	Dec-30-96		< 0.002		34		0.006		< 0.04		< 0.02		144		< 0.03		5.70
X10	Dec-19-96		0.006		4		0.017		0.17		< 0.02		10		< 0.03		3.30
X11	Dec-19-96		0.003		49		0.041		0.28		< 0.02		220		0.04		6.90
X12	Dec-19-96		< 0.002		42		< 0.005		0.09		< 0.02		136		< 0.03		5.60
X13	Dec-2-96		< 0.002		47		< 0.005		0.08		< 0.02		168		< 0.03		5.50
X13	Dec-11-96		< 0.002		43		0.012		0.10		< 0.02		151		< 0.03		4.90
X13	Dec-19-96		< 0.002		45		< 0.005		0.07		< 0.02		166		< 0.03		6.20
X13	Dec-23-96		0.004		47		0.019		0.15		< 0.02		158		< 0.03		8.10
X13	Dec-30-96		< 0.002		35		< 0.005		< 0.04		< 0.02		142		< 0.03		7.80
X14	Dec-19-96		< 0.002		32		< 0.005		0.11		< 0.02		120		< 0.03		4.40
X22B	Dec-19-96		0.011		37		0.108		0.23		0.27		218		0.07		2.00
X23	Dec-19-96		< 0.002		55		0.310		< 0.04		< 0.02		822		< 0.03		7.60
R7	Dec-19-96		< 0.002		5		< 0.005		0.07		< 0.02		6		< 0.03		4.40
R8	Dec-19-96		< 0.002		5		< 0.005		0.05		< 0.02		4		< 0.03		4.40
R9	Dec-19-96		< 0.002		5		< 0.005		< 0.04		< 0.02		4		< 0.03		4.20
R10	Dec-19-96		< 0.002		5		< 0.005		< 0.04		< 0.02		3		< 0.03		4.40

STN	DATE	SR-D mg/L	SR-T mg/L	TI-D mg/L	TI-T mg/L	V-D mg/L	V-T mg/L	W-D mg/L	W-T mg/L	ZN-D mg/L	ZN-T mg/L
X2	Dec-19-96		0.178		0.005		< 0.005		< 0.03		0.12
X3	Dec-19-96		0.177		< 0.005		< 0.005		< 0.03		0.05
X5	Dec-2-96		0.460		< 0.005		< 0.005		< 0.03		0.16
X5	Dec-11-96		1.461		< 0.005		0.012		< 0.03		0.20
X5	Dec-19-96		0.515		< 0.005		< 0.005		< 0.03		0.21
X5	Dec-23-96		0.547		< 0.005		< 0.005		< 0.03		0.15
X5	Dec-30-96		0.551		< 0.005		< 0.005		< 0.03		0.15
X10	Dec-19-96		0.207		< 0.005		0.005		< 0.03		0.09
X11	Dec-19-96		0.749		0.009		< 0.005		< 0.03		0.10
X12	Dec-19-96		0.463		0.006		< 0.005		< 0.03		0.07
X13	Dec-2-96		0.529		< 0.005		< 0.005		< 0.03		0.01
X13	Dec-11-96		1.467		0.005		0.007		< 0.03		0.01
X13	Dec-19-96		0.595		< 0.005		< 0.005		< 0.03		0.05
X13	Dec-23-96		0.628		< 0.005		< 0.005		< 0.03		0.01
X13	Dec-30-96		0.586		< 0.005		< 0.005		< 0.03		0.01
X14	Dec-19-96		0.499		< 0.005		< 0.005		< 0.03		0.12
X22B	Dec-19-96		0.314		0.007		< 0.005		< 0.03		4.26
X23	Dec-19-96		3.254		0.014		< 0.005		< 0.03		27.74
R7	Dec-19-96		0.174		< 0.005		< 0.005		< 0.03		0.04
R8	Dec-19-96		0.170		< 0.005		< 0.005		< 0.03		0.03
R9	Dec-19-96		0.175		< 0.005		< 0.005		< 0.03		0.03
R10	Dec-19-96		0.180		< 0.005		< 0.005		< 0.03		0.06

APPENDIX 3

1996 BIOASSAY RESULTS

Cavendish Analytical Laboratory Ltd.

2225 S. Springer Avenue, Burnaby
British Columbia V5B 3N1
Telephone (604) 299-2560
Fax: 299-6252
Data Line: 299-2491

259-326

DATE: 26 March 1996

REPORT ON: **RAINBOW TROUT BIOASSAY RESULTS**

SAMPLE DESCRIPTION:

Sample Name:	X-5; File no: 0315I
Collection method:	not stated
Amount, Container:	2 X 22L plastic containers
Physical description:	Clear, colourless
Date collected:	12 March 1996
Date, time received:	15 March 1996; 1525 hrs.
Shipping details:	By ground via Dan Foss Couriers
Received by:	KW
Date, time tested:	16 March 1996; 0930 hrs.
Set up technician:	KW

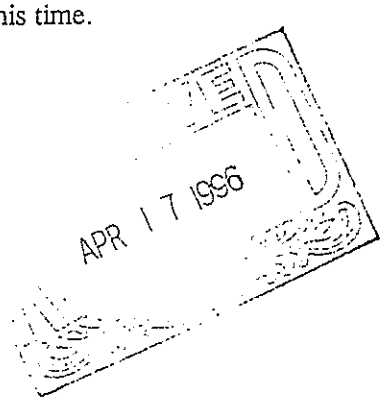
RAINBOW TROUT 96 HR LC50 RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13 (July, 1990). Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of no greater than 7.5 ml/L/min.

The initial dissolved oxygen level was 10.0 mg/L at 15.0°C, the conductivity was 1000 µmhos and the initial pH was 7.7. After pre-aerating the sample for 30 minutes, the dissolved oxygen level was 10.0 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.



IRC Integrated Resource Consultants Inc.

Marian Zazzi
Biologist
b224.1/X5;03.12.96

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.8	9.6	9.8	9.9
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.7	8.8	8.8	8.8	8.6
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
56%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.1	9.7	8.8	9.9	9.8
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.6	8.6	8.5	8.5	8.4
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
32%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.3	9.8	9.5	9.6	9.3
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.6	8.4	8.4	8.3	8.1
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
18%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	9.6	9.3	9.4	9.4
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.5	8.1	8.3	8.3	7.8
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
10%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.6	9.2	9.3	9.5	9.5
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.5	7.8	7.9	7.9	7.6
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
CONTROL	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.6	8.8	9.0	9.1	9.4
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	6.5	6.6	6.2	6.2	6.4
	Conductivity (µmhos)	10				
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.41	0.41	0.41	0.41	0.41
	Technician	KW	JE	BW	BW	BW

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: **February 6, 1996**
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 3.99cm ± 0.25cm
Range: 3.7cm - 4.5cm

Wet weight: Mean: 0.61g ± 0.14g
Range: 0.43g - 0.87g

Condition Factor (100 x wt(g)/length^{3}cm): 0.96

Acclimation History:
- Acclimation temperature: 13.0 - 13.5° CELSIUS
- Treatments: None
- Water: Dechlorinated tap water
- Feeding: Moore Clark Fry Feed
- Mortality: Less than 1%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test Date	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
95.10.10	95.10.18	Phenol	13.4	10 to 18
95.10.11	95.10.18	"	12	5 to 18
95.10.26	95.11.08	"	12.6	10 to 18
95.11.02	95.11.14	"	12	5 to 18
95.11.09	95.11.21	"	12.6	10 to 18
95.11.20	95.11.28	"	11.4	5 to 18
95.11.23	95.12.05	"	12	5 to 18
95.11.30	95.12.14	"	13	10 to 18
95.12.13	96.01.12	"	11	5 to 18
96.01.08	96.01.18	"	9	5 to 18
96.01.08	96.02.01	"	11	8 to 14
96.01.16	96.02.05	"	12	5 to 18
96.01.22	96.02.19	"	13	10 to 18
96.01.22	96.03.04	"	10	5 to 18
96.02.06	96.03.12	"	10	5 to 18
LAB MEAN	11.7 mg/L ± 2.7			

CONTROL/DILUTION WATER QUALITY:

Hardness: 4 mg/L
Total Residual Chlorine: 0 mg/L

Cavendish Analytical Laboratory Ltd.

2225 S. Springer Avenue, Burnaby
British Columbia V5B 3N1
Telephone (604) 299-2560
Fax: 299-6252
Data Line: 299-2491

DATE: 26 March 1996

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-13; File no: 0315I
Collection method:	not stated
Amount, Container:	2 X 22L plastic containers
Physical description:	Clear, orange colour with some suspended solids
Date collected:	12 March 1996
Date, time received:	15 March 1996; 1525 hrs.
Shipping details:	By ground via Dan Foss Couriers
Received by:	KW
Date, time tested:	16 March 1996; 0930 hrs.
Set up technician:	KW

RAINBOW TROUT 96 HR LC50 RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13 (July, 1990). Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of no greater than 7.5 ml/L/min.

The initial dissolved oxygen level was 8.3 mg/L at 15.0°C, the conductivity was 1100 µmhos and the initial pH was 7.6. After pre-aerating the sample for 30 minutes, the dissolved oxygen level was 8.4 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

IRC Integrated Resource Consultants Inc.

Marian Zazzi
Biologist
b224.1/X13;03.12.96

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	8.4	9.4	9.5	9.6	9.5
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.6	8.7	8.7	8.7	8.7
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
56%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.0	9.4	9.5	9.4	9.4
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.5	8.6	8.6	8.5	8.5
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
32%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.6	9.4	9.7	9.7	9.6
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.4	8.4	8.3	8.3	8.2
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
18%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.5	9.6	9.7	9.6
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.3	8.1	8.1	8.0	7.9
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
10%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	8.5	8.9	9.0	9.6
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.2	7.7	7.8	7.8	7.6
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
CONTROL	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.6	9.0	9.0	9.4	9.4
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	6.5	6.6	6.3	6.2	6.4
	Conductivity (µmhos)	10				
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.39	0.39	0.39	0.39	0.39
	Technician	KW	JE	BW	BW	BW

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: February 6, 1996
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 4.02cm ± 0.27cm
Range: 3.5cm - 4.3cm

Wet weight: Mean: 0.58g ± 0.10g
Range: 0.41g - 0.72g

Condition Factor (100 x wt(g)/length^{3}cm): 0.89

Acclimation History:

Acclimation temperature: 13.0 - 13.5° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 1%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test Date	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
95.10.10	95.10.18	Phenol	13.4	10 to 18
95.10.11	95.10.18	"	12	5 to 18
95.10.26	95.11.08	"	12.6	10 to 18
95.11.02	95.11.14	"	12	5 to 18
95.11.09	95.11.21	"	12.6	10 to 18
95.11.20	95.11.28	"	11.4	5 to 18
95.11.23	95.12.05	"	12	5 to 18
95.11.30	95.12.14	"	13	10 to 18
95.12.13	96.01.12	"	11	5 to 18
96.01.08	96.01.18	"	9	5 to 18
96.01.08	96.02.01	"	11	8 to 14
96.01.16	96.02.05	"	12	5 to 18
96.01.22	96.02.19	"	13	10 to 18
96.01.22	96.03.04	"	10	5 to 18
96.02.06	96.03.12	"	10	5 to 18
LAB MEAN	11.7 mg/L ± 2.7			

CONTROL/DILUTION WATER QUALITY:

Hardness: 4 mg/L
Total Residual Chlorine: 0 mg/L

DATE: 2 July 1996

TO: Yolanda Vandermeer
Anvil Range Mining Corp.
Postal Bag 1000
Faro, Yukon Ter. Y0B 1K0

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-13
Collection method:	not stated
Amount, Container:	2 X 20L plastic containers
Physical description:	Opaque yellow liquid
Date collected:	not stated
Date, time received:	28 June 1996; 1245 hrs.
Shipping details:	By ground
Received by:	MZ
Date, time tested:	28 June 1996; 1530 hrs.
Set up technician:	BW/JM

RAINBOW TROUT 96 HR RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13 (July, 1990). Due to large size of the fish stock test volume was thirty litres with ten fish per concentration; only two concentrations were tested due to lack of sample. Aeration was by forced air through clean glass pipettes at a rate of no greater than 7.5 ml/L/min.

The initial dissolved oxygen level was 9.4 mg/L at 13.0°C, the conductivity was 1200 µmhos and the initial pH was 7.4. After pre-aerating the sample for 30 minutes and warming to 15.0°C, the dissolved oxygen level was 9.5 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

Marian Zazzi
Biologist
b224.1/X13;06.28.96

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	**Percent survival**	100%	100%	100%	100%	90%
	Dissolved Oxygen (mg/L)	9.5	9.2	9.3	9.4	9.6
	Temperature (°C)	15.0	15.0	15.5	15.0	15.0
	pH	7.5	8.1	8.3	8.2	8.2
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.21	0.21	0.21	0.21	0.19
56%	**Percent survival**	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.6	9.0	9.4	9.6	9.7
	Temperature (°C)	15.0	15.0	15.5	15.0	15.0
	pH	7.4	7.6	8.2	8.1	8.2
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.21	0.21	0.21	0.21	0.19
CONTROL	**Percent Survival**	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.7	9.3	8.3	9.7	9.5
	Temperature (°C)	15.0	15.0	15.5	15.0	15.0
	pH	6.4	6.3	6.2	5.9	6.3
	Conductivity (µmhos)	10				
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.21	0.21	0.21	0.21	0.21
	Technician	JM	BW	JE	JE	JM

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: **June 10, 1996**
Source: Sun Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 4.17cm ± 0.32cm
Range: 3.7cm - 4.7cm

Wet weight: Mean: 0.64g ± 0.17g
Range: 0.42g - 0.99g

Condition Factor (100 x wt(g)/length^{3}cm): 0.89

Acclimation History:
Acclimation temperature: 13.0 - 14.5° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 1%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test Date	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
96.02.06	96.03.12	Phenol	10	5 to 18
96.02.15	96.03.26	"	10	5 to 18
96.03.07	96.04.10	"	9	5 to 18
96.03.21	96.04.16	"	9	5 to 18
96.04.16	96.04.29	"	12	5 to 18
96.04.20	96.05.14	"	11	5 to 18
96.04.20	96.05.29	"	12	5 to 18
96.05.16	96.06.10	"	13	5 to 18
96.06.10	96.06.13	"	13	10 to 18
96.06.10	96.06.27	"	9	5 to 18
LAB MEAN	11.6 mg/L ± 2.7			

CONTROL/DILUTION WATER QUALITY:
Hardness: 2 mg/L
Total Residual Chlorine: 0 mg/L

DATE: 10 October 1996

TO: ANVIL MINING
Attn: Yolanda
Postal Bag 10000
Faro, Yukon Ter.

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-5
Collection method:	not stated
Amount, Container:	2 X 20L plastic containers
Physical description:	Clear paler blue liquid
Date collected:	24 September 1996
Date, time received:	30 September 1996; 1430 hrs.
Shipping details:	By ground via Dan Foss couriers
Received by:	MZ
Date, time tested:	30 September 1996; 1550 hrs.
Set up technician:	KW

RAINBOW TROUT 96 HR RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13 (July, 1990). Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of no greater than 7.5 ml/L/min. Sample was 6 days old upon arrival, this exceeds the maximum testing period recommended by the Environment Canada protocol; the client was called and said to proceed with testing.

