CopperFox Metals Inc.

Schaft Creek Project

British Columbia, Canada

2008 Environmental and Social Work Plans

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1. INTRODUCTION

1. Introduction

The following document presents proposed environmental and social work plans for the Schaft Creek Project. The work plans presented herein will support environmental and social baseline studies required to complete an Environmental Assessment (EA) Application. These work plans are subject to change following review by Tahltan Heritage Resources Environmental Assessment Team (THREAT) and the Schaft Creek Working Group.

1.1 Schaft Creek Project Summary

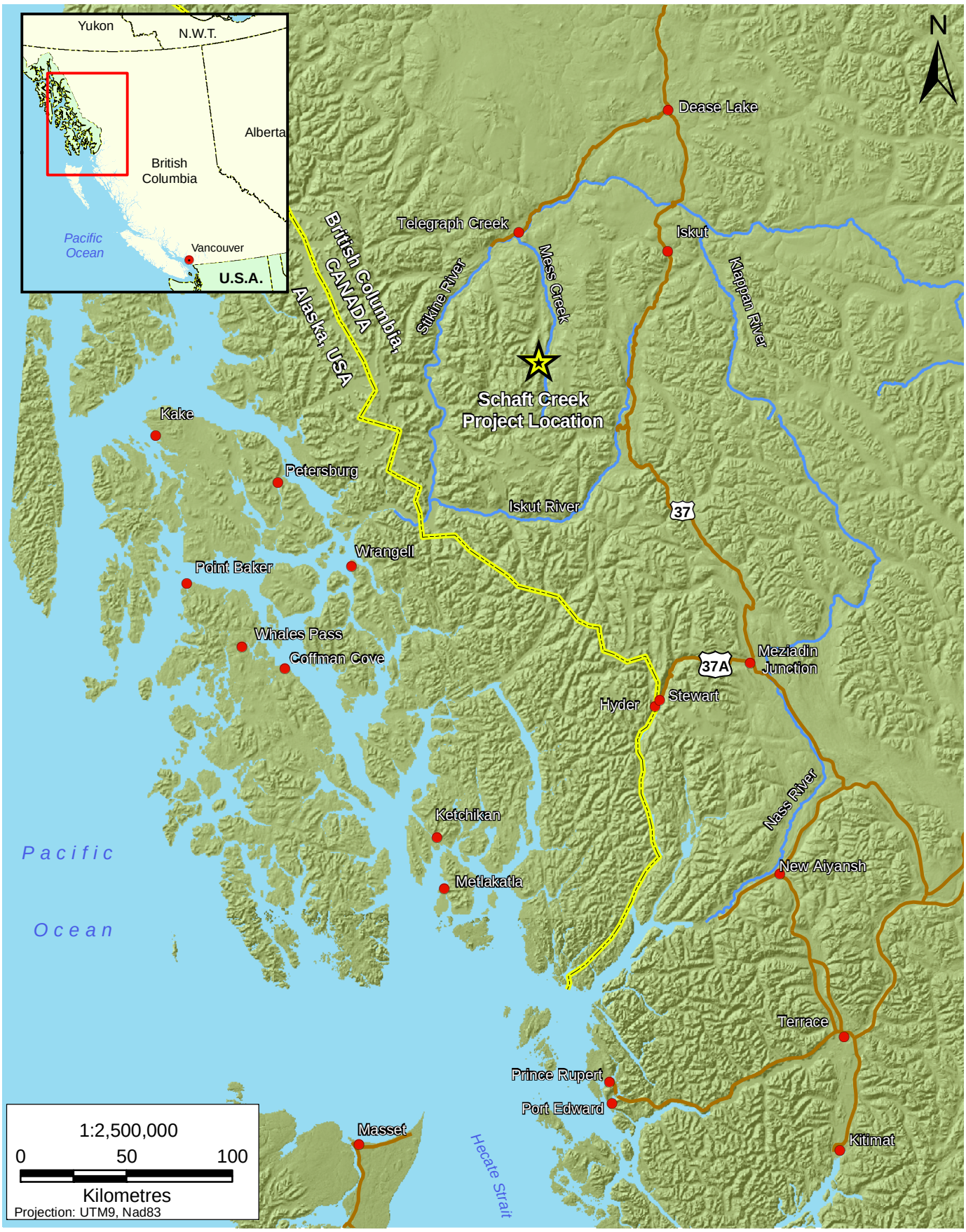
Copper Fox Metals Inc. (Copper Fox) is a Canadian mineral exploration and development company focused on developing the Schaft Creek deposit located in north-western British Columbia, approximately 60 km south of the village of Telegraph Creek (Figure 1.1-1). The Schaft Creek deposit is a polymetallic (copper-gold-silver-molybdenum) deposit located in the Liard District of north-western British Columbia (Latitude 57^{o} 22' 4.2''; Longitude 130^{o}, 58' 48.9"). The property comprises 40 mineral claims covering an area totalling approximately 20,932 ha within the Cassiar Iskut-Stikine Land and Resource Management Plan (Figure 1.1-2).

The Schaft Creek Project is located within the traditional territory of the Tahltan Nation. Copper Fox has been in discussions with the Tahltan Central Council (TCC) and the Tahltan Heritage Resources Environmental Assessment Team (THREAT) since initiating exploration activities in 2005. Copper Fox has engaged in numerous agreements with the TCC including a Communications Agreement, Traditional Knowledge Agreement, Letter of Understanding with the Tahltan Nation Development Corporation (TNDC) and a THREAT Agreement. Copper Fox will continue to work together with the Tahltan Nation as work on the Schaft Creek Project continues.

The Schaft Creek deposit was discovered in 1957 and has since been investigated by prospecting, geological mapping, geophysical surveys as well as diamond and percussion drilling. Over 65,000 meters of drilling has been completed on the property as of end of 2007. Additional drilling is planned for 2008 to support future economic assessments of the property and an environmental assessment application.