The initial dissolved oxygen level was 10.1 mg/L at 16.5°C, the conductivity was 700 µmhos and the initial pH was 7.9. After pre-aerating the sample for 80 minutes, the dissolved oxygen level was 10.0 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

Please call should you have any questions.

Results Certified By:

Marian Zazzi
Biologist
b224.1/X5;09.24.96
attachment

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	8.6	8.4	8.4	8.6
	Temperature (°C)	16.0	15.0	15.0	15.0	15.0
	pH	7.9	7.9	7.7	7.8	7.8
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.50
56%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	8.9	8.8	9.0	9.0
	Temperature (°C)	16.0	15.0	15.0	15.0	15.0
	pH	7.8	7.8	7.6	7.7	7.7
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
32%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	8.8	8.9	8.8	8.9
	Temperature (°C)	15.5	15.0	15.0	15.0	15.0
	pH	7.4	7.3	7.4	7.5	7.6
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
18%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.0	9.0	9.2	9.1
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.3	7.1	7.1	7.2	7.3
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
10%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.1	8.9	8.9	9.0
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	6.9	7.0	7.0	7.0	7.1
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
CONTROL	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.0	8.9	9.0	9.0
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	6.2	6.4	6.5	6.5	6.4
	Conductivity (µmhos)	10				
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.50
	Technician	KW	MZ	MZ	MZ	MZ

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: September 6, 1996
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 4.21cm ± 0.26cm
Range: 3.80cm - 4.70cm

Wet weight: Mean: 0.75g ± 0.16g
Range: 0.49g - 1.12g

Condition Factor (100 x wt(g)/length^{3}cm): 1.01

Acclimation History:
Acclimation temperature: 14.0 - 15.0° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 1%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test Date	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
96.04.20	96.05.29	Phenol	12	5 to 18
96.05.16	96.06.10	"	13	5 to 18
96.06.10	96.06.13	"	13	10 to 18
96.06.10	96.06.27	"	9	5 to 18
96.06.17	96.07.09	"	13	10 to 16
96.06.28	96.07.16	"	13	10 to 18
96.06.28	96.07.29	"	9	5 to 18
96.07.12	96.08.13	"	12	5 to 18
96.07.12	96.08.27	"	11	8 to 15
96.08.13	96.09.05	"	10	5 to 18
96.09.06	96.09.19	"	11	8 to 14
LAB MEAN	11.6 mg/L ± 2.8			

CONTROL/DILUTION WATER QUALITY:
Hardness: 5 mg/L
Total Residual Chlorine: 0 mg/L

DATE: 10 October 1996

TO: ANVIL MINING
Attn: Yolanda
Postal Bag 10000
Faro, Yukon Ter.

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-13
Collection method:	not stated
Amount, Container:	2 X 20L plastic containers
Physical description:	Opaque orange liquid
Date collected:	24 September 1996
Date, time received:	30 September 1996; 1430 hrs.
Shipping details:	By ground via Dan Foss couriers
Received by:	MZ
Date, time tested:	30 September 1996; 1550 hrs.
Set up technician:	KW

RAINBOW TROUT 96 HR RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13 (July, 1990). Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of no greater than 7.5 ml/L/min. Sample was 6 days old upon arrival, this exceeds the maximum testing period recommended by the Environment Canada protocol; the client was called and said to proceed with testing.

The initial dissolved oxygen level was 9.0 mg/L at 16.0°C, the conductivity was 800 µmhos and the initial pH was 7.4. After pre-aerating the sample for 30 minutes, the dissolved oxygen level was 9.3 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

Please call should you have any questions.

Results Certified By:

Marian Zazzi
Biologist
b224.1/X13;09.24.96
attachment

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.3	9.0	8.8	8.7	8.6
	Temperature (°C)	16.0	15.0	15.0	15.0	15.0
	pH	7.4	8.0	8.2	8.2	8.2
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.50
56%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.7	9.1	9.0	9.0	9.0
	Temperature (°C)	15.5	15.0	15.0	15.0	15.0
	pH	7.4	8.0	8.1	8.0	8.0
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
32%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	8.9	8.9	8.8	9.0
	Temperature (°C)	15.5	15.0	15.0	15.0	15.0
	pH	7.4	7.8	7.9	7.9	7.9
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
18%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.1	8.9	8.8	8.8	8.9
	Temperature (°C)	15.5	15.0	15.0	15.0	15.0
	pH	7.4	7.7	7.7	7.7	7.7
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
10%	Percent survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.2	9.1	9.0	9.1	9.0
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.4	7.5	7.5	7.5	7.5
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.19
CONTROL	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.2	9.0	9.0	9.0	8.9
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	6.3	6.4	6.4	6.4	6.4
	Conductivity (µmhos)	10				
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.50	0.50	0.50	0.50	0.50
	Technician	KW	MZ	MZ	MZ	MZ

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement

TEST FISH STOCK INFORMATION

Date received: September 6, 1996
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 4.21cm ± 0.26cm
Range: 3.80cm - 4.70cm

Wet weight: Mean: 0.75g ± 0.16g
Range: 0.49g - 1.12g

Condition Factor (100 x wt(g)/length^{3}cm): 1.01

Acclimation History:
Acclimation temperature: 14.0 - 15.0° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 1%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test Date	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
96.04.20	96.05.29	Phenol	12	5 to 18
96.05.16	96.06.10	"	13	5 to 18
96.06.10	96.06.13	"	13	10 to 18
96.06.10	96.06.27	"	9	5 to 18
96.06.17	96.07.09	"	13	10 to 16
96.06.28	96.07.16	"	13	10 to 18
96.06.28	96.07.29	"	9	5 to 18
96.07.12	96.08.13	"	12	5 to 18
96.07.12	96.08.27	"	11	8 to 15
96.08.13	96.09.05	"	10	5 to 18
96.09.06	96.09.19	"	11	8 to 14
LAB MEAN	11.6 mg/L ± 2.8			

CONTROL/DILUTION WATER QUALITY:
Hardness: 5 mg/L
Total Residual Chlorine: 0mg/L

Cavendish Analytical Laboratory Ltd.

1650 Pandora Street, Vancouver
British Columbia Canada V5L 1L6
Telephone: (604) 251-4456
BBS and Fax: (604) 258-9497
EMAIL: cavendsh@portal.ca

DATE: 17 December 1996

TO: Yolanda Vandermeer
Anvil Range Mining Corporation
Postal Bag 1000, Faro, Yukon Y0B 1K0
Ph- 604-521-2461 Fax- 403-633-3216

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-5
Collection method:	not stated
Amount, Container:	2 X 22L plastic containers
Physical description:	Pale yellow liquid
Date collected:	2 December 1996
Date, time received:	5 December 1996; 1420 hrs.
Shipping details:	By ground via Dan Foss couriers
Received by:	MZ
Date, time tested:	5 December 1996; 1630 hrs.
Set up technician:	JM

RAINBOW TROUT 96 HR RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13, 1990, amended May 1996. Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of 6.5 ± 1 ml/L/min.

The initial dissolved oxygen level was 10.2 mg/L at 10.0°C, the conductivity was 900 µmhos and the initial pH was 7.3. After pre-aerating the sample for 60 minutes and warming to 15.0°C, the dissolved oxygen level was 10.0 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

Please call should you have any questions.

Results Certified By:

Marian Zazzi
Biologist
b224.1/X5;12.02.96
enclosure

Environmental & Geochemical Analysis, ICP Services, Technical Consultation, Technologies in Analytical Chemistry

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.8	9.7	9.7	9.6
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.4	8.2	8.3	8.4	8.4
	Conductivity (µmhos)	900				900
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
56%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.4	8.8	8.5	8.8
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.3	7.9	7.9	7.9	8.0
	Conductivity (µmhos)	600				600
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
32%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.6	8.9	8.6	8.8
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.2	7.8	7.8	7.8	7.6
	Conductivity (µmhos)	350				360
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
18%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.6	9.4	9.4	9.4
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.2	7.6	7.7	7.7	7.7
	Conductivity (µmhos)	220				230
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
10%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.3	9.0	8.5	8.3
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.1	7.3	7.6	7.6	7.3
	Conductivity (µmhos)	140				150
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
CONTROL	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.5	9.2	8.9	9.0
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.0	6.8	6.9	6.9	6.9
	Symptoms	1	1	1	1	1
	Conductivity (µmhos)	30				30
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
	Technician	JM	MZ/JM	BW	BW	MZ

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: 1 November 1996
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 3.87cm ± 0.39cm
Range: 3.10cm - 4.70cm

Wet weight: Mean: 0.49g ± 0.14g
Range: 0.21g - 0.84g

Condition Factor (100 x wt(g)/length^{3}cm): 0.85

Acclimation History:
Acclimation temperature: 9.0.°- 14.0° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 2%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
96.05.16	96.06.10	Phenol	13	5 to 18
96.06.10	96.06.13	"	13	10 to 18
96.06.10	96.06.27	"	9	5 to 18
96.06.17	96.07.09	"	13	10 to 16
96.06.28	96.07.16	"	13	10 to 18
96.06.28	96.07.29	"	9	5 to 18
96.07.12	96.08.13	"	12	5 to 18
96.07.12	96.08.27	"	11	8 to 15
96.08.13	96.09.05	"	10	5 to 18
96.09.06	96.09.19	"	11	8 to 14
96.09.20	96.10.08	"	10	5 to 18
96.09.26	96.10.21	"	13	10 to 18
96.10.10	96.10.28	"	13	10 to 18
96.11.01	96.12.02	"	11	8 to 18
LAB MEAN	11.5 mg/L ± 2.7			

CONTROL/DILUTION WATER QUALITY:
Hardness: 14 mg/L
Total Residual Chlorine: 0 mg/L

DATE: 17 December 1996

TO: ANVIL MINING
Attn: Yolanda
Postal Bag 1000
Faro, Yukon Ter.

REPORT ON: RAINBOW TROUT BIOASSAY RESULTS

SAMPLE DESCRIPTION:

Sample Name:	X-13
Collection method:	not stated
Amount, Container:	2 X 22L plastic containers
Physical description:	Opaque orange/ yellow liquid
Date collected:	2 December 1996
Date, time received:	5 December 1996; 1420 hrs.
Shipping details:	By ground via Dan Foss couriers
Received by:	MZ
Date, time tested:	5 December 1996; 1600 hrs.
Set up technician:	JM

RAINBOW TROUT 96 HR RESULTS:

The 96 hour (static) LC_{50} was greater than 100% (v/v sample).

The LC_{50} is defined as the mean lethal concentration or the concentration at which there is 50% fish mortality. Results are calculated using the method described by Stephan (Methods for calculating an LC_{50} in: Aquatic Toxicology and Hazard Evaluation, American Society for Testing and Materials, 1977).

The test method followed was as per "Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout" EPS 1/RM/13, 1990, amended May 1996. Test volume was fifteen litres with ten fish per concentration. Aeration was by forced air through clean glass pipettes at a rate of 6.5 ± 1 ml/L/min.

The initial dissolved oxygen level was 9.6 mg/L at 9.0°C, the conductivity was 1000 µmhos and the initial pH was 7.2. After pre-aerating the sample for 30 minutes and warming to 14.0°C, the dissolved oxygen level was 9.8 mg/L, as this was greater than 70% saturation and less than 100% saturation the test was initiated at this time.

Please call should you have any questions.

IRC Integrated Resource Consultants Inc.

Marian Zazzi
Biologist
b224.1/X13;12.02.96
enclosure

RAW DATA:

TEST CONCENTRATION		HOURS 0	24	48	72	96
100%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	9.8	9.8	9.7	9.5	9.2
	Temperature (°C)	14.0	15.0	15.0	15.0	15.0
	pH	7.3	8.2	8.4	8.4	8.5
	Conductivity (µmhos)	1000				1000
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
56%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	9.9	9.5	9.4	9.2
	Temperature (°C)	14.0	15.0	15.0	15.0	15.0
	pH	7.2	8.1	8.2	8.2	8.2
	Conductivity (µmhos)	600				650
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
32%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	10.0	9.5	9.5	9.6
	Temperature (°C)	14.0	15.0	15.0	15.0	15.0
	pH	7.2	8.0	7.9	7.9	8.0
	Conductivity (µmhos)	390				400
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
18%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	9.7	9.5	8.9	9.1
	Temperature (°C)	14.0	15.0	15.0	15.0	15.0
	pH	7.2	7.6	7.5	7.5	7.6
	Conductivity (µmhos)	280				260
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
10%	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.4	9.8	9.5	9.3	9.5
	Temperature (°C)	14.0	15.0	15.0	15.0	15.0
	pH	7.2	7.4	7.4	7.5	7.5
	Conductivity (µmhos)	150				180
	Symptoms	1	1	1	1	1
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
CONTROL	Percent Survival	100%	100%	100%	100%	100%
	Dissolved Oxygen (mg/L)	10.0	9.4	9.0	8.4	8.5
	Temperature (°C)	15.0	15.0	15.0	15.0	15.0
	pH	7.0	6.8	6.9	6.9	7.0
	Symptoms	1	1	1	1	1
	Conductivity (µmhos)	30				30
	Loading Density (g/L)	0.33	0.33	0.33	0.33	0.33
	Technician	JM	MZ/JM	BW	BW	MZ

KEY TO SYMPTOMS:

1 = no apparent effect
2 = fish showing signs of stress
3 = slight opercular movement
4 = loss of equilibrium

TEST FISH STOCK INFORMATION

Date received: 1 November 1996
Source: Spring Valley Trout Farm
Species: *Oncorhynchus mykiss* (Rainbow Trout)

Fork length: Mean: 3.87cm ± 0.39cm
Range: 3.10cm - 4.70cm

Wet weight: Mean: 0.49g ± 0.14g
Range: 0.21g - 0.84g

Condition Factor (100 x wt(g)/length^{3}cm): 0.85

Acclimation History:
Acclimation temperature: 9.0.°- 14.0° CELSIUS
Treatments: None
Water: Dechlorinated tap water
Feeding: Moore Clark Fry Feed
Mortality: Less than 2%

RAINBOW TROUT REFERENCE TOXICANT DATA

Stock Arrival Date	Test	Toxicant	LC_{50} (mg/L)	95% Confidence Limits
96.05.16	96.06.10	Phenol	13	5 to 18
96.06.10	96.06.13	"	13	10 to 18
96.06.10	96.06.27	"	9	5 to 18
96.06.17	96.07.09	"	13	10 to 16
96.06.28	96.07.16	"	13	10 to 18
96.06.28	96.07.29	"	9	5 to 18
96.07.12	96.08.13	"	12	5 to 18
96.07.12	96.08.27	"	11	8 to 15
96.08.13	96.09.05	"	10	5 to 18
96.09.06	96.09.19	"	11	8 to 14
96.09.20	96.10.08	"	10	5 to 18
96.09.26	96.10.21	"	13	10 to 18
96.10.10	96.10.28	"	13	10 to 18
96.11.01	96.12.02	"	11	8 to 18
LAB MEAN	11.5 mg/L ± 2.7			

CONTROL/DILUTION WATER QUALITY:
Hardness: 14 mg/L
Total Residual Chlorine: 0 mg/L

APPENDIX 4

BIOLOGICAL MONITORING PROGRAM AT ROSE AND ANVIL CREEKS, FARO, YT

Laberge Environmental Services

Laberge
ENVIRONMENTAL SERVICES

P.O. BOX 5111
WHITEHORSE, YT
Y1A 4S3

OFFICE PHONE (403) 668-6838
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FAX (403) 667-6956

BIOLOGICAL MONITORING PROGRAM

AT

ROSE AND ANVIL CREEKS, FARO, Y.T.

1996

Submitted to:

ANVIL RANGE MINING CORPORATION

Prepared by:

B.E. Burns
LABERGE ENVIRONMENTAL SERVICES

January, 1997

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1.0 INTRODUCTION

On August 16, 1994, Anvil Range Mining Corporation was officially assigned Licence Number IN89-001, which was originally issued to Curragh Resources Inc, by the Yukon Territory Water Board.

To comply with Schedule B of Amendment #3 of the licence, a biological monitoring program is to be undertaken every two years on the Rose Creek system. The Schedule states that three replicate samples of benthic macro-invertebrate fauna are to be collected from seven sites located on Rose and Anvil Creeks. These benthic organisms are to be identified, enumerated and the data evaluated. Water samples are also to be collected.

Anvil Range Mining Corporation contracted Laberge Environmental Services (LES) to conduct the monitoring surveys and this report contains all data collected during the 1996 program.

2.0 STUDY AREA

The Faro mine and mill are located approximately 20 road kilometres north of the town of Faro at roughly 62° 20' N and 133° 25' W (Figure 1).

The biological monitoring sites are established on Rose and Anvil Creeks at the following locations (Figure 2):

R1 Upstream of the freshwater pumphouse and above the confluence of the North Fork of Rose Creek, and downstream of the reservoir.

R2 In the mixing zone downstream of the intersection of the Rose Creek diversion canal and the outlet of the tailings pond.

R3 Rose Creek approximately half way between the tailings pond outlet and Anvil Creek.

R4 Rose Creek just upstream of Anvil Creek.

R5 Anvil Creek downstream of Rose Creek.

R6 Anvil Creek immediately upstream of Rose Creek.

R7 North Fork of Rose Creek upstream of the confluence with the Faro Creek diversion.

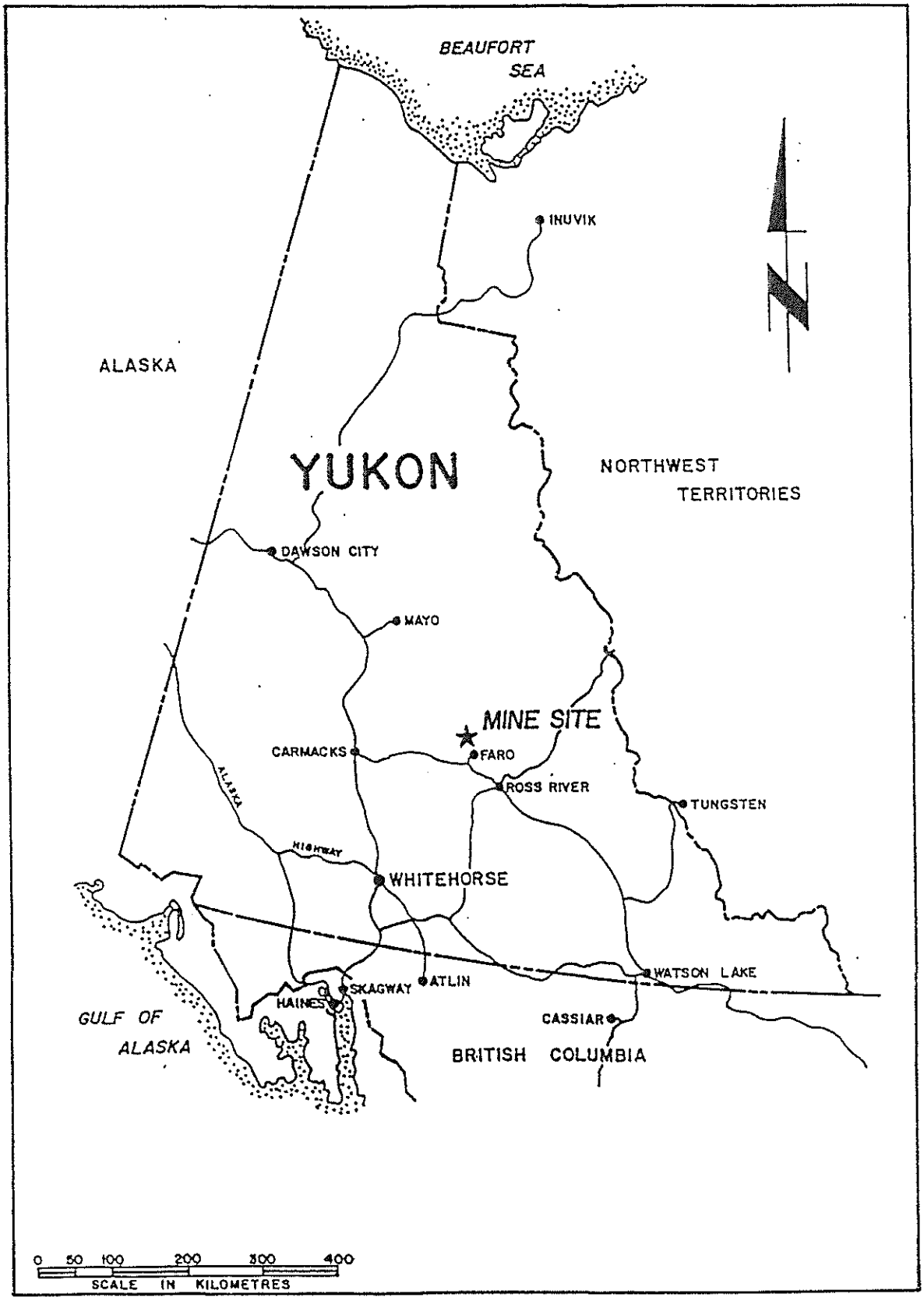
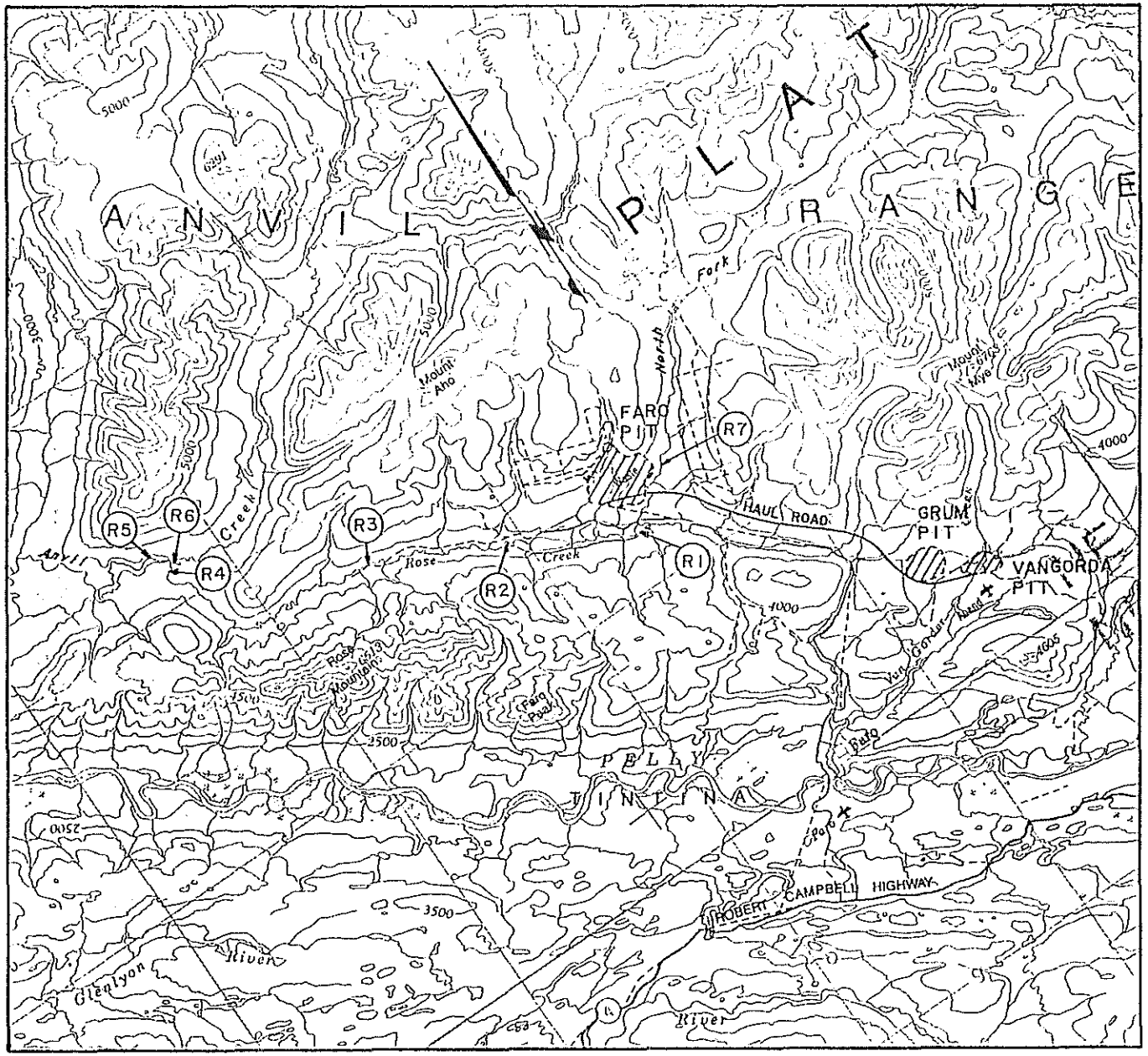


FIGURE 1 Location of Faro Mine



ANVIL CREEK/ROSE CREEK

FIGURE 2 - LOCATION OF SAMPLE SITES

5 0 5 10 15 20 km

SCALE 1 : 250,000

(R6) . . . . . Sample Site

3.0 METHODS

The 1996 biological monitoring program consisted of two field surveys conducted on July 30 and 31, and on September 3 and 4. Helicopter access was required for the sites situated on the lower mainstem of Rose Creek and the sites on Anvil Creek. The remaining sites were accessed by vehicle and on foot.

3.1 Water Quality

Water quality samples were collected at each site in July and September. The samples were collected in a fast flowing section of the stream upstream of the benthic sampler locations.

3.1.1 Field Measurements

In-situ measurements were taken at each site during both surveys. Conductivity and temperature were determined with an Orion conductivity meter model 126. Dissolved oxygen readings were obtained using an Orion oxygen meter model 820 and pH measurements were taken using an Orion model 210A pH meter.

3.1.2 Chemical Analyses

All sample bottles were supplied by Cavendish Laboratories of Vancouver, B.C. and were provided to LES personnel at the Faro Mine Lab. At each site, samples were collected in a one litre plastic bottle for sulphates, alkalinity, ammonia and nonfilterable residue. Samples to be analyzed for total metals were collected in 250 ml plastic bottles. The dissolved metal samples were filtered in the field using a hand operated vacuum pump with a 0.45 micron filter and placed into 250 ml plastic bottles. Dissolved and total metals samples were preserved with nitric acid. At sites, R2, R3, and R4, samples to be analyzed for cyanide were collected in one litre bottles and preserved with sodium

hydroxide pellets. All sample bottles with the exception of the dissolved metals sample, were partially filled and rinsed three times prior to collecting sample waters. The dissolved metals sample bottle was rinsed three times with the filtrate. Samples were kept cool prior to shipment to the Cavendish laboratory.

3.1.3 Quality Assurance/Quality Control

In July, duplicate samples were collected at some of the sites and sent to another lab (Quanta Trace Laboratories in Burnaby, B.C.) as a cross check. In September, Cavendish ran duplicates in the lab on a couple of the samples. In July and September, field blanks were submitted with the water samples.

3.2 Water Quantity

Discharge was measured at each of the sites on both visits. An area with a uniform cross section was chosen and the velocity and depth were measured using either a AA Price or Price mini meter. Ten or more readings were taken across the profile of the stream. Total discharge was calculated as the sum of these individual discharges (area x velocity).

3.3 Stream Sediment Sampling

Stream sediment sampling is not a requirement of Licence IN89-001, however single sediment samples were collected from each of the sites on July 30 and 31, 1996, to aid in interpretation and to increase the database. The sediment was collected with a teflon trowel from areas of deposition within the active channel and placed into ziplock bags. The samples were kept cool prior to shipment with the water samples to the Cavendish Lab.

3.4 Benthic Invertebrate Sampling

3.4.1 Field Collection

Artificial substrate samplers were used for benthic invertebrate sampling. The basket samplers were cylindrical in shape, measured 26 cm long with a diameter of 17 cm, and were constructed of galvanized wire with a 1 cm mesh. Each substrate sampler was filled with washed indigenous gravels collected from the stream bed or the bank at each sample site. The surface area provided by this 'artificial substrate' was approximately 6000 ± 1000 cm^2 (Baker 1979).

Three rock filled samplers were submerged in riffle areas of the stream at each site on July 30 and 31, 1996. These samplers were left to colonize for five weeks. On September 3 and 4, 1996, the artificial substrate samplers were retrieved by placing a screened bucket with a 300 micron mesh, downstream and under the basket. On shore the basket was opened in the bucket. Individual rocks were then carefully washed in the screened bucket to remove and collect all invertebrates from that sample. The detritus and benthic invertebrates remaining in the bucket were placed in a one litre nalgene bottle and preserved with 10% formalin. These samples were sent to Charles Low PhD, an entomologist in Victoria, B.C. for enumeration and identification.

3.4.2 Laboratory Analysis

All samples were washed through two screens with mesh sizes 1 millimetre and 180 microns. All of the organisms retained by the coarse screen were counted and identified, whereas the organisms on the 180 micron screen were subsampled as necessary. A Folsom plankton splitter was used for the subsampling. The majority of the benthos were identified to the genus level.

4.0 RESULTS AND DISCUSSION

4.1 Water Quality

Water quality samples were collected in July and September, 1996, at each of the seven sites. The analytical results are presented in Appendix A. Eleven metals (bismuth, cadmium, chromium, cobalt, lanthanum, lead, molybdenum, silver, titanium, tungsten and vanadium) were not detected in any of the samples.

Part 3(a) of Schedule B specifically requests the analysis of total hardness, alkalinity, sulphate, suspended solids, ammonia, and total and dissolved copper, iron, lead and zinc. Part 3(b) states that total cyanide is to be analyzed at R2, R3 and R4. The results for these parameters are presented in Table 1 with discussion per parameter presented below.

4.1.1 Temperature

The temperature values reflected the diurnal and seasonal timing of the sampling, ranging from 4.8°C at R5 and R6 on September 4 to 11.2°C at R3 on July 30.

4.1.2 Conductivity and Total Hardness

Calcium and magnesium are considered to be the primary contributors to hardness but other cations such as strontium, barium, manganese, iron and aluminum also contribute to total hardness. The upstream Rose Creek sites R1 and R7 measured medium hardness and the rest of the sites exhibited hard waters. Conductivity, which is a measure of the ionic constituents in water, had a similar trend to total hardness with lower values in the upstream sites and considerably higher values in the downstream sites.