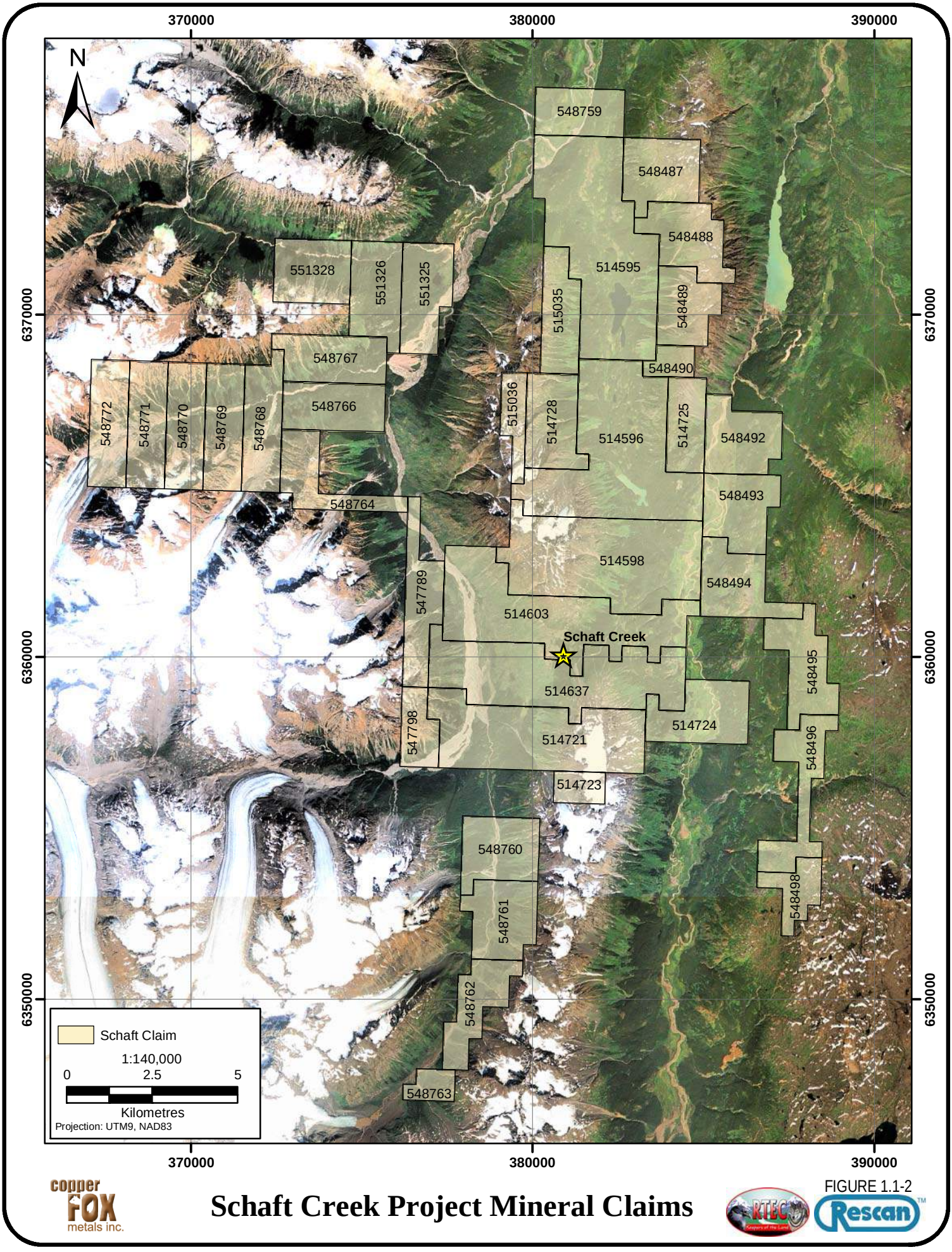
The Project entered the British Columbia environmental assessment process in August 2006. Although a formal federal decision has not yet been made, the Project will likely require federal approval as per the Canadian Environmental Assessment Act. Copper Fox has targeted the end of 2008 for submission of their Schaft Creek Environmental Assessment Application.

Copper Fox has recently released a scoping level engineering and economic report for Schaft Creek. The mine and associated infrastructure are presented in Figure 1.1-3. The current mine plan has ore milled from an open pit at a rate of 65,000 tonnes/day. The Schaft deposit will be mined with large truck/shovel operations and typical drill and blast techniques. An explosives manufacturing facility will be constructed on-site to support blasting activities. The mine plan includes 719 million tonnes of minable ore over a 31 year mine life. The Project is estimated to generate up to 1,200 jobs during the construction phase of the project and approximately 500 permanent jobs during the life of the mine.