TABLE 1

WATER QUALITY DATA

Sample Site	R1		R2		R3		R4		R5		R6		R7	
Date, 1996	July 31	Sept 3	July 31	Sept 3	July 30	Sept 4	July 30	Sept 4	July 30	Sept 4	July 30	Sept 4	July 30	Sept 4
Flow, m³/sec	1.162	1.750	1.189	1.923	1.538	2.440	2.379	3.108	4.960	5.770	2.786	2 662	0.770	1.097
Temp °C	10.0	5.8	10.1	8.2	11.2	7.0	9.7	5.6	8.2	4 8	7.9	4 8	10.8	5.4
Conductivity (uS/cm)	173.6	155.0	327	332	292	301	282	297	272	271	271	268	155.9	144.3
pH (in-situ)	8.24	7.97	8.03	7.50	8.69	7.96	8.80	8.10	8.94	7.96	9.00	7.95	7.90	7.64
pH (lab)	8.00	7.93	7.98	7.88	8.05	7.94	8.15	8.00	8.22	8.14	8.24	8.17	8.01	7.95
Dissolved	11.5	12.1	10.7	10.8	11.3	11.5	11.3	11.7	11.2	12.2	12.7	11.9	10.6	12.1
Oxygen	116	110	110	105	119	109	114	106	108	108	121	106	111	112
Alkalinity mg/L as CaCO3	78	70	106	96	100	92	101	95	121	119	125	124	75	69
Sulphate		11		34		39		35		16		7		3
Ammonia	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0 05
NFR	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Cyanide			<0.001	0.002	<0.001	0.001	<0.001	0.001						
Copper - total	0.0033	0.0043	0.0052	0.0073	0.0023	0.0131	0.0026	0.0153	0.0017	0 0110	0.0035	0.0031	0.0022	0 0023
- dissolved	0.0021	0.0043	0.0017	<0.0005	0.0013	<0.0005	0.0015	0.0056	0.0008	<0.0005	0.0013	0.0020	0.0012	<0 0005
Iron - total	0.21	0.47	0.26	0.47	0.10	0.35	0 02	0.35	0.02	0 27	0.05	0 29	0 08	0 31
- dissolved	0 03	0.07	0.09	0.17	0.02	0.09	0.01	0.06	0.02	0.05	0.02	0.03	0 04	0 13
Lead - total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0 005	<0.005	<0.005	<0 005
- dissolved	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0 005	<0.005	<0.005	<0 005
Zinc - total	0.006	0.026	0.027	0.042	0.016	0.051	0.006	0.026	<0.005	0.009	<0.005	0.006	0 006	0.041
- dissolved	0.005	<0.005	0.015	0.032	0.006	0.024	0.005	0.018	<0.005	0.011	<0.005	<0 005	<0.005	0.006
Total Hardness mg/L as CaC03	77	70	135	133	121	127	122	127	127	124	135	125	72	63

NOTE: All units in mg/L unless otherwise indicated

4.1.3 pH and Alkalinity

All pH values were alkaline ranging from 7.50 at R2 to 9.0 at R6. The field values were considerably higher at R3, R4, R5 and R6 than the lab values and it is suspected that there was a malfunction with the field pH meter in July. Alkalinity is a measure of the buffering capacity of natural waters against changes in pH relating to the carbonate system. Alkalinity was low in the upstream sites (R1 and R7) and considerably greater at the other sites.

4.1.4 Dissolved Oxygen

All sites were well aerated, ranging from 10.6 mg/L at R7 to 12.7 mg/L at R6.

4.1.5 Sulphate

Sulphate values were low at the upstream and tributary sites but significantly greater at the downstream sites. Sulphate concentrations normally vary from 10 to 80 mg/L in surface waters (CCREM, 1987).

4.1.6 Ammonia and Non Filterable Residue (NFR)

Ammonia and NFR were not detected at any of the sites.

4.1.7 Cyanide

Cyanide was not detected in the July samples but was at or near the detection in all three samples in the September samples. A duplicate sample for cyanide was collected at R2 in July and sent to the Quanta Trace Lab where a relatively high value of 0.012 mg/L was reported (see Appendix A).

4.1.8 Total and Dissolved Metals

Copper was detected throughout. A significant increase in total copper was reported at R3, R4 and R5 in the September samples. The CCREM guideline for the protection of aquatic life for copper was exceeded in all samples at R1 and in most of the total samples at the rest of the sites to varying degrees.

Iron was detected at all sites. Higher concentrations were recorded in the September samples and the CCREM guideline for iron was exceeded in the total samples at R1, R2, R3, R4 and R7.

Lead was not detected in any of the samples.

Zinc was detected throughout and the CCREM guideline was slightly exceeded in the September total metals samples at R2, R3 and R7.

The above metal concentrations have been discussed in relation to the CCREM guidelines. It is important to note that the limits as set out under the Water Licence issued by the Yukon Territory Water Board apply to the discharge point and there is no obligation to meet the CCREM criteria in the receiving waters at this time. The CCREM guidelines pertaining to the metals in question are presented below in Table 2.

TABLE 2 CCREM RECOMMENDED GUIDELINES FOR THE PROTECTION OF AQUATIC LIFE				
HARDNESS as $CaCO_3$ mg/L	COPPER mg/L	LEAD mg/L	IRON mg/L	ZINC mg/L
0 - 60 soft	0.002	0.001	0.3	0.03
60 - 120 medium soft	0.002	0.002	0.3	0.03
120 - 180 hard	0.003	0.004	0.3	0.03
>180 very hard	0.004	0.007	0.3	0.03

It is difficult to ascertain why there was a notable increase in copper, iron, and to a lesser extent zinc, in the September samples compared to the July samples. A possible explanation for the elevated copper levels could be related to a small copper sulphate spill which occurred at the BXL Explosives Plant on August 17, 1996. However, when company data was examined for X14 (Table 3), which is a monthly monitoring station located just upstream of R2, no increase in copper during this time period was noted.

TABLE 3 COPPER CONCENTRATIONS (mg/L) AT X14, 1996					
June 11	July 17	Aug 15	Sept 9	Oct 21	Nov 20
0.009	<0.002	<0.002	<0.002	0.030	<0.002

Another contributing factor could be related to the climatic conditions experienced during the five weeks between sampling. Rainfall for the month of August 1996 was 70.8 mm, which is 150% of normal rainfall for this time of the year. This significantly increased flow

in Rose Creek (see Section 4.2). Runoff would have also increased, thereby possibly increasing the various constituents loading in the water column.

As some of these metal concentrations exceeded the guidelines at the background sites (R1, R6 and R7) also, it is likely that these levels resulted through natural conditions as well, and cannot wholly be attributed to the copper sulphate spill or to the tailings ponds discharge.

4.1.9 Quality Assurance/Quality Control

There were two significant anomalies with the duplicate samples that were sent to Quanta Trace Laboratories. As previously mentioned in Section 4.1.7, the value reported for total cyanide at R2 by Quanta Trace was six times greater than that reported by Cavendish Laboratory. In both duplicate samples R2 and R5, the sulphur values were considerably greater in the Quanta Trace samples than in the Cavendish samples. Both sets are presented in Appendix A but only the Cavendish sample results are presented in Table 1.

The duplicate analyses performed at the Cavendish lab for the September samples R1 and R2 generally show good correlation.

The field blanks were generally of good quality except that total zinc was detected (0.006 mg/L) in the September blank.

4.2 Water Quantity

Water flow was measured at each of the sites in July and September. These data are presented in Table 1 with the water quality data. Except for R6, flows increased considerably at all sites. As stated previously, the Faro area received 70.8 mm of rain during the month of August which represents an increase of almost a third of the average rainfall experienced at this time of year (pers. comm. D. Millar, Jan 15, 1997).

4.3 Stream Sediment Sampling

Stream sediments were collected from all sites during the July visit. The results of these analyses are in Appendix B. Of the twenty-eight metals analyzed, three were below detection in all samples (bismuth, mercury and tungsten).

Six elements (arsenic, cadmium, copper, nickel, lead and zinc) were chosen for closer examination as these have the potential to be toxic to the aquatic systems. R7 had the lowest values for most of the metals and R4 had the highest concentration for most of the metals. The concentration of these metals were compared to the guidelines for the protection and management of aquatic sediment quality established by the Ministry of Ontario Environment (see Table 4). The lowest effect level (LEL) indicates a level of contamination that can be tolerated by the majority of aquatic benthic organisms. The severe effect level (SEL) indicates the level where it is expected that a pronounced disturbance of the benthic community will occur and would be detrimental to the majority of benthic species. Several of the parameters exceeded their respective LEL at various sites but most were below the SEL. The exceptions to this were lead at R2 and R4 and zinc at R4.

The levels of copper, lead and zinc in the sediments have been graphed individually and are presented in Figures 3, 4 and 5 respectively. To aid in interpretation, the stations were arranged on the X-axis to demonstrate where the tributaries, R7 and R6, enter the mainstem of Rose Creek.

As far as can be determined, it is believed that sediment samples have been collected from Rose and Anvil Creeks on three previous occasions only. Environmental Protection, Whitehorse, conducted a preliminary environmental assessment in this area in 1973 (Hoos and Holman, 1973) and conducted an environmental study one year after the Cyprus Anvil Mine shut down for an indefinite period in 1983 (Godin and Osler, 1985). Sediment samples were collected from R1, R2 and R3 in 1973, and from R1, R2, R3, R4

TABLE 4

SUMMARY OF STREAM SEDIMENT METAL CONCENTRATIONS

STATION NUMBER	STATION DESCRIPTION	ARSENIC (ppm)	CADMIUM (ppm)	COPPER (ppm)	NICKEL (ppm)	LEAD (ppm)	ZINC (ppm)
R1	Rose Creek upstream	6	0.6	21	25	74	221
R7	North Fork of Rose Creek	10	0.4	14	17	18	82
R2	Rose Creek d/s tailings ponds	32	1.6	60	49	310	617
R3	Rose Cr midway between R2 & R4	31	1.0	59	42	244	581
R4	Rose Cr just u/s of Anvil Creek	32	2.1	78	66	267	908
R6	Anvil Creek u/s Rose Creek	9	1.0	34	40	11	125
R5	Anvil Creek d/s Rose Creek	14	0.8	35	41	20	161
Guideline L.E.L.		6	0.6	16	16	31	120
Guideline S.E.L.		33	10	110	75	250	820

Note: L.E.L. = Low Effect Level
S.E.L. = Severe Effect Level

Figure 3

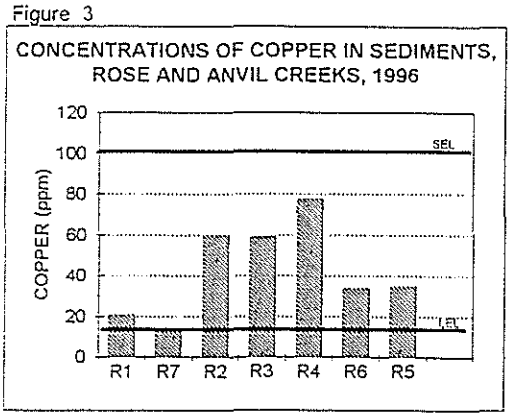


Figure 4

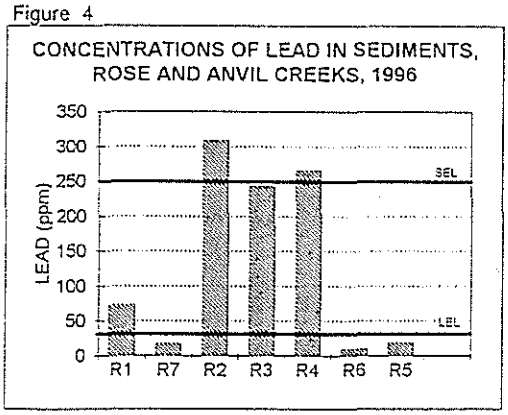
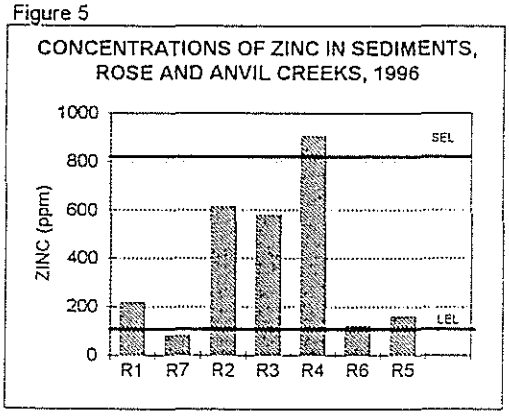


Figure 5



and R6 on July 26 and September 9, 1983. Copper, lead and zinc were examined for each of these data sets (Table 5). R1, R2 and R3 have data for each of the four occasions. The concentrations at the upstream site, R1, fluctuated considerably. The concentrations downstream of the tailings ponds discharge at R2 and R3 had a definite trend where the concentrations in 1983 were significantly greater than those in 1973. The concentrations in 1996 were lower than in 1983 but not as low as those in 1973. At all sites, R4 and R6 included, concentrations were greater in 1983 than in 1996.

These results provide a limited data set to reliably suggest any overall trends. However, the increase in the above noted metals from 1973 to 1983 at R2 and R3 may be explained by the remaining effects of a tailings pond spill in March 1975 when 2.45×10^5 m^3 of tailings slurry contaminated Rose Creek (Godin and Osler, 1985). The lower concentrations observed in 1996 could have resulted from bedload movement, as these materials are continually moved and dispersed downstream. However, no explanation can be suggested for the significant differences encountered at R6 between 1983 and 1996, which is not influenced by any mining activity or discharges.

Metals in sediments are difficult to interpret because levels vary widely as a function of natural mineralization of local soils in a given watershed. The levels summarized in Table 4 are consistent with other mineral target areas in the Yukon (Environ. Prot., 1992).

TABLE 5

COMPARISONS OF METAL CONCENTRATIONS IN SEDIMENTS, 1973, 1983 AND 1996

	Copper (ppm)				Lead (ppm)				Zinc (ppm)			
	1973	1983	1983	1996	1973	1983	1983	1996	1973	1983	1983	1996
R1	64	26	25	21	280	124	198	74	270	215	304	221
R2	24	130	102	60	83	775	554	310	180	967	868	617
R3	44	119	114	59	280	681	682	244	440	1000	992	581
R4		224	120	78		585	899	267		1020	750	908
R6		119	116	34		510	504	11		997	778	125

4.4 Benthic Invertebrates

The benthic invertebrate baskets were set in the same locations utilized in the 1994 study (Burns, 1994).

4.4.1 Abundance and Taxonomic Richness

Five phyla were found in Rose and Anvil Creeks; Arthropoda, Annelida, Nematoda, Mollusca and Coelenterata. A total of 92 different taxonomic groups were identified within these five phyla. This data is presented in Appendix C.

The total number of organisms of the triplicates for each site were summed to give a total abundance value for that site. The community with the highest population occurred at R7, the north fork of Rose Creek, with a total of 4029 individuals. The lowest population was recorded at R3, halfway between the tailings discharge and Anvil Creek, where a total of 144 individuals were found. The potentially mine impacted sites on Rose Creek, R2, R3 and R4, had significantly reduced populations compared to the other sites.

Taxonomic richness was determined for each site by enumerating all taxonomic groups identified from species to phylum, as a measure of community diversity. The diversity ranged from a high of 57 at R1, the upstream site on the mainstem of Rose Creek to a low of 25 at R3.

Abundance and diversity were plotted and are displayed in Figure 6. To aid in interpretation, the stations were arranged on the X-axis to demonstrate where the tributaries, R7 and R6, enter the mainstem of Rose Creek.