Location Map for Schaft Creek Project

FIGURE 1.1-1



Schaft Creek Project Mineral Claims

FIGURE 1.1-2

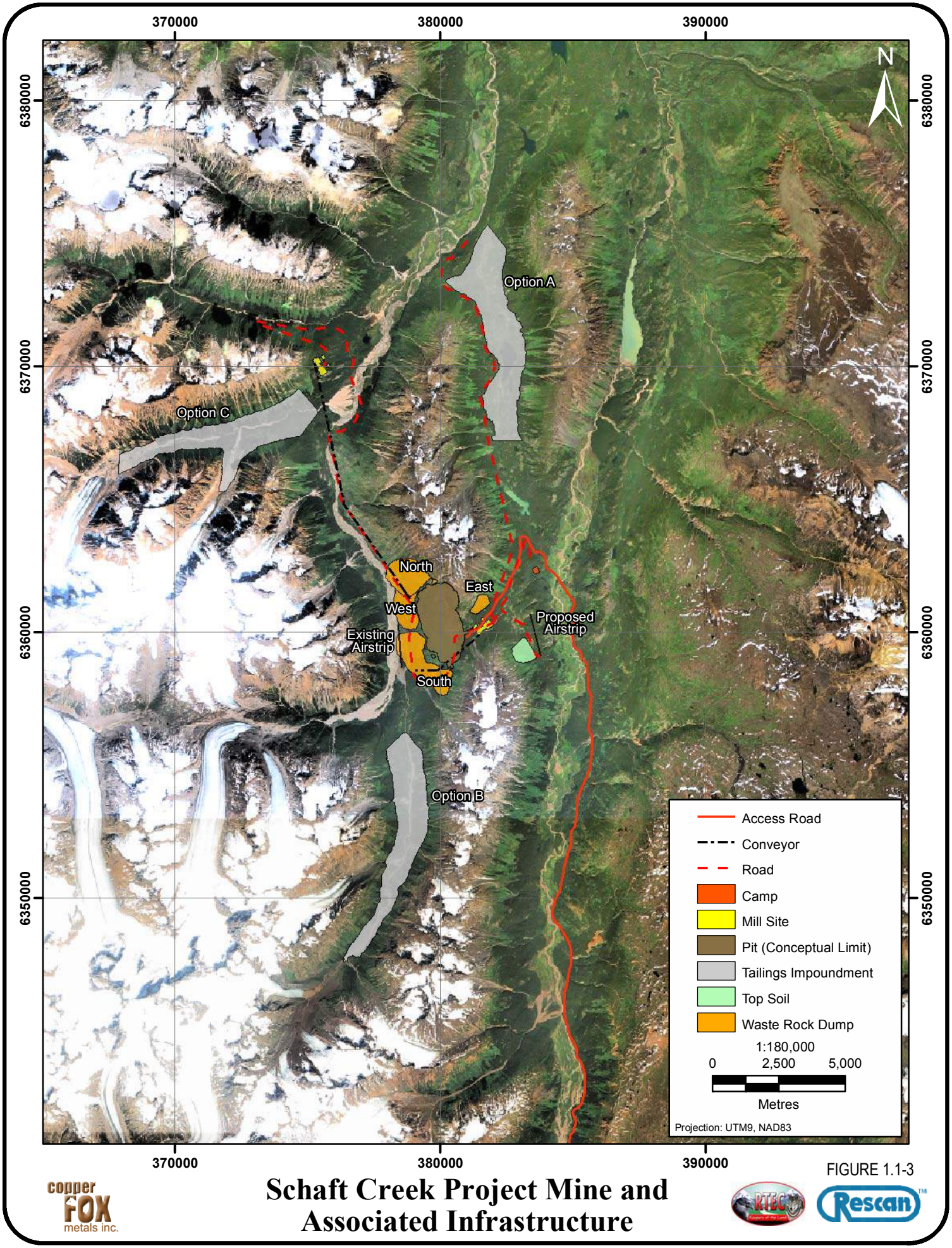


FIGURE 1.1-3

Schaft Creek Project Mine and Associated Infrastructure

Ore will be crushed, milled and filtered on-site to produce copper and molybdenum concentrates. The mill will include a typical comminution circuit (Semi-Autogenous Mill, Ball Mill and Pebble Crusher) followed by a flotation circuit and a copper circuit with thickener, filtration and concentrate loadout and shipping. The mill includes a designated molybdenum circuit with thickener, filtration circuit, drying and bagging. The filter plant will be located at the plant site. A tailings thickener and water reclaim system will be used to recycle process water. The circuit will have a design capacity of 70,652 tonnes per day and a nominal capacity of 65,000 tonnes per day (23,400,000 tonnes per year). The copper and molybdenum concentrates will be shipped via truck from the mill to the port of Stewart, BC.

Copper Fox will construct an access road from Highway 37 to the Schaft Creek property. Access to the property from Highway 37 will require approximately 105 km of new road. The first 65 km of the access road to the Schaft Creek property follows the partially constructed access road the Galore Creek Project owned by NovaGold and Teck Cominco. NovaGold and Teck Cominco have currently put a hold on future construction efforts along their access road and the overall Galore Creek Project. Copper Fox will seek approval from the provincial government and NovaGold/Teck Cominco to construct the first 65 km of the Galore Creek access road should the project not be revived.

The route of the final 40 km of access road has not been finalized. Copper Fox has completed initial investigations of a route along Mess Creek. An alternative route is also being considered that utilizes the highland plateau to the east of Mess Creek. Copper Fox is currently investigating the feasibility, as it relates to geohazards, of the two alignments. Both alignments include a 30 m bridge over Mess Creek. Mess Creek is considered navigable as per Transportation Canada criteria. Figure 1.1-4 presents the access road alignment that follows the Galore Creek road (65 km from Highway 37) and the Mess Creek alignment (40 km) to the Schaft Creek property.

Over the life of the mine, the Schaft Creek Project will generate over 700 million tonnes of tailings. There are three tailings facilities being considered (Figure 1.1-3). The three options will undergo an alternatives assessment that will include engineering, construction and operating costs, geotechnical, geohazards, environmental and social considerations.

The Project will generate over a billion tonnes of waste rock. Waste rock dumps are proposed around the perimeter of the pit (Figure 1.1-3). This includes the flat area between the proposed pit and Schaft Creek.

A detailed water management plan has yet to be developed for the Project. A water management plan will be included in the next level of economic assessment (pre-feasibility) and the next project description update. Waste water discharge is expected from the tailings facility, waste rock dumps and domestic waste water treatment plant. The management plan will detail the plans to minimize natural drainage into the tailings facility, the pit and the waste rock dumps. Pit water will be pumped to the tailings facility.

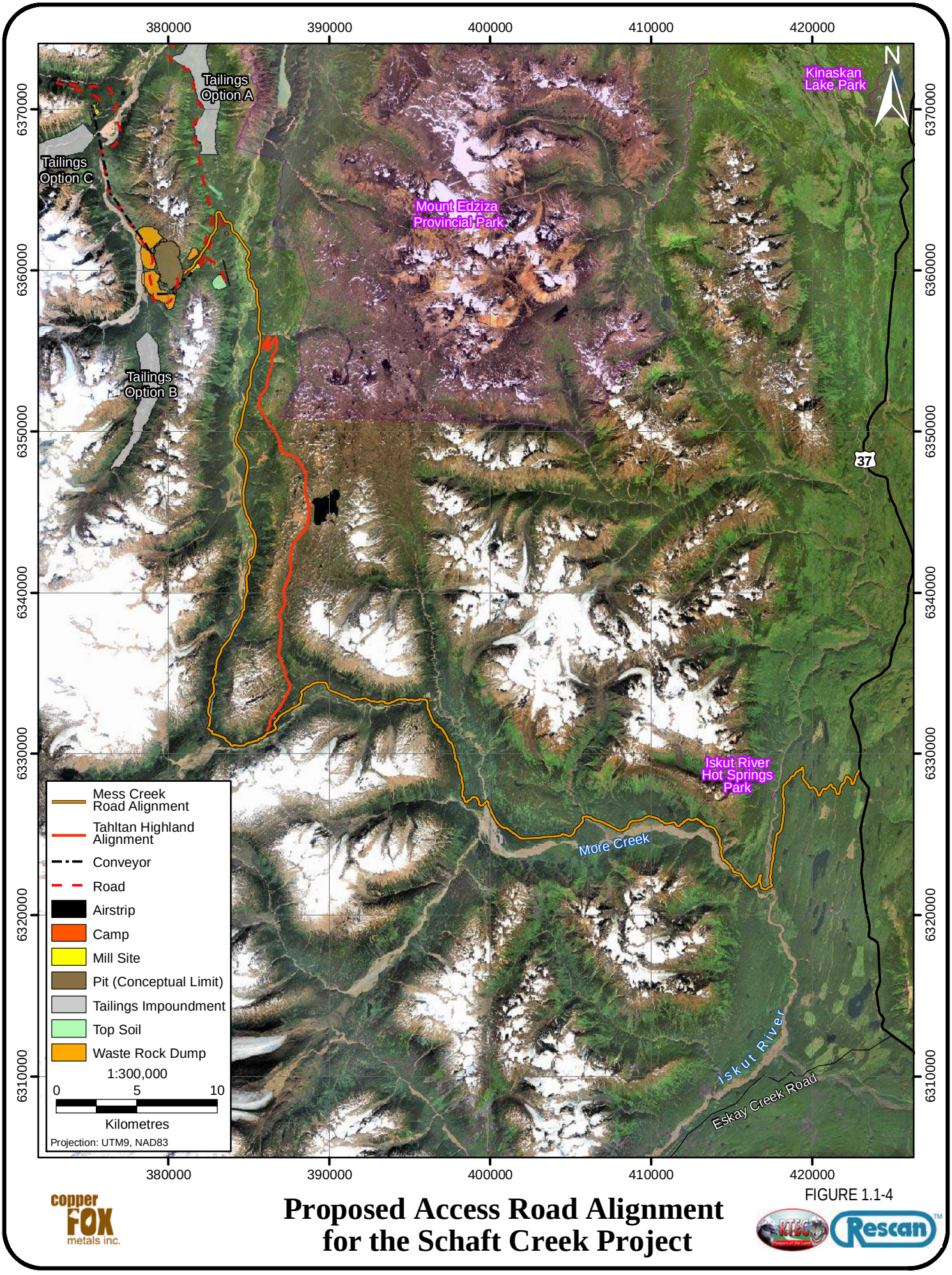


FIGURE 1.1-4

Proposed Access Road Alignment for the Schaft Creek Project

A new airfield will be constructed to the east of the pit (Figure 1.1-3). The Project will be a fly-in, fly-out operation. The new landing strip will be capable of handling a Boeing 737. Other facilities include a terminal building, fuelling, maintenance and control facilities.

A permanent camp will be constructed to support a staff of approximately 500 employees. Other facilities include truck shop, warehouse, administration, maintenance laboratory, explosives storage, water treatment facilities and potable water storage.

Figure 1.1-5 shows the proposed EA schedule for the Schaft Creek Project. Copper Fox has targeted the end of 2008 for submission of the EA Application and full Feasibility Report for the Project. Screening of the EA Application plus the 180 day review period will result in project approval as early as July 2009. On the engineering side, a prefeasibility study is scheduled for completion on April 30, 2008 and a full feasibility study is anticipated by December of 2008.

Copper Fox will likely seek concurrent permitting for strategic permits to facilitate the timely construction of key project components. Following award of all necessary permits and authorizations, construction would begin in the first quarter of 2010. Construction is estimated to take two and half years. Thus, production could begin by early to mid-2012.

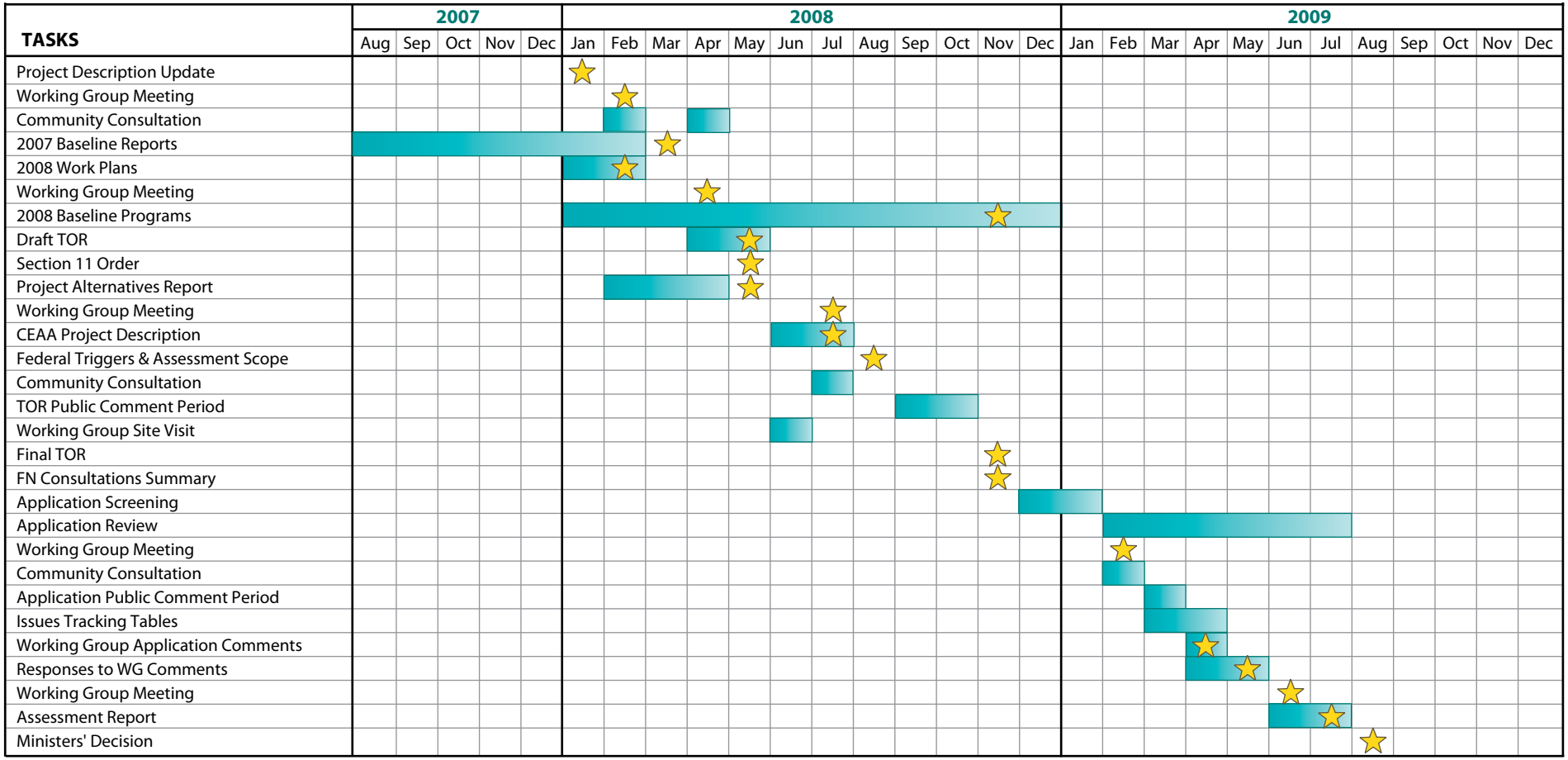


FIGURE 1.1-5

Schaft Creek Project Environmental Assessment Schedule

2. ENVIRONMENTAL AND SOCIAL WORK PLANS 2008

2. Environmental and Social Work Plans 2008

The following work plans have been developed to provide baseline data in support of the future application for an EA Certificate for the Schaft Creek Project. In addition, the studies will form the basis of baseline data required in support of permit applications for the construction and operation of the proposed Schaft Creek mine.