Based on abundance and taxonomic richness (diversity), it appears that discharge from the tailing ponds may have impacted the benthic communities at the downstream sites of R2, R3 and R4, with full recovery occurring at R5 downstream on Anvil Creek. The

SITE	SITE DESCRIPTION	ABUNDANCE	TAXOMONIC RICHNESS
R1	Rose Creek upstream	1629	57
R7	North Fork of Rose Creek	4029	45
R2	Rose Creek d/s tailings ponds and diversion canal	991	37
R3	Rose Creek midway between R2 and R4	144	25
R4	Rose Creek just u/s of Anvil Creek	666	35
R6	Anvil Creek just u/s of Rose Creek	2741	45
R5	Anvil Creek d/s of Rose Creek	2726	43

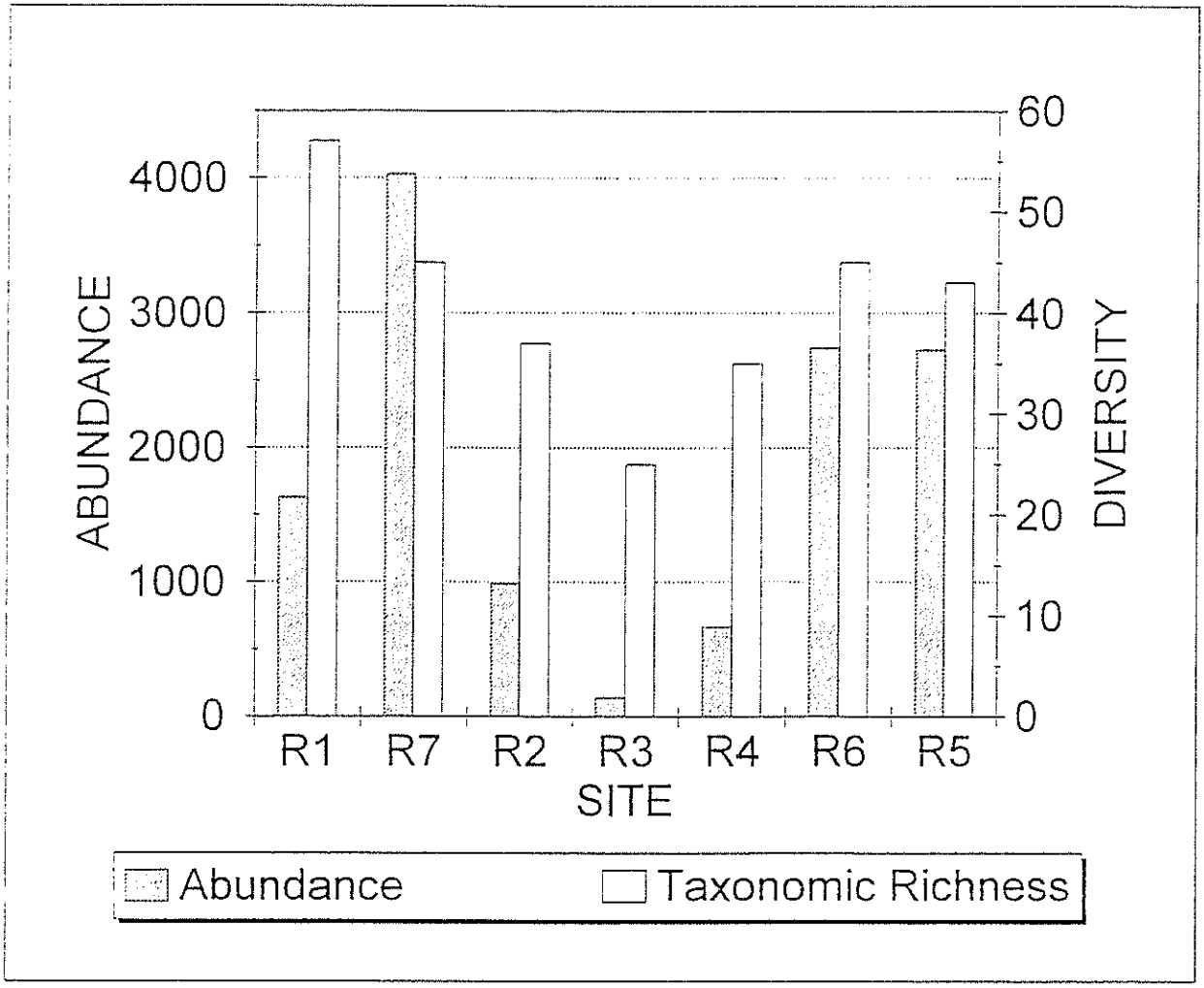


FIGURE 6 Abundance and Taxonomic Richness at Rose and Anvil Creeks, 1996

community at R5 is more abundant than that at the upstream site of R1 but is somewhat less diverse.

It should be noted that mine tailings have not been dumped into the tailings ponds since 1992. All tailings are currently routed to the Faro pit. Any waters entering the tailings ponds are via surface runoff and seepages from X23 from the rocks dumps. This represents a very small volume of water overall and is easily handled and treated. The water at the discharge point, X5, was customarily below the maximum allowable licensed limit of 0.50 mg/L zinc in 1996 (see Annual Report).

4.4.2 Distribution

The composition of the benthos communities was displayed as a percentage of the major taxonomic orders for each station (Table 6). Based on this, taxa were classified with respect to their dominance within the community (Table 7).

Diptera was the dominant or co-dominant order at all of the sites except for R4. Diptera formed 81% of the population at the background sites R1 and R7. At the remaining sites, Diptera formed close to half of the population except at R4 where it was only 20% of the population. The majority of the organisms within Diptera belonged to the family Chironomidae (midges) although there was good representation of Simulidae (blackflies) at some of the sites.

Ephemeroptera was the dominant order at R4 and co-dominant at R2. The family Baetidae formed the majority of the organisms at R2 while the family Ephemereliidae formed the majority at R4. Ephemeroptera was the subdominant group at the remaining sites except at R7 where it was common. Plecoptera and Trichoptera were either subdominant or common at all sites except at R7 where Trichoptera was rare. Hydracarina was either common or rare at all of the sites except R6 where it was a co-subdominant group. Other was rare or incidental.

TABLE 6

THE PERCENTAGE OF COMPOSITION OF DIFFERENT TAXONOMIC ORDERS AT EACH STATION

TAXONOMIC ORDER	R1	R2	R3	R4	R5	R6	R7
Ephemeroptera (mayflies)	11.7	34.0	22.2	41.9	19.6	12.8	3.1
Plecoptera (stoneflies)	4.0	11.4	19.4	20.6	10.8	7.9	11.9
Trichoptera (caddisflies)	1.1	4.1	15.3	15.9	3.4	7.1	0.5
Diptera (true flies)	81.0	49.8	42.4	20.0	53.3	54.9	81.5
Hydracarina (water mites)	0.7	0.5	0.7	1.5	12.6	17.3	2.7
Other *	1.4	0.1	0	0.15	0.3	0.08	0.22

* Other includes one or more of the following taxonomic groups:

Coelenterata	Copepoda	Collembola
Nematoda	Ostracoda	Homoptera
Hymenoptera	Pelecypoda	Lepidoptera
Oligochaeta		

TABLE 7

TAXONOMIC DISTRIBUTION OF BENTHIC INVERTABRATES

SITE	DOMINANT (≥25%)	SUBDOMINANT (10% to 24.9%)	COMMON (1.0% to 9.9%)	RARE (0.1% to 0.9%)	INCIDENTAL (<0.1%)
R1	Diptera	Ephemeroptera	Plecoptera Other Trichoptera	Hydracarina	
R2	Diptera Ephemeroptera	Plecoptera	Trichoptera	Hydracarina Other	
R3	Diptera	Ephemeroptera Plecoptera Trichoptera		Hydracarina	Other
R4	Ephemeroptera	Plecoptera Diptera Trichoptera	Hydracarina	Other	
R5	Diptera	Ephemeroptera Hydracarina Plecoptera	Trichoptera	Other	
R6	Diptera	Hydracarina Ephemeroptera	Plecoptera Trichoptera		Other
R7	Diptera	Plecoptera	Ephemeroptera Hydracarina	Trichoptera Other	

4.4.3 Possible Influencing Factors

Several studies have been conducted using macroinvertebrates as biological monitors of pollution (Rosenberg and Resh, 1993). Using benthic invertebrates in biomonitoring offer many advantages for the following reasons; they are ubiquitous, they are abundant and easy to collect, there are a large number of species offering a spectrum of responses to environmental stress, they are generally sedentary and therefore are representative of local conditions, and they have long life cycles compared to other groups (ie periphyton). As such, benthic macroinvertebrates act as continuous monitors of the water they inhabit.

Ephemeroptera, Trichoptera and Plecoptera are sensitive to most types of pollution (Rosenberg and Resh, 1993) and Lehmkuhl (1979) has identified several groups within these insect orders which have very low tolerance to chemical pollution. Eleven of these taxa (six taxa within Plecoptera, three taxa within Ephemeroptera and two taxa within Trichoptera) have been identified in the Rose and Anvil Creek study area. Table 8 summarizes the presence or absence of each of these taxa per site.

All of the sites were relatively similar. R3 had the lowest amount of sensitive taxa present, 7 out of 11. R2, R4 and R5 had the most with 9 out of 11 taxa present and R1, R6 and R7 (all background sites) had eight.

Although populations were low at the downstream sites (R2, R3 and R4), the presence of many of the pollution sensitive insects identified at these sites, indicate that the benthic communities are healthy . It is interesting to note that proportionally, these potentially impacted sites had greater populations of Ephemeroptera and Plecoptera, pollution sensitive insects, than did the background/control sites of R1, R6 and R7 (see Table 6).

Based on the data presented in Section 4.3, the stream sediments at R4 appear to be contaminated with metals. Both zinc and lead levels were greater than the severe effect level and it would be expected that the benthic community here would suffer. However, the community at R4 was dominated by the pollution sensitive family Ephemereliidae of the order Ephemeroptera, demonstrating that the habitat is certainly suitable at this location. These data would indicate that although metals exist in the sediments, they presumably are not in a bioavailable form.

TABLE 8

Presence (+) and Absence (-) of Sensitive Taxa at Rose and Anvil Creeks

Sensitive Taxa	R1	R2	R3	R4	R5	R6	R7
Plecoptera							
Nemouridae	+	+	+	+	+	+	+
Perlodidae	+	+	-	+	+	+	+
Capniidae	+	+	+	+	+	+	+
Taeniopterigidae	+	+	-	+	+	+	+
Chloroperlidae	-	+	+	+	-	-	+
Pteronarcyidae	-	-	-	-	+	-	-
Ephemeroptera							
Epeorus	+	+	+	+	+	+	+
Ephemerellidae	+	+	+	+	+	+	+
Rithrogena	+	-	-	-	-	-	-
Trichoptera							
Brachycentriidae	-	+	+	+	+	+	-
Rhyacophilidae	+	+	+	+	+	+	+
Total # of sensitive taxa:	8	9	7	9	9	8	8

After Lehmkuhl (1979)

5.0 SUMMARY

Overall, the water samples collected at the sites in this study and analyzed for the selected parameters, generally indicated good water quality for the support of aquatic life. Several metals concentrations increased in the September water samples and the CCREM guideline for copper was exceeded at all sites, for iron at all sites except R5 and R6, and zinc at R2, R3 and R7. This anomalous incident of elevated concentrations at the background sites also, suggests that the increases were from natural sources.

Although stream sediment sampling is not a requirement of the current licence, samples were collected at each of the sites. The concentrations of various metals increased significantly at the three sites located on Rose Creek downstream of the tailings ponds compared to the non-impacted sites.

Based on abundance and diversity, it appears that the communities located on Rose Creek downstream of the tailings ponds have been negatively affected. However, the composition of these populations indicates that healthy benthic communities exist here. In addition, there appears to be full recovery of the populations at the downstream site of R5 on Anvil Creek, where abundance numbers and diversity were near or above levels at the upstream site of R1. The composition of all the communities had good representation of the major groups of organisms that are usually present in lotic waters.

6.0 REFERENCES

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APPENDIX A

WATER QUALITY DATA

APPENDIX A WATER QUALITY CHEMISTRY DATA, 1996

Site	Lab	Date	total alk.	pH	NFR	sulfate	ammonia	Total cyanide	Total Hardness	TOTAL METALS (mg/L) aluminum	antimony	arsenic	barium	beryllium	bismuth
R1	Cavendish	July 31/96	78	8.00	<5		<0.05		77	0.05	<0.03	<0.02	0.061	<0.001	<0.04
R1	Cavendish	Sept 3/96	70	7.93	<5	11	<0.05		70	<0.05	<0.02	<0.02	0.052	<0.001	<0.04
R1	Lab Dup									<0.05	<0.02	<0.02	0.044	<0.001	<0.04
R2	Cavendish	July 31/96	106	7.98	<5		<0.05	<0.001	135	0.05	<0.03	<0.02	0.046	<0.001	<0.04
R2	Quanta	July 31/96	110	7.90	<5	62	0.05	0.012	156	0.01	<0.02	<0.02	0.049	<0.0002	<0.02
R2	Cavendish	Sept 3/96	96	7.88	<5	34	<0.05	0.002	133	<0.05	<0.02	<0.02	0.056	0.001	<0.04
R2	Lab Dup														
R3	Cavendish	July 30/96	100	8.05	<5		<0.05	<0.001	121	0.05	<0.03	<0.02	0.042	<0.001	<0.04
R3	Cavendish	Sept 4/96	92	7.94	<5	39	<0.05	0.001	127	<0.05	<0.02	<0.02	0.053	<0.001	<0.04
R4	Cavendish	July 30/96	101	8.15	<5		<0.05	<0.001	122	0.05	<0.03	<0.02	0.048	<0.001	<0.04
R4	Cavendish	Sept 4/96	95	8.00	<5	35	<0.05	0.001	127	<0.05	<0.02	<0.02	0.066	<0.001	<0.04
R5	Cavendish	July 30/96	121	8.22	<5		<0.05		127	0.05	<0.03	<0.02	0.047	<0.001	<0.04
R5	Quanta	July 30/96	130	8.20	<5	23	<0.05		142	<0.01	<0.02	<0.02	0.0621	<0.0002	<0.02
R5	Cavendish	Sept 4/96	119	8.14	<5	16	<0.05		124	<0.05	<0.02	<0.02	0.072	<0.001	<0.04
R6	Cavendish	July 30/96	125	8.24	<5		<0.05		135	0.05	<0.03	<0.02	0.056	<0.001	<0.04
R6	Cavendish	Sept 4/96	124	8.17	<5	7	<0.05		125	<0.05	<0.02	<0.02	0.072	<0.001	<0.04
R7	Cavendish	July 30/96	75	8.01	<5		<0.05		72	0.05	<0.03	<0.02	0.038	<0.001	<0.04
R7	Cavendish	Sept 4/96	69	7.95	<5	3	<0.05		63	<0.05	<0.02	<0.02	0.044	<0.001	<0.04
FB	Field Blank	July 31/96								0.05	<0.03	<0.02	<0.002	<0.001	<0.04
FB	Field Blank	Sept 4/96								<0.05	<0.02	<0.02	<0.002	<0.001	<0.04