2.1 Meteorology, Air Quality and Noise

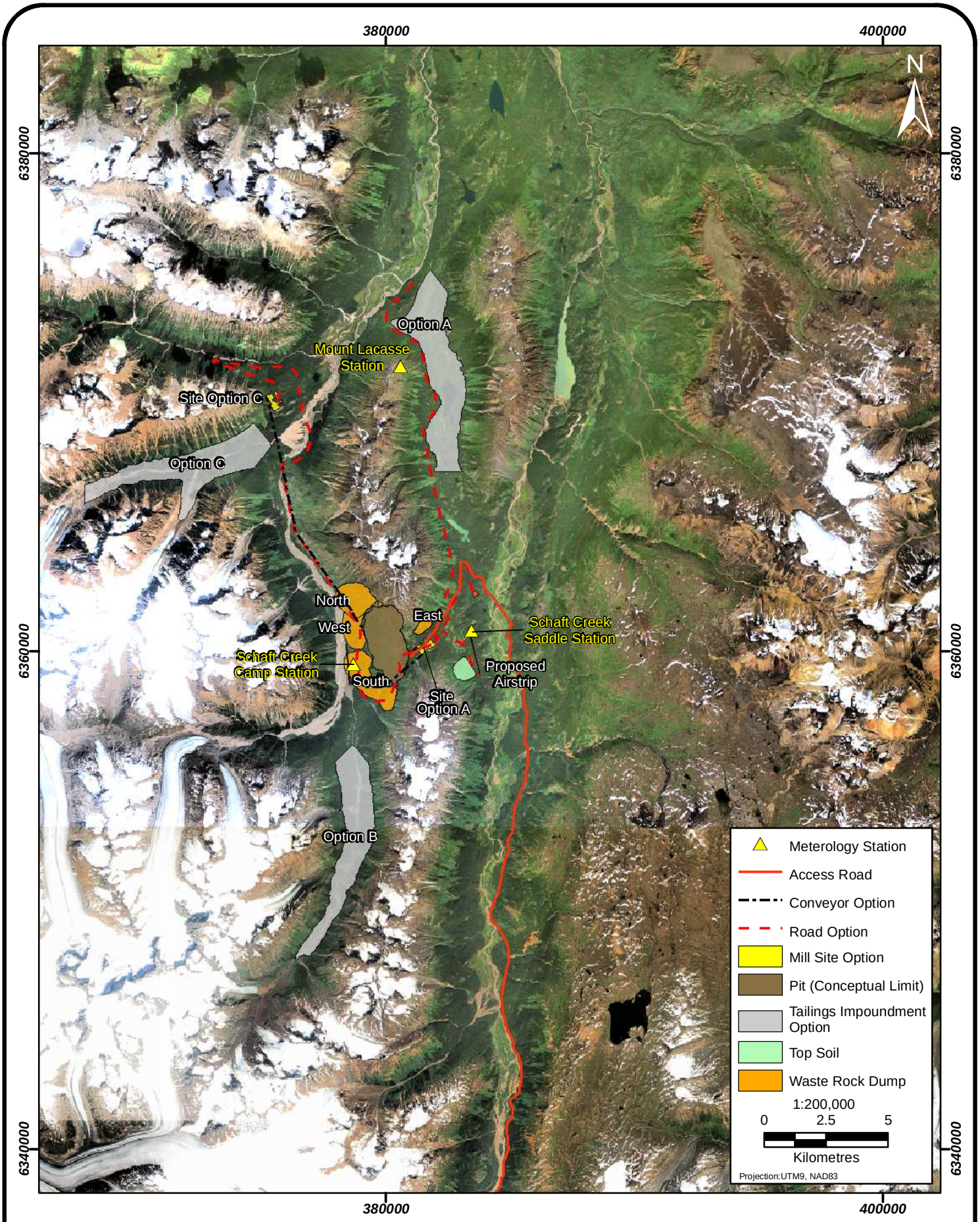
2.1.1 Summary of Work Completed

The meteorological baseline study for the Schaft Creek Project was initiated in October 2005 with the installation of a Campbell Scientific/Westower automated meteorology station (the Schaft Creek Saddle station) and an all season GEONOR precipitation gauge near the proposed process plant location (Figure 2.1-1). In August of 2006, three additional meteorological stations were installed for the Schaft Creek Project:

- a Campbell Scientific/Westower station near the tree-line on the north-eastern slope of Mount LaCasse overlooking the proposed tailings site (Mount LaCasse station);
- a RainWise meteorology station in the Mess Creek valley along the proposed road route; and
- a RainWise meteorology station approximately 1 km northwest of the existing exploration camp in the Schaft Creek valley (Schaft Creek Camp station).

Unfortunately, the RainWise meteorology station installed in the Mess Creek valley was destroyed by a moose in early October 2006 despite the fact that an electrical fence had been installed to protect the station. Scheduled maintenance visits to the operating stations were completed throughout 2006 and 2007. The two Campbell Scientific/Westower meteorological stations have been in continuous operations since their installation. The Schaft Creek Camp RainWise meteorology station has recorded useful data, although not continuously, throughout 2007.

In 2007, several upgrades were completed for the meteorological stations installed for the Schaft Creek baseline program. A sturdy fence was constructed to protect the Schaft Creek Camp station. The GEONOR precipitation gauges at the Saddle and LaCasse meteorology stations were fitted with inlet heaters to prevent snow bridges from forming over the inlets, which would result in loss of precipitation data. The programming code for the precipitation gauges was updated to eliminate signal noise in the precipitation signal. The Texas Instrument tipping bucket rain gauges were encased in sturdy steel housings to prevent wildlife damage or damage caused by the pressure exerted by the considerable snow pack that typically accumulates in Schaft Creek.