APPENDIX A WATER QUALITY CHEMISTRY DATA, 1996

Site	Lab	TOTAL METALS (mg/L) cadmium	calcium	chromium	cobalt	copper	iron	lanthanum	lead	magnesium	manganese	molybdenum	nickel
R1	Cavendish	<0.0005	22.6	<0.005	<0.005	0.0033	0.21	<0.005	<0.005	4.9	0.02	<0.002	<0.005
R1	Cavendish	<0.0005	20.1	<0.005	<0.005	0.0043	0.47	<0.005	<0.005	4.4	0.01	<0.002	<0.005
R1	Lab Dup	<0.0005	18.8	<0.005	<0.005	0.0006	0.29	<0.005	<0.005	4	0.01	<0.002	<0.005
R2	Cavendish	<0.0005	39.9	<0.005	<0.005	0.0052	0.26	<0.005	<0.005	8.6	0.71	<0.002	0.007
R2	Quanta	<0.0001	46.1	<0.001	<0.001	0.003	0.336		<0.001	9.45	0.595	<0.005	<0.002
R2	Cavendish	<0.0005	39.9	<0.005	<0.005	0.0073	0.47	<0.005	<0.005	8.6	0.77	<0.002	<0.005
R2	Lab Dup												
R3	Cavendish	<0.0005	36.2	<0.005	<0.005	0.0023	0.1	<0.005	<0.005	7.5	0.38	<0.002	<0.005
R3	Cavendish	<0.0005	39.0	<0.005	<0.005	0.0131	0.35	<0.005	<0.005	8.2	0.54	<0.002	0.006
R4	Cavendish	<0.0005	36.6	<0.005	<0.005	0.0026	0.02	<0.005	<0.005	7.5	0.12	<0.002	<0.005
R4	Cavendish	<0.0005	35.6	<0.005	<0.005	0.0153	0.35	<0.005	<0.005	7.6	0.27	<0.002	<0.005
R5	Cavendish	<0.0005	35.9	<0.005	<0.005	0.0017	0.02	<0.005	<0.005	9.1	0.03	<0.002	<0.005
R5	Quanta	<0.0001	40.6	<0.001	<0.001	0.004	0.11		<0.001	9.84	0.0246	<0.005	<0.002
R5	Cavendish	<0.0005	35.6	<0.005	<0.005	0.011	0.27	<0.005	<0.005	9.2	0.05	<0.002	<0.005
R6	Cavendish	<0.0005	37.9	<0.005	<0.005	0.0035	0.05	<0.005	<0.005	9.6	0.02	<0.002	0.009
R6	Cavendish	<0.0005	35.0	<0.005	<0.005	0.0031	0.29	<0.005	<0.005	9.5	0.01	<0.002	<0.005
R7	Cavendish	<0.0005	21.5	<0.005	<0.005	0.0022	0.08	<0.005	<0.005	4.4	0.01	<0.002	<0.005
R7	Cavendish	<0.0005	18.6	<0.005	<0.005	0.0023	0.31	<0.005	<0.005	3.8	0.01	<0.002	<0.005
FB	Field Blank	<0.0005	0.4	<0.005	<0.005	<0.0005	0.15	<0.005	<0.005	<0.1	<0.01	<0.002	<0.005
FB	Field Blank	<0.0005	<0.1	<0.005	<0.005	<0.0005	0.25	<0.005	<0.005	<0.1	<0.01	<0.002	<0.005

APPENDIX A WATER QUALITY CHEMISTRY DATA, 1996

Site	Lab	TOTAL METALS (mg/L) phosphorus	silicon	silver	sodium	strontium	sulfur	titanium	tungsten	vanadium	DISSOLVED METALS (mg/L) zinc	aluminum	antimony	arsenic	barium
R1	Cavendish	<0.04	3.12	<0.003	<1	0.115	1	<0.005	<0.03	<0.005	0.006	0.05	<0.03	<0.02	0.059
R1	Cavendish	0.08	5.45	<0.003	12	0.108	4	<0.005	<0.03	<0.005	0.026	<0.05	<0.02	<0.02	0.045
R1	Lab Dup	0.06	4.84	<0.003	11	0.097	<1	<0.005	<0.03	<0.005	0.028				
R2	Cavendish	<0.04	2.81	<0.003	4	0.168	9	<0.005	<0.03	<0.005	0.027	0.05	<0.03	<0.02	0.05
R2	Quanta	<0.06	4.89	<0.001	6.13	0.149	21.2	<0.001		<0.002	0.031	<0.01	<0.02	<0.02	0.0489
R2	Cavendish	0.09	4.86	<0.003	20	0.166	10	<0.005	<0.03	<0.005	0.042	<0.05	<0.02	<0.02	0.038
R2	Lab Dup											<0.05	<0.02	<0.02	0.039
R3	Cavendish	<0.04	2.90	<0.003	3	0.152	5	<0.005	<0.03	<0.005	0.016	0.05	<0.03	<0.02	0.039
R3	Cavendish	0.12	5.16	<0.003	22	0.160	10	<0.005	<0.03	<0.005	0.051	<0.05	<0.02	<0.02	0.039
R4	Cavendish	<0.04	3.02	<0.003	3	0.152	5	<0.005	<0.03	<0.005	0.006	0.05	<0.03	<0.02	0.05
R4	Cavendish	0.10	4.75	<0.003	20	0.146	9	<0.005	<0.03	<0.005	0.026	<0.05	<0.02	<0.02	0.048
R5	Cavendish	0.10	2.71	<0.003	1	0.123	1	<0.005	<0.03	<0.005	<0.005	0.05	<0.03	0.03	0.048
R5	Quanta	<0.06	4.74	<0.001	2.72	0.110	7.9	<0.001		<0.002	0.002	<0.01	<0.02	<0.02	0.051
R5	Cavendish	0.04	4.76	<0.003	12	0.123	3	<0.005	<0.03	<0.005	0.009	<0.05	0.03	<0.02	0.056
R6	Cavendish	0.09	2.98	<0.003	1	0.125	1	<0.005	<0.03	<0.005	<0.005	0.05	<0.03	<0.02	0.06
R6	Cavendish	0.09	4.36	<0.003	11	0.120	1	<0.005	<0.03	<0.005	0.006	<0.05	<0.02	<0.02	0.059
R7	Cavendish	<0.04	3.09	<0.003	1	0.100	1	<0.005	<0.03	<0.005	0.006	0.05	<0.03	<0.02	0.035
R7	Cavendish	<0.04	4.60	<0.003	9	0.091	1	<0.005	<0.03	<0.005	0.041	<0.05	<0.02	<0.02	0.036
FB	Field Blank	<0.04	<0.1	<0.003	<1	0.004	1	<0.005	<0.03	<0.005	<0.005	0.05	<0.03	<0.02	<0.002
FB	Field Blank	<0.04	1.58	<0.003	<1	<0.002	1	<0.005	<0.03	<0.005	0.006	<0.05	<0.02	<0.02	<0.002

APPENDIX A WATER QUALITY CHEMISTRY DATA, 1996

Site	Lab	DISSOLVED METALS (mg/L) beryllium	bismuth	cadmium	calcium	chromium	cobalt	copper	iron	lanthanum	lead	magnesium	manganese
R1	Cavendish	<0.001	<0.04	<0.002	22.0	<0.005	<0.005	0.0021	0.03	<0.005	<0.02	4.9	0.02
R1	Cavendish	0.003	<0.04	<0.0005	20.8	<0.005	<0.005	0.0043	0.07	<0.005	<0.005	4.3	0.01
R1	Lab Dup												
R2	Cavendish	0.001	<0.04	<0.002	39.3	<0.005	<0.005	0.0017	0.09	<0.005	<0.02	8.7	0.7
R2	Quanta	<0.0002	<0.02	<0.0001	46.0	<0.001	<0.001	<0.002	0.127		<0.001	9.5	0.594
R2	Cavendish	0.003	<0.04	<0.0005	39.5	<0.005	<0.005	<0.0005	0.17	<0.005	<0.005	8.3	0.78
R2	Lab Dup	0.001	<0.04	<0.0005	38.8	<0.005	<0.005	<0.0005	0.17	<0.005	<0.005	8.2	0.77
R3	Cavendish	0.001	<0.04	<0.002	36.4	<0.005	<0.005	0.0013	0.02	<0.005	<0.02	7.7	0.37
R3	Cavendish	<0.001	<0.04	<0.0005	38.0	<0.005	<0.005	<0.0005	0.09	<0.005	<0.005	7.7	0.55
R4	Cavendish	0.001	<0.04	<0.002	36.5	<0.005	<0.005	0.0015	0.01	<0.005	<0.02	7.8	0.1
R4	Cavendish	<0.001	<0.04	<0.0005	37.6	<0.005	<0.005	0.0056	0.06	<0.005	<0.005	8.0	0.28
R5	Cavendish	<0.001	<0.04	<0.002	34.5	<0.005	<0.005	0.0008	0.02	<0.005	<0.02	9.0	0.02
R5	Quanta	<0.0002	<0.02	<0.0001	20.6	<0.001	<0.001	<0.002	0.035		<0.001	4.4	0.0084
R5	Cavendish	0.002	<0.04	<0.0005	34.7	<0.005	<0.005	<0.0005	0.05	<0.005	<0.005	9.0	0.06
R6	Cavendish	<0.001	<0.04	<0.002	34.9	<0.005	<0.005	0.0013	0.02	<0.005	<0.02	9.3	0.01
R6	Cavendish	<0.001	<0.04	<0.0005	35.0	<0.005	<0.005	0.0020	0.03	<0.005	<0.005	9.1	0.01
R7	Cavendish	<0.001	<0.04	<0.002	20.2	<0.005	<0.005	0.0012	0.04	<0.005	<0.02	4.2	0.01
R7	Cavendish	0.002	<0.04	<0.0005	18.7	<0.005	<0.005	<0.0005	0.13	<0.005	<0.005	3.9	<0.01
FB	Field Blank	<0.001	<0.04	<0.0005	0.4	<0.005	<0.005	<0.0005	0.02	<0.005	<0.005	<0.1	<0.01
FB	Field Blank	<0.001	<0.04	<0.0005	0.2	<0.005	<0.005	0.002	<0.1	<0.005	<0.005	<0.1	<0.01

APPENDIX A WATER QUALITY CHEMISTRY DATA, 1996

Site	Lab	DISSOLVED METALS (mg/L) molybdenum	nickel	phosphorus	silicon	silver	sodium	strontium	sulfur	titanium	tungsten	vanadium	zinc
R1	Cavendish	<0.002	<0.005	<0.04	3.00	<0.003	2	0.109	1	<0.005	<0.03	<0.005	<0.01
R1	Cavendish	<0.002	<0.005	<0.04	4.56	<0.003	8	0.103	<1	<0.005	<0.03	<0.005	<0.005
R1	Lab Dup												
R2	Cavendish	<0.002	<0.005	<0.04	2.59	<0.003	5	0.165	8	<0.005	<0.03	<0.005	0.03
R2	Quanta	<0.005	<0.002	<0.06	4.74	<0.001	6	0.145	20	<0.001		<0.002	0.027
R2	Cavendish	<0.002	<0.005	0.09	4.30	<0.003	16	0.163	1	<0.005	<0.03	<0.005	0.032
R2	Lab Dup	<0.002	<0.005	0.11	4.54	<0.003	16	0.161	<1	<0.005	<0.03	<0.005	0.029
R3	Cavendish	<0.002	<0.005	<0.04	2.96	<0.003	4	0.152	5	<0.005	<0.03	<0.005	0.02
R3	Cavendish	<0.002	<0.005	<0.04	4.52	<0.003	16	0.155	<1	<0.005	<0.03	<0.005	0.024
R4	Cavendish	<0.002	<0.005	<0.04	2.97	<0.003	4	0.151	3	<0.005	<0.03	<0.005	<0.01
R4	Cavendish	<0.002	<0.005	0.06	4.35	<0.003	15	0.155	1	<0.005	<0.03	<0.005	0.018
R5	Cavendish	<0.002	<0.005	<0.04	2.55	<0.003	2	0.121	1	<0.005	<0.03	<0.005	<0.01
R5	Quanta	<0.005	<0.002	<0.06	4.59	<0.001	2	0.076	4	<0.001		<0.002	<0.001
R5	Cavendish	<0.002	0.005	<0.04	4.21	<0.003	9	0.123	<1	<0.005	<0.03	<0.005	0.011
R6	Cavendish	<0.002	<0.005	<0.04	2.46	<0.003	1	0.116	1	<0.005	<0.03	<0.005	<0.01
R6	Cavendish	<0.002	<0.005	0.07	4.20	<0.003	7	0.118	<1	<0.005	<0.03	<0.005	<0.005
R7	Cavendish	<0.002	<0.005	<0.04	2.68	<0.003	2	0.094	1	<0.005	<0.03	<0.005	<0.01
R7	Cavendish	<0.002	<0.005	0.20	4.86	<0.003	7	0.091	1	<0.005	<0.03	<0.005	0.006
FB	Field Blank	<0.002	0.005	<0.04	<0.1	<0.003	<1	<0.002	1	<0.005	<0.03	<0.005	<0.005
FB	Field Blank	<0.002	<0.005	0.05	0.33	<0.003	<1	<0.002	<1	<0.005	<0.03	<0.005	<0.005

APPENDIX B

SEDIMENT DATA

APPENDIX B, SEDIMENT RESULTS AT ROSE AND ANVIL CREEKS, JULY, 1996

SITE	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Hg ppm	La ppm
R1	<0.1	1.09	6	195	0.9	<3	0.53	0.6	9	27	21	2.09	<3	18
R2	0.6	1.21	32	399	1.0	<3	0.79	1.6	16	50	60	3.38	<3	16
R3	0.4	1.05	31	263	0.9	<3	0.65	1.0	17	39	59	2.95	<3	12
R4	0.9	1.20	32	600	1.2	<3	0.68	2.1	24	46	78	3.24	<3	16
R5	<0.1	1.36	14	308	0.9	<3	0.65	0.8	13	45	35	2.65	<3	18
R6	<0.1	1.42	9	238	0.9	<3	0.69	1.0	13	45	34	2.65	<3	19
R7	<0.1	0.86	10	173	0.7	<3	0.40	0.4	4	20	14	1.84	<3	16

SITE	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Si %	Sr ppm	Ti %	V ppm	W ppm	Zn ppm
R1	0.45	1419	<1	0.05	25	1167	74	<2	0.06	55	0.05	27	<2	221
R2	0.72	2808	1	0.05	49	1162	310	3	0.10	51	0.05	34	<2	617
R3	0.59	4665	1	0.05	42	1183	244	<2	0.09	45	0.04	29	<2	581
R4	0.70	11466	2	0.07	66	1043	267	<2	0.10	57	0.05	35	<2	908
R5	0.73	1855	<1	0.04	41	1413	20	3	0.05	39	0.07	53	<2	161
R6	0.76	1222	1	0.04	40	1349	11	<2	0.06	40	0.07	54	<2	125
R7	0.35	887	<1	0.01	17	1109	18	<2	0.04	31	0.05	24	<2	82