Automated Meteorological Stations for the Schaft Creek Project

FIGURE 2.1-1

Monthly manual snow surveys were completed at the Schaft Creek property from February to May of 2006 and 2007. Two snow courses were installed to provide snow depth and snow-water-equivalent (SWE) data for calculating runoff and support future efforts for both the environmental assessment as well as engineering design(s). Snow course SSCW1 is located in the Skeeter Lake valley and snow course SSCW2 is located near the existing Schaft Creek exploration camp but at a higher elevation.

Snow surveys were completed at four locations in the Schaft Creek Project area between February and May in 2006 and 2007 at the following locations: near Schaft Creek Camp, near the Saddle meteorological station and at the northern and southern end of Skeeter Lake. Only snow depth was measured during the snow surveys (*i.e.,* SWE was not measured).

Eight dust collector stations were installed in the Schaft Creek Project area in June 2007 (Figure 2.1-2). Each dust collector station comprised two dust collector canisters installed in wind screens on bases two meters above ground level. The canisters were left in place for approximately 30 days and were then sent to ALS Environmental in Vancouver for total dustfall and metals analysis.

Baseline noise sampling was completed at four stations in June and July, 2007. Noise was recorded continuously for four days at each station using Two Quest Model 2900 sound level meters.

Baseline reports for 2007 meteorology and noise baseline studies will be completed by early March, 2007.

2.1.2 2008 Work Plan

The 2008 meteorology and air quality baseline program will be a continuation of the existing baseline program. The baseline work will focus on maintaining the three automated meteorology stations in good working order to ensure that meteorological data are recorded continuously throughout 2008. Minor upgrades and repairs will be completed throughout the year as needed. Maintenance of the stations will be completed every two months at a minimum. Visits to the stations will be coordinated with hydrology and water quality site visits to increase the frequency of maintenance visits at a minimal cost.

Snow courses and snow surveys will be completed in February, March, April and May 2008 at the established stations.

Dust collectors will be installed at the eight existing dust collector stations beginning in May or June (weather and access permitting), July, August and September, 2008.

A meteorological and air quality baseline report will be completed by November or December of 2008.

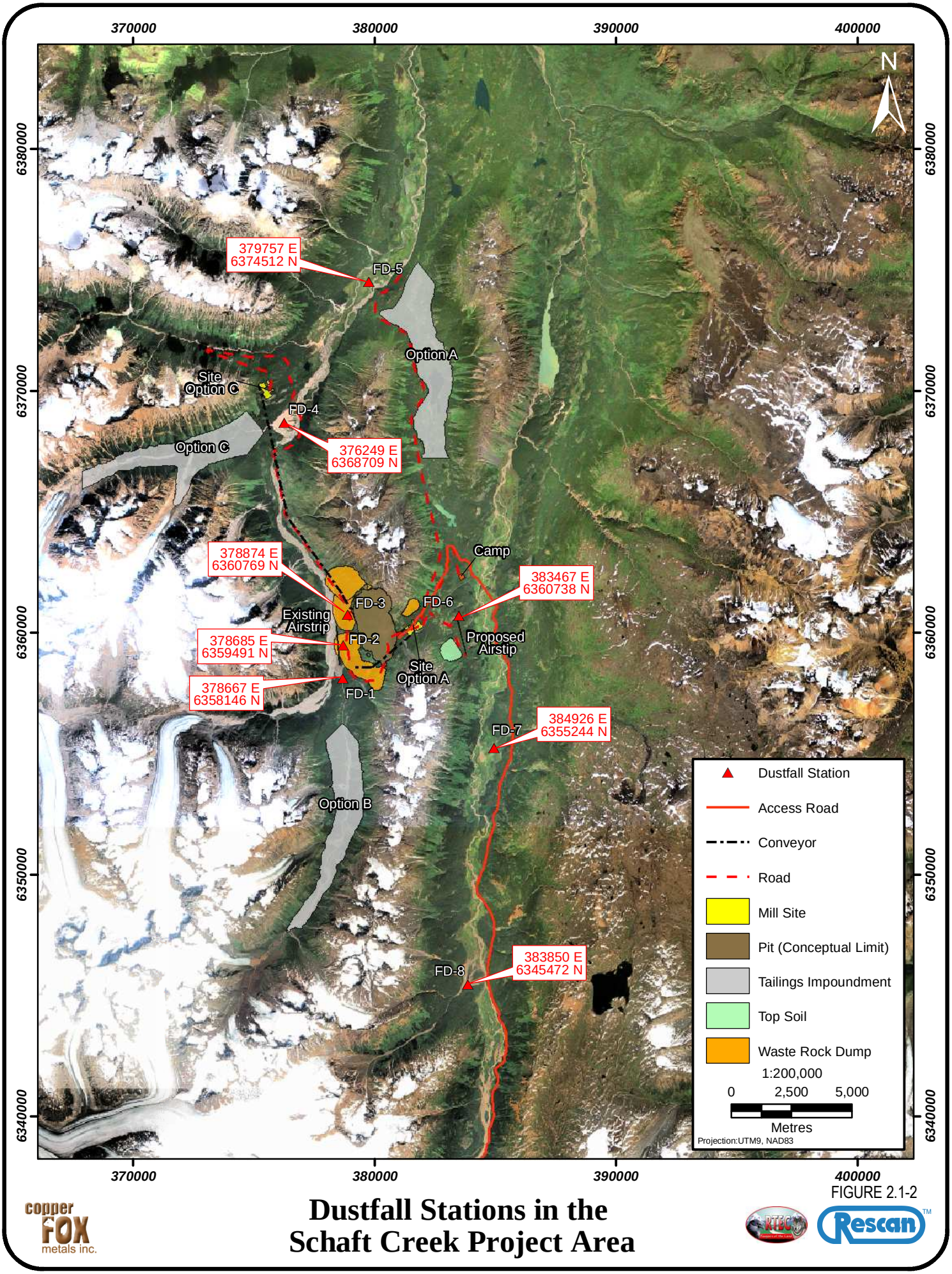


FIGURE 2.1-2

Dustfall Stations in the Schaft Creek Project Area

2.1.3 2008 Work Schedule

Table 2.1-1 shows a preliminary field schedule for the 2008 baseline meteorology and air quality programs. The field work will be coordinated with the hydrology and water quality programs to the greatest extent possible to minimize logistical requirements and costs.

Table 2.1-1
2008 Meteorology Field Schedule

Time	Tasks	Duration	Personnel Required
March 2008	Snow Courses/Surveys General meteorology station maintenance Noise Monitoring	2 days	1 Rescan Staff and 1 Tahltan field assistant
April 2008	Snow Courses/Surveys General meteorology station maintenance	2 days	1 Rescan Staff and 1 Tahltan field assistant
May 2008	Snow Courses/Surveys General meteorology station maintenance Possible installation of dust collectors	2 days	1 Rescan Staff and 1 Tahltan field assistant
June 2008	General meteorology station maintenance Installation of dust collectors	1 day	1 Rescan Staff and 1 Tahltan field assistant
July 2008	Installation of dust collectors	1 day	1 Rescan Staff and 1 Tahltan field assistant
August 2008	General meteorology station maintenance Installation of dust collectors	1 day	1 Rescan Staff and 1 Tahltan field assistant
September 2008	Installation of dust collectors	1 day	1 Rescan Staff and 1 Tahltan field assistant
October 2008	Winterization of meteorology stations and general meteorology station maintenance Retrieve dust collectors	1 to 2 days	1 Rescan Engineer and 1 Tahltan field assistant
November 2008	Baseline Report	-	Rescan Engineer/Scientist
December 2008	general meteorology station maintenance	1 day	1 Rescan Engineer and 1 Tahltan field assistant

2.2 Hydrology

2.2.1 Summary of Work Completed

A hydrological monitoring program was initiated in the Schaft Creek Project area in the spring of 2006 with the installation of eight automated hydrometric stations (Figure 2.2-1). All stations were demobilized over the winter so that the monitoring equipment would not be damaged due to freezing conditions. However, manual winter flow measurements were taken throughout the winter to extend the monitoring period at each monitoring location.

Seven of the stations were re-mobilized in the spring of 2007. One of the original stations (HCTR-1; Hickman Creek tributary) was relocated to an alternate drainage (SCTR-3; Schaft Creek tributary) with the aim of providing an improved data set. An additional automated station (SCTR-2) was installed on a tributary of Schaft Creek (Tailings Option C). In total, nine automated stations were operated in 2007. Eight of the stations were de-mobilized in November of 2007. As of December 2007, one station (HC-1) had been left active as water levels remained high enough to ensure that the monitoring equipment would not be exposed to freezing conditions.

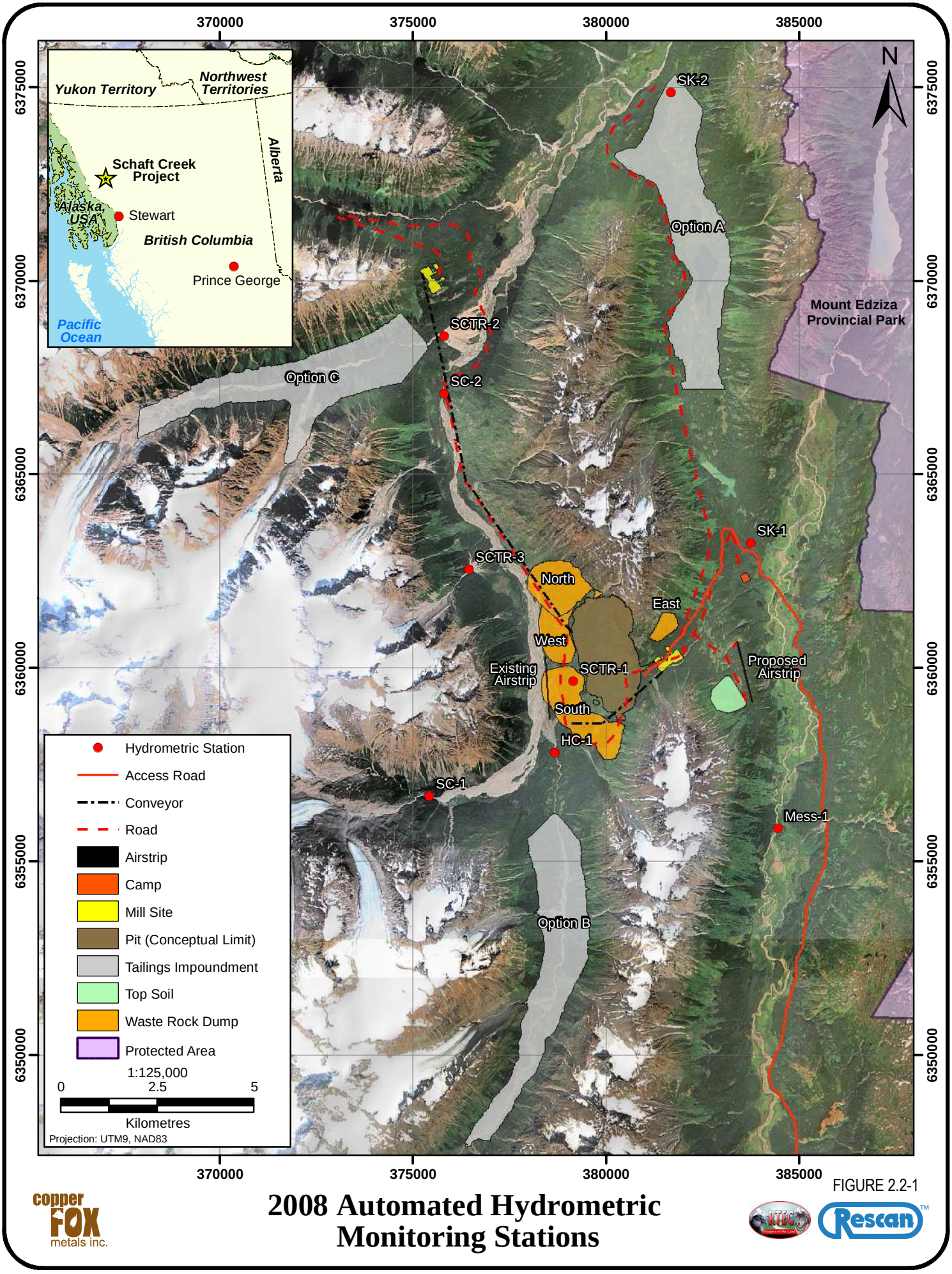


FIGURE 2.2-1

2008 Automated Hydrometric Monitoring Stations

Work completed in 2006 and 2007 is summarized in Table 2.2-1

Table 2.2-1
Work Completed – 2006 and 2007

Year	Summary of Tasks Completed
2006	Installation of eight automated hydrometric stations operated from May until October
	36 manual flow measurements conducted across study area
	Establishment of stage-discharge rating equation for all but one (Mess Creek) automated stations
	Production of baseline report summarizing work completed
2007	Reactivation of seven of the eight automated stations from 2006
	Installation of two new automated stations
	69 manual flow measurements conducted across study area, including 20 measurements during the winter low flow season
	Establishment of stage-discharge rating equation for each of the automated stations
	Production of baseline report summarizing work completed