APPENDIX C

BENTHIC INVERTEBRATE DATA

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R1a	R1b	R1c	R2a	R2b	R2c	R3a	R3b	R3c	R4a	R4b	R4c
PHYLUM COELENTERATA												
Class Hydrozoa												
Hydra sp	1											
PHYLUM MULLOSCA												
Class Pelecypoda												
Family Sphaeriidae												
Pisidium sp					1							
PHYLUM NEMATODA	1	3	2									
PHYLUM ANNELIDA												
Class Oligochaeta												
Order Haplotaxidae												
Family Naididae												
Nais sp	1											
Family Tubificidae unid J	6									1		
PHYLUM ARTHROPODA												
Class Crustacea												
Sub Class Copepoda												
Sub Order Cyclopoida	1											
Sub Order Harpacticoida												
Sub Class Ostracoda												
Ostracoda Unid												
Family Candonidae												
Candona sp		2										
Family Cyclocypridae												
Cypria sp		1										
Class Arachnida												
Order Hydracarina												
Hydracarina, unid J/D	5			2			1			4	2	
Lebertia sp		2		1	1	1						
Neumannia sp												
Sperchon sp	1									3		1
Torrenticola sp	4											
Class Insecta												
Oder Plecoptera												
Plecoptera, Unid J/D										36		
Family Capniidae												
Capnia sp	1	2		1	1	1	1		1	36	10	4
Family Perlodidae												
Isoperla sp	5	2		24	7	13				1		
Megarcys sp			2	3	6	6	1	1	6	4		1
Skwala curvata		1	1	1		1				4		1
Skwala paralella				1								
Family Nemouridae												
Malenka sp	10	3	1	6	5	10		1	1	5		2
Zapada sp	13	11	1	8	6	11	5	5	3	2	11	13
Family Pteronarcyidae												
Pteronarcella sp												
Family Chloroperlidae												
Sweltsa sp gp					1				3			3
Family Taeniopterygidae												
Taenionema sp	5	4	3			1				2	2	
Order Ephemeroptera												
Ephemeroptera Adult												
Family Siphlonuridae												
Ameletus sp												
Siphlonurus sp	2	2										

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R1a	R1b	R1c	R2a	R2b	R2c	R3a	R3b	R3c	R4a	R4b	R4c
Family Baetidae												
Baetis sp	54	79	18	139	42	125	4		8	62	23	2
Family Heptageniidae												
Cinygmula sp		3	2	2		3						
Epeorus (Iron) albertae				3	1		2			1		
Epeorus (Iron)longimanus	1						3		4	4		
Heptagenia sp												
Rhithrogena sp		1	2									
Family Ephemerellidae												
Ephemerella coloradensis												
Ephemerella doddsi			1	1			2	1	1	4	7	4
Ephemerella inermis	2	19	1		1	2				2		
Ephemerella grandis		2									1	
Ephemerella sp	1	1		9		9	2	1	4	133	24	12
Order Trichoptera												
Trichoptera, Unid J				1	1							
Trichoptera pupae												
Family Hydropsychidae												
Arctopsyche sp				5	1	4	1	3	2	32	14	3
Cheumatopsyche sp												
Hydropsychidae unid J												
Family Brachycentridae												
Brachycentrus sp				8	4	6	2	1	1	2	6	3
Family Limnephilidae												
Clostoeca sp												
Dicosmoecus sp				1		1					1	
Family Glossosomatidae												
Glossosoma sp		4	1	7	1					12	4	20
Family Hydroptilidae												
Hydroptila sp												
Family Rhyacophilidae												
Rhyacophila sp juv	2			1			2		2	4	2	
Rhyacophila acropedes/vao	4	5	2									1
Rhyacophila (hyalinata?)							4		4		1	1
Rhyacophila vepulsa												
Order Diptera												
Diptera, Unid adult		1										
Family Tipulidae												
Antocha sp		1										
Dicranota sp	1											
Hexatoma sp												
Tipula sp												
Family Simulidae												
Prosimulium sp	1											
Prosimulium sp P	1											
Simulium sp L	74	122	13	7	4	2	9	10	25	19	17	1
Simulium sp P		1			1							
Family Chironomidae												
Chironomidae adult	1	1					1					
Chironomidae pupae	14	6	7	2		1			1			
Chironomidae unid J/D	80	252	15	19	12	28		1	3	20	3	
Sub Family Tanypodinae												
Thienemannimyia sp					1	1						
Sub Family Chironomini												
Dicrotendipes sp												
Micropsectra sp												
Microtendipes sp												
Rheotanytarsus sp	2	4	1	1							1	
Tanytarsus sp	3					1						
Sub Family Orthocladiinae												
Brillia sp	70			7	2	1			2	2		
Cardiocladius sp	39	87	57	112	76	115	3		2	20	7	9

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R1a	R1b	R1c	R2a	R2b	R2c	R3a	R3b	R3c	R4a	R4b	R4c
Corynoneura sp	3								1			
Cricotopus sp	96	60	10	18	25	15	1			12	11	2
Eukiefferiella sp	91	155	17	4	7	5			1	3		
Euryhapsis sp				6	7	7	1			3	2	
Symposiocladius sp	1											
Synorthocladius sp	3	1	2									
Thienemanniella sp	9	5	6									
Sub Family Diamesinae												
Diamesa sp												
Family Ceratopogonidae												
Culicoides sp												
Palpomyia sp	1											
Family Deuterophlebiidae												
Deuterophlebia sp												
Family Empididae												
Empididae pupae												
Chelifera sp		1								1		
Family Muscidae												
Limnophora sp				1	4	2						
Family Psychodidae.												
Pericoma sp	3	2										
Order Colembolla												
Podura sp	1											
Order Homoptera												
Aphididae	1		1									
Cicadellidae												
Order Hymenoptera Unid A	1											
Order Lepidoptera L	1											
Total per site:	617	846	166	401	218	372	45	24	75	434	149	83
Taxonomic Richness per site:	44	35	23	31	26	27	20	10	22	29	21	19

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R5a	R5b	R5c	R6a	R6b	R6c	R7a	R7b	R7c
PHYLUM COELENTERATA									
Class Hydrozoa									
Hydra sp									
PHYLUM MULLOSCA									
Class Pelecypoda									
Family Sphaeriidae									
Pisidium sp									
PHYLUM NEMATODA	3		4					1	7
PHYLUM ANNELIDA									
Class Oligochaeta									
Order Haplotaxidae									
Family Naididae									
Nais sp									
Family Tubificidae unid J									1
PHYLUM ARTHROPODA									
Class Crustacea									
Sub Class Copepoda									
Sub Order Cyclopoida									
Sub Order Harpacticoida									
Sub Class Ostracoda									
Ostracoda Unid									
Family Candonidae									
Candona sp									
Family Cyclocypridae									
Cypria sp									
Class Arachnida									
Order Hydracarina									
Hydracarina, unid J/D	21	18	26	32		43		19	14
Lebertia sp	1						2	5	2
Neumannia sp									
Sperchon sp	7	5	4	5		2	1	3	6
Torrenticola sp	58	103	101	176	3	212		33	25
Class Insecta									
Oder Plecoptera									
Plecoptera, Unid J/D									
Family Capniidae									
Capnia sp	46	52	42	28	2	16	20	12	40
Family Perlodidae									
Isoperla sp	3	2	2	2	1	2		1	1
Megarcys sp		1	1	3	1	4			
Skwala curvata	6	6	14	4		4	4	3	4
Skwala paralella									
Family Nemouridae									
Malenka sp	4	10	20	19	2	12	32	108	142
Zapada sp	21	19		7	6	16	15		
Family Pteronarcyidae									
Pteronarcella sp	1								
Family Chloroperlidae									
Sweltsa sp gp							1		2
Family Taeniopterygidae									
Taenionema sp	6	18	20	45	6	36	23	51	22
Order Ephemeroptera									
Ephemeroptera Adult						1			
Family Siphlonuridae									
Ameletus sp								1	
Siphlonurus sp									

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R5a	R5b	R5c	R6a	R6b	R6c	R7a	R7b	R7c
Family Baetidae									
Baetis sp	70	117	192	59	6	123	5	34	4
Family Heptageniidae									
Cinygmula sp	9	2	7	1		1	13	3	14
Epeorus (Iron) albertae		2				1	3	2	3
Epeorus (Iron)longimanus				1					
Heptagenia sp									
Rhithrogena sp									
Family Ephemerellidae									
Ephemerella coloradensis	1			1			2	1	8
Ephemerella doddsi	4	11	16	28	9	21	3		
Ephemerella inermis		1	1			1	1	2	1
Ephemerella grandis	35	13	24	40		20	1		1
Ephemerella sp	7	14	9	19	10	8	6	5	12
Order Trichoptera									
Trichoptera, Unid J									
Trichoptera pupae									
Family Hydropsychidae									
Arctopsyche sp		2	1	5	3	3	1	4	3
Cheumatopsyche sp	14	25	43	53	9	104	1	4	3
Hydropsychidae unid J			1						
Family Brachycentridae									
Brachycentrus sp		2	2	3		4			
Family Limnephilidae									
Clostoeca sp			1						
Dicosmoecus sp								1	2
Family Glossosomatidae									
Glossosoma sp					1		1		
Family Hydroptilidae									
Hydroptila sp									
Family Rhyacophilidae									
Rhyacophila sp juv	1			5					
Rhyacophila acropedes/vao	1			2		1		1	1
Rhyacophila (hyalinata?)				1		1			
Rhyacophila vepulsa									
Order Diptera									
Diptera, Unid adult									
Family Tipulidae									
Antocha sp									
Dicranota sp									
Hexatoma sp									
Tipula sp									
Family Simulidae									
Prosimulium sp	1	5				11	1	1	1
Prosimulium sp P				1		3			1
Simulium sp L	17	67	42	217	39	215	19	35	51
Simulium sp P		5		9	1	7		4	6
Family Chironomidae									
Chironomidae adult						1			
Chironomidae pupae		7	3	7		4	3	27	8
Chironomidae unid J/D	300	77	156	189	9	173	59	1262	290
Sub Family Tanypodinae									
Thienemannimyia sp									
Sub Family Chironomini									
Dicrotendipes sp									
Micropsectra sp									1
Microtendipes sp									
Rheotanytarsus sp	7	4	5					10	2
Tanytarsus sp	1								
Sub Family Orthocladiinae									
Brillia sp									
Cardiocladius sp	47	74	65	103	16	78	61	100	96

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX C BENTHIC INVERTEBRATE DATA, 1996

	R5a	R5b	R5c	R6a	R6b	R6c	R7a	R7b	R7c
Corynoneura sp						1			
Cricotopus sp	133	87	79	54	17	93	156	251	164
Eukiefferiella sp	97	64	61	119	7	113	59	372	135
Euryhapsis sp	11	8	5	2	1	4	3	22	11
Symposiocladius sp									
Synorthocladius sp	2	2	3	3		1	1	2	
Thienemanniella sp	10	2	3			2	17	17	24
Sub Family Diamesinae									
Diamesa sp			1	1					
Family Ceratopogonidae									
Culicoides sp							1	1	
Palpomyia sp									
Family Deuterophlebiidae									
Deuterophlebia sp									
Family Empididae									
Empididae pupae									1
Chelifera sp									1
Family Muscidae									
Limnophora sp									
Family Psychodidae									
Pericoma sp	1		1	1		3		5	1
Order Colembolla									
Podura sp									
Order Homoptera									
Aphididae									
Cicadellidae				1					
Order Hymenoptera Unid A						1			
Order Lepidoptera L									
Total per site:	946	825	955	1246	149	1346	515	2403	1111
Taxonomic Richness per site:	34	32	33	36	20	39	30	35	39

unid = unidentified J = juvenile L = larvae P = pupae A = adult D = damaged

APPENDIX 5

1996 SEEP SURVEY RESULTS

FARO MINE SITE - 1996 SEEP SURVEY - EXTRA RESULTS IN ADDITION TO THE COMPREHENSIVE ANNUAL SURVEY (JUNE)

STATION: Faro Cr u/s of confluence NFRose ('FAROCR')

Date	CN-T mg/L	COND-L µS/cm	FLOW m3/sec	NH3-N mg/L	PH-F pH unit	LAB pH pH unit	SO4-T mg/L	TSS mg/L
23/04/96	0.001	214		0.24	6.89		239	78
15/05/96		161	0.01	0.18	6.58		131	65

STATION: NW Interceptor ditch u/s of X5 ('NWINT')

Date	CN-T mg/L	COND-L µS/cm	FLOW m3/sec	NH3-N mg/L	PH-F pH unit	LAB pH pH unit	SO4-T mg/L	TSS mg/L
06/05/96			0.0134					
13/05/96	<.001	235	0.0165	<.05	8.21		78	126
11/06/96		414		<.05			28	<5

STATION: S Fork of Rose Cr ('SFORKROSE')

Date	CN-T mg/L	COND-L µS/cm	FLOW m3/sec	NH3-N mg/L	PH-F pH unit	LAB pH pH unit	SO4-T mg/L	TSS mg/L
13/05/96	<.001	84		<.05	7.66		8	40

STATION: Zone II Area Seep Survey Interceptor Ditch ('SP5-6')

Date	CN-T mg/L	COND-L µS/cm	FLOW m3/sec	NH3-N mg/L	PH-F pH unit	LAB pH pH unit	SO4-T mg/L	TSS mg/L
20/06/96		1029				7.66	437	

FARO MINE SITE - 1996 SEEP SURVEY - EXTRA RESULTS IN ADDITION TO THE COMPREHENSIVE ANNUAL SURVEY (JUNE)

STATION: Faro Cr u/s of confluence NFRose ('FAROCR')

Date	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L	CO-T mg/L	CR-T mg/L	CU-T mg/L	FE-T mg/L	HG-T mg/L	LA-T mg/L	MG-T mg/L	MN-T mg/L	MO-T mg/L	NA-T mg/L	NI-T mg/L	PB-T mg/L	P-T mg/L	SB-T mg/L	SE-T mg/L	SI-T mg/L	S-T mg/L	SR-T mg/L	TI-T mg/L	V-T mg/L	W-T mg/L	ZN-T mg/L
23/04/96	<.003	3.24	<.02	0.097	<.001	<.04	22.6	0.003	<.005	<.005	0.021	6.37		<.005	7.1	0.28	0.003	<1	0.022	<.02	0.16	< 03		3.05	22	0.102	0 149	0 012	< 03	1 02
15/05/96	<.003	3.82	< 02	0.103	< 001	< 04	15.1	<.002	<.005	<.005	0.052	5.86		< 005	4.2	0.13	< 002	<1	<.005	< 02	0.09	<.03		3.77	44	< 002	0 137	< 005	< 03	0 68

STATION: NW Interceptor ditch u/s of X5 ('NWINT')

Date	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L	CO-T mg/L	CR-T mg/L	CU-T mg/L	FE-T mg/L	HG-T mg/L	LA-T mg/L	MG-T mg/L	MN-T mg/L	MO-T mg/L	NA-T mg/L	NI-T mg/L	PB-T mg/L	P-T mg/L	SB-T mg/L	SE-T mg/L	SI-T mg/L	S-T mg/L	SR-T mg/L	TI-T mg/L	V-T mg/L	W-T mg/L	ZN-T mg/L
13/05/96	< 003	1.94	< 02	0.076	< 001	< 04	32	<.002	<.005	< 005	0.03	3.27	< 02	<.005	6 2	0 02	< 002	<1	< 005	< 02	0.23	< 03	< 02	2 28	23	0 15	0 058	< 01	< 03	0 03
11/06/96	< 003	<.05	< 02	0 053	0 002	< 04	44 9	<.002	<.005	< 005	<.002	0.19	< 02	<.005	8 9	0 02	< 002	1	< 005	0 02	< 04	< 03	< 02	2 07	9	0 207	< 005	0 008	< 03	0 01

STATION: S Fork of Rose Cr ('SFORKROSE')

Date	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L	CO-T mg/L	CR-T mg/L	CU-T mg/L	FE-T mg/L	HG-T mg/L	LA-T mg/L	MG-T mg/L	MN-T mg/L	MO-T mg/L	NA-T mg/L	NI-T mg/L	PB-T mg/L	P-T mg/L	SB-T mg/L	SE-T mg/L	SI-T mg/L	S-T mg/L	SR-T mg/L	TI-T mg/L	V-T mg/L	W-T mg/L	ZN-T mg/L
13/05/96	<.003	0.66	< 02	0.033	< 001	< 04	10 9	<.002	<.005	<.005	0.002	1.45		<.005	1.6	0.12	< 002	<1	< 005	< 02	< 04	< 03		1 56	2	0 067	0 024	< 01	< 03	0 02

STATION: Zone II Area Seep Survey Interceptor Ditch ('SP5-6')

Date	AG-T mg/L	AL-T mg/L	AS-T mg/L	BA-T mg/L	BE-T mg/L	BI-T mg/L	CA-T mg/L	CD-T mg/L	CO-T mg/L	CR-T mg/L	CU-T mg/L	FE-T mg/L	HG-T mg/L	LA-T mg/L	MG-T mg/L	MN-T mg/L	MO-T mg/L	NA-T mg/L	NI-T mg/L	PB-T mg/L	P-T mg/L	SB-T mg/L	SE-T mg/L	SI-T mg/L	S-T mg/L	SR-T mg/L	TI-T mg/L	V-T mg/L	W-T mg/L	ZN-T mg/L
21/06/96	<.003	<.05	< 02	0.02	0 004	< 04	107 8	<.002	<.005	<.005	0.003	0.14	< 02	<.005	62 8	0.14	<.002	4	0.023	< 02	< 04	< 03		2 45	145	0 506	< 005	< 005	< 03	2 53

CHEMICAL ANALYSIS REPORT

Date: June 28, 1996

ASL File No. G2015

Report On: Seep Survey Water Analysis

Report To: **Anvil Range Mining Corporation**
Postal Bag 1000
Faro, YT

Attention: **Ms. Yolanda Vandermeer**

Received: June 12, 1996

ASL ANALYTICAL SERVICE LABORATORIES LTD.
per:

Brent A. Makelki, B.Sc.
Project Chemist

Andrea Brocke, B.Sc.
Project Chemist

REMARKS File No. G2015

Please note that from our laboratory analysis of the water, it was determined that the concentration of some dissolved metals exceeds the concentration of the total metals within a given sample. The cause of this is generally due to the following factors: 1) filter contamination in the field during sample collection, 2) contamination during transport, or 3) analytical variability.

It is highly recommended that filter blanks be submitted along with the samples in order to check for potential contamination; these samples are analyzed at no extra cost.

RESULTS OF ANALYSIS File No. G2015

			FC5 Site 25	FCO29	FDU	FDL (FC5)	SP5/6
			96 06 06	96 06 06	96 06 06	96 06 06	96 06 06
Physical Tests							
Conductivity (umhos/cm)			19.2	142	20.8	21.7	1970
Hardness		CaCO3	7.25	48.6	7.91	9.14	1190
pH			6.72	5.69	6.51	6.59	7.68
Dissolved Anions							
Acidity		CaCO3	2.0	10.0	2.0	2.0	19.0
Alkalinity - Total		CaCO3	7.2	1.9	7.0	7.8	321
Sulphate	SO4		1.5	55.5	2.4	2.2	894
Total Metals							
Aluminum	T-Al		<0.2	0.4	<0.2	<0.2	<0.2
Antimony	T-Sb		<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	T-As		<0.2	<0.2	<0.2	<0.2	<0.2
Barium	T-Ba		0.01	0.11	0.02	0.02	0.03
Beryllium	T-Be		<0.005	<0.005	<0.005	<0.005	<0.005
Bismuth	T-Bi		<0.1	<0.1	<0.1	<0.1	0.2
Boron	T-B		<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T-Cd		<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	T-Ca		2.18	12.7	2.42	2.38	235
Chromium	T-Cr		<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	T-Co		<0.01	0.01	<0.01	<0.01	<0.01
Copper	T-Cu		<0.01	0.06	<0.01	<0.01	<0.01
Iron	T-Fe		0.10	1.03	0.20	0.21	0.07
Lead	T-Pb		<0.05	0.22	0.09	0.05	<0.05
Lithium	T-Li		<0.01	<0.01	<0.01	<0.01	0.06
Magnesium	T-Mg		0.46	4.55	0.51	0.51	151
Manganese	T-Mn		<0.005	0.369	0.005	0.006	0.722
Molybdenum	T-Mo		<0.03	<0.03	<0.03	<0.03	<0.03
Nickel	T-Ni		<0.02	<0.02	<0.02	<0.02	0.06
Phosphorus	T-P		<0.3	<0.3	<0.3	<0.3	<0.3
Potassium	T-K		<2	<2	<2	<2	7
Selenium	T-Se		<0.2	<0.2	<0.2	<0.2	<0.2
Silicon	T-Si		3.51	3.97	3.47	3.44	4.42
Silver	T-Ag		<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	T-Na		<2	<2	<2	<2	11
Strontium	T-Sr		0.019	0.073	0.019	0.021	1.02
Tin	T-Sn		<0.03	<0.03	<0.03	<0.03	<0.03
Titanium	T-Ti		<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	T-V		<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn		<0.005	3.15	0.033	0.037	5.25

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS File No. G2015

			W10	W8	NF2 (NFL)	NW1	GHSCR2
			96 06 06	96 06 06	96 06 06	96 06 06	96 06 06
Physical Tests							
Conductivity (umhos/cm)			61.2	72.6	88.5	298	1740
Hardness		CaCO3	27.6	37.6	48.5	161	1060
pH			7.35	7.34	7.23	7.85	7.68
Dissolved Anions							
Acidity		CaCO3	1.0	1.0	2.0	2.0	36.0
Alkalinity - Total		CaCO3	27.0	30.7	39.3	134	189
Sulphate	SO4		3.9	5.2	4.8	20.2	841
Total Metals							
Aluminum	T-Al		<0.2	<0.2	<0.2	<0.2	1.1
Antimony	T-Sb		<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	T-As		<0.2	<0.2	<0.2	<0.2	<0.2
Barium	T-Ba		0.01	0.02	0.04	0.06	0.08
Beryllium	T-Be		<0.005	<0.005	<0.005	<0.005	<0.005
Bismuth	T-Bi		<0.1	<0.1	<0.1	<0.1	<0.1
Boron	T-B		<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	T Cd		<0.01	<0.01	<0.01	<0.01	0.02
Calcium	T-Ca		9.24	10.6	14.8	52.7	309
Chromium	T-Cr		<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	T-Co		<0.01	<0.01	<0.01	<0.01	0.03
Copper	T-Cu		<0.01	<0.01	<0.01	<0.01	0.06
Iron	T-Fe		0.06	0.07	0.29	0.11	10.3
Lead	T-Pb		<0.05	<0.05	<0.05	<0.05	1.02
Lithium	T-Li		<0.01	<0.01	<0.01	<0.01	0.04
Magnesium	T-Mg		1.18	1.48	2.79	9.60	95.8
Manganese	T-Mn		<0.005	<0.005	0.019	0.009	2.30
Molybdenum	T-Mo		<0.03	<0.03	<0.03	<0.03	<0.03
Nickel	T-Ni		<0.02	<0.02	<0.02	<0.02	0.06
Phosphorus	T-P		<0.3	<0.3	<0.3	<0.3	0.4
Potassium	T-K		<2	<2	<2	3	6
Selenium	T-Se		<0.2	<0.2	<0.2	<0.2	<0.2
Silicon	T-Si		4.83	4.75	3.88	4.96	7.35
Silver	T-Ag		<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	T-Na		<2	<2	<2	3	20
Strontium	T-Sr		0.035	0.043	0.071	0.229	1.48
Tin	T-Sn		<0.03	<0.03	<0.03	<0.03	<0.03
Titanium	T-Ti		<0.01	<0.01	<0.01	<0.01	0.02
Vanadium	T-V		<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	T-Zn		<0.005	0.013	0.013	0.006	23.1

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS File No. G2015

			BH-12 Seepage NE1
			96 06 06
Physical Tests			
Conductivity (umhos/cm)			2290
Hardness		CaCO3	1390
pH			7.46
Dissolved Anions			
Acidity		CaCO3	26.0
Alkalinity - Total		CaCO3	244
Sulphate	SO4		930
Total Metals			
Aluminum	T-Al		2.2
Antimony	T-Sb		<0.2
Arsenic	T-As		<0.2
Barium	T-Ba		0.08
Beryllium	T-Be		<0.005
Bismuth	T-Bi		0.2
Boron	T-B		<0.1
Cadmium	T-Cd		<0.01
Calcium	T-Ca		273
Chromium	T-Cr		<0.01
Cobalt	T-Co		<0.01
Copper	T-Cu		0.02
Iron	T-Fe		2.33
Lead	T-Pb		<0.05
Lithium	T-Li		0.06
Magnesium	T-Mg		184
Manganese	T-Mn		0.238
Molybdenum	T-Mo		<0.03
Nickel	T-Ni		0.09
Phosphorus	T-P		<0.3
Potassium	T-K		7
Selenium	T-Se		<0.2
Silicon	T-Si		6.71
Silver	T-Ag		<0.01
Sodium	T-Na		15
Strontium	T-Sr		1.15
Tin	T-Sn		<0.03
Titanium	T-Ti		0.05
Vanadium	T-V		<0.03
Zinc	T-Zn		2.79

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS File No. G2015

		FC5 Site 25	FCO29	FDU	FDL	SP5/6
		96 06 06	96 06 06	96 06 06	96 06 06	96 06 06
Dissolved Metals						
Aluminum	D-Al	<0.2	<0.2	<0.2	<0.2	<0.2
Antimony	D-Sb	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	D-As	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	D-Ba	<0.01	0.09	0.01	0.01	0.03
Beryllium	D-Be	<0.005	<0.005	<0.005	<0.005	<0.005
Bismuth	D-Bi	<0.1	<0.1	<0.1	<0.1	0.1
Boron	D-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	D-Cd	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	D-Ca	2.17	12.3	2.34	2.80	231
Chromium	D-Cr	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	D-Co	<0.01	0.01	<0.01	<0.01	<0.01
Copper	D-Cu	<0.01	0.03	<0.01	<0.01	<0.01
Iron	D-Fe	0.07	0.08	0.11	0.10	<0.03
Lead	D-Pb	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium	D-Li	<0.01	<0.01	<0.01	<0.01	0.06
Magnesium	D-Mg	0.447	4.37	0.504	0.518	150
Manganese	D-Mn	<0.005	0.342	<0.005	0.014	0.718
Molybdenum	D-Mo	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel	D-Ni	<0.02	<0.02	<0.02	<0.02	0.06
Phosphorus	D-P	<0.3	<0.3	<0.3	<0.3	<0.3
Potassium	D-K	<2	<2	<2	<2	7
Selenium	D-Se	<0.2	<0.2	<0.2	<0.2	<0.2
Silicon	D-Si	3.38	3.67	3.40	3.27	4.36
Silver	D-Ag	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	D-Na	<2	2	<2	<2	11
Strontium	D-Sr	0.018	0.066	0.019	0.021	1.02
Tin	D-Sn	<0.03	<0.03	<0.03	<0.03	<0.03
Titanium	D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	D-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	D-Zn	0.006	2.92	0.032	0.037	5.14

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS File No. G2015

		W10	W8	NF2 (NFL)	NW1	GHSCR2
		96 06 06	96 06 06	96 06 06	96 06 06	96 06 06
Dissolved Metals						
Aluminum	D-Al	<0.2	<0.2	<0.2	<0.2	<0.2
Antimony	D-Sb	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	D-As	<0.2	<0.2	<0.2	<0.2	<0.2
Barium	D-Ba	<0.01	0.02	0.04	0.06	0.05
Beryllium	D-Be	<0.005	<0.005	<0.005	<0.005	<0.005
Bismuth	D-Bi	<0.1	<0.1	<0.1	<0.1	<0.1
Boron	D-B	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	D-Cd	<0.01	<0.01	<0.01	<0.01	0.02
Calcium	D-Ca	9.10	12.3	14.8	49.6	281
Chromium	D-Cr	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	D-Co	<0.01	<0.01	<0.01	<0.01	0.03
Copper	D-Cu	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	D-Fe	0.03	0.04	0.16	0.03	<0.03
Lead	D-Pb	<0.05	<0.05	<0.05	<0.05	0.06
Lithium	D-Li	<0.01	<0.01	<0.01	<0.01	0.02
Magnesium	D-Mg	1.17	1.68	2.78	9.07	86.4
Manganese	D-Mn	<0.005	<0.005	0.014	0.006	1.89
Molybdenum	D-Mo	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel	D-Ni	<0.02	<0.02	<0.02	<0.02	0.04
Phosphorus	D-P	<0.3	<0.3	<0.3	<0.3	<0.3
Potassium	D-K	<2	<2	<2	3	6
Selenium	D-Se	<0.2	<0.2	<0.2	<0.2	<0.2
Silicon	D-Si	4.77	5.33	3.75	4.63	5.85
Silver	D-Ag	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	D-Na	<2	<2	<2	3	18
Strontium	D-Sr	0.035	0.048	0.071	0.216	1.33
Tin	D-Sn	<0.03	<0.03	<0.03	<0.03	<0.03
Titanium	D-Ti	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	D-V	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc	D-Zn	0.005	0.013	0.031	0.006	20.1

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

RESULTS OF ANALYSIS File No. G2015

		BH-12 Seepage 'NE1'
		96 06 06
Dissolved Metals		
Aluminum	D-Al	<0.2
Antimony	D-Sb	<0.2
Arsenic	D-As	<0.2
Barium	D-Ba	0.05
Beryllium	D-Be	<0.005
Bismuth	D-Bi	0.2
Boron	D-B	<0.1
Cadmium	D-Cd	<0.01
Calcium	D-Ca	262
Chromium	D-Cr	<0.01
Cobalt	D-Co	<0.01
Copper	D-Cu	<0.01
Iron	D-Fe	<0.03
Lead	D-Pb	<0.05
Lithium	D-Li	0.06
Magnesium	D-Mg	179
Manganese	D-Mn	0.156
Molybdenum	D-Mo	<0.03
Nickel	D-Ni	0.08
Phosphorus	D-P	<0.3
Potassium	D-K	7
Selenium	D-Se	<0.2
Silicon	D-Si	4.93
Silver	D-Ag	<0.01
Sodium	D-Na	14
Strontium	D-Sr	1.11
Tin	D-Sn	<0.03
Titanium	D-Ti	<0.01
Vanadium	D-V	<0.03
Zinc	D-Zn	2.47

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.

METHODOLOGY File No. G2015

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows:

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

This analysis is carried out in accordance with procedures described in "Standard Methods for the Examination of Water and Wastewater" 19th Edition 1995 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion or filtration (EPA Method 3005), followed by instrumental analysis by atomic absorption spectrophotometry (EPA Method 7000), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

End of Report