2.2.2 2008 Work Plan

All stations operated in 2007 will be re-mobilized in the spring of 2008 (Figure 2.2-1). Remobilization will occur as soon as snow and ice conditions allow, which is anticipated to occur in late-April or May. Water level data will be collected by the automated stations at ten-minute intervals. Where possible, anchoring and housing structures installed in 2006 and 2007 will be re-used in 2008.

During the 2007 monitoring period, issues at SC-1 compromised the quality of data collected by the station. During station demobilization in December of 2007, it was observed that the staff gauge had been knocked off of the angle iron that was used as a support for the station. The lower end of the aluminium conduit that contained the pressure transducer was also not secured to the angle iron. This was likely caused by breakage of the steel hose clamps that secured the conduit and pressure transducer to the angle iron. Additionally, stage data recorded by the station did not correlate well to that of other nearby monitoring stations. This may have been the result of the damage to the station, but may have also resulted from complex hydraulics at the monitoring, which may not exhibit a predictable correlation between stage and stream flow. Therefore, in 2008 an attempt will be made to find a better suited location for the station. If a better location cannot be found, the station will be remobilized at the same location with more robust anchor supplies.

Although good quality data has been collected at the SC-2 station over the past two years, there is the potential to lower the elevation of the pressure transducer to ensure that it stays submerged during low flow. During station remobilization, an attempt will be made to lower the elevation of the station by approximately 0.25 m. It is anticipated that the station can be successfully lowered while retaining the ability to use the existing rating curve established for the station.

A total of nine automated stations will be operated in 2008 (Table 2.2-2, Figure 2.2-1). Data recorded at the stations will be downloaded during scheduled site visits to conduct manual flow

measurements (see the following section). Station maintenance will also be performed as required during the site visits.

Table 2.2-2
Proposed 2008 Baseline Hydrometric Monitoring Network

Station	*Operated in 2007*	*To be operated in 2008*	*Notes*
SC-1	Yes	Yes	Monitors Schaft Creek above the pit area; an alternate nearby location will be scouted to install station
SC-2	Yes	Yes	Monitors main steam of Schaft Creek downstream of pit area
HC-1	Yes	Yes	Monitors site of Tailings Option B
Mess-1	Yes	Yes	Monitors main stem of Mess Creek
SK-1	Yes	Yes	Monitors outflow of Start Lake valley; flows into Mess Creek
SK-2	Yes	Yes	Monitors outflow of Skeeter Lake valley, site of Tailings Option A; flows into Schaft Creek
SCTR-1	Yes	Yes	Drains area of proposed main pit
SCTR-2	Yes	Yes	Monitors site of Tailings Option C
SCTR-3	Yes	Yes	To act as reference site to SCTR-1, replaces HCTR-1

Notes: SC = Schaft Creek; HC = Hickman Creek; SK = Skeeter Creek; Mess = Mess Creek

Manual flow measurements will continue to be conducted at all hydrometric stations. Manual flow measurements are required to:

- Increase size of the data set used to establish rating curves;
- Extend the range of flows used to establish rating curves; measurements during high flow periods are especially beneficial;
- Gauge whether a shift in channel geometry has occurred (through surveys), which would affect the established rating curves; and
- Provide winter flow data when most automated stations are inactive.

Flow measurements will be performed throughout the year during site visits conducted by Rescan scientists. In total, nine site visits will be conducted; one visit prior to freshet to reactivate automated stations, three visits during the freshet, one visit during the fall storm season, one visit at the end of the open water season to deactivate automated stations for the winter, and three visits over the winter.

Data collected during the 2008 monitoring season will be used to;

- Improve established rating curves where channel geometry remains constant between 2007 and 2008 and establish new rating curves where channel geometry has changed;
- Generate daily flow hydrographs;
- Estimate annual and monthly runoff; and
- Calculate annual peak and low flow estimates.

Data collected in 2008 will be incorporated in a surface hydrology baseline report that will include a comparison to data collected during previous years as well as to historical data sets from regional gauges. The 2008 baseline report will be the main deliverable from the 2008 surface hydrology monitoring program.

2.2.3 2008 Work Schedule

Table 2.2-3 shows the proposed work schedule for the 2008 surface hydrology baseline program for the Schaft Creek Project.

Table 2.2-3
Proposed 2008 Surface Hydrology Work Schedule

Tasks	Frequency	Approximate Timing
Automated station activation [a]	One time	Late-April
Open water season flow measurements/ data download [a]	Semi- Monthly	Mid-month (May, June, July, September)
Automated station de-activation [a]	One time	Late-October
Winter Flow Monitoring [a]	Semi- Monthly	Late-January, early-March, early December
Data Analysis [b]	Continuous	Initial analysis will be done following each site visit, main analysis done together with the writing of the 2008 surface hydrology baseline report
Report Writing [b]	One time	November 2008

Notes: [a] – Field work; [b] – Office based work

2.3 Hydrogeology

The purpose of the 2008 hydrogeology baseline program for the Schaft Creek Project is to characterize the groundwater regime in the Project area. Data collected during the 2008 field program will be documented in a baseline report, which will provide data required for applications for an EA Certificate and permits for the Project.

The hydrogeology program will evaluate the groundwater flow and quality in the area to be developed. This will be achieved by installing groundwater monitoring wells, performing hydrogeologic testing and sampling the groundwater. Estimates of groundwater inflow to the proposed open pit are important for determining pit dewatering efforts and the potential effects on surface water quality.

2.3.1 2008 Work Plan

At present the most critical proposed infrastructure developments at the Schaft Creek property, with regard to hydrogeologic conditions, include the following:

- The open pit;
- Tailings impoundment;
- Waste rock dumps;

- Plant site; and
- Camp.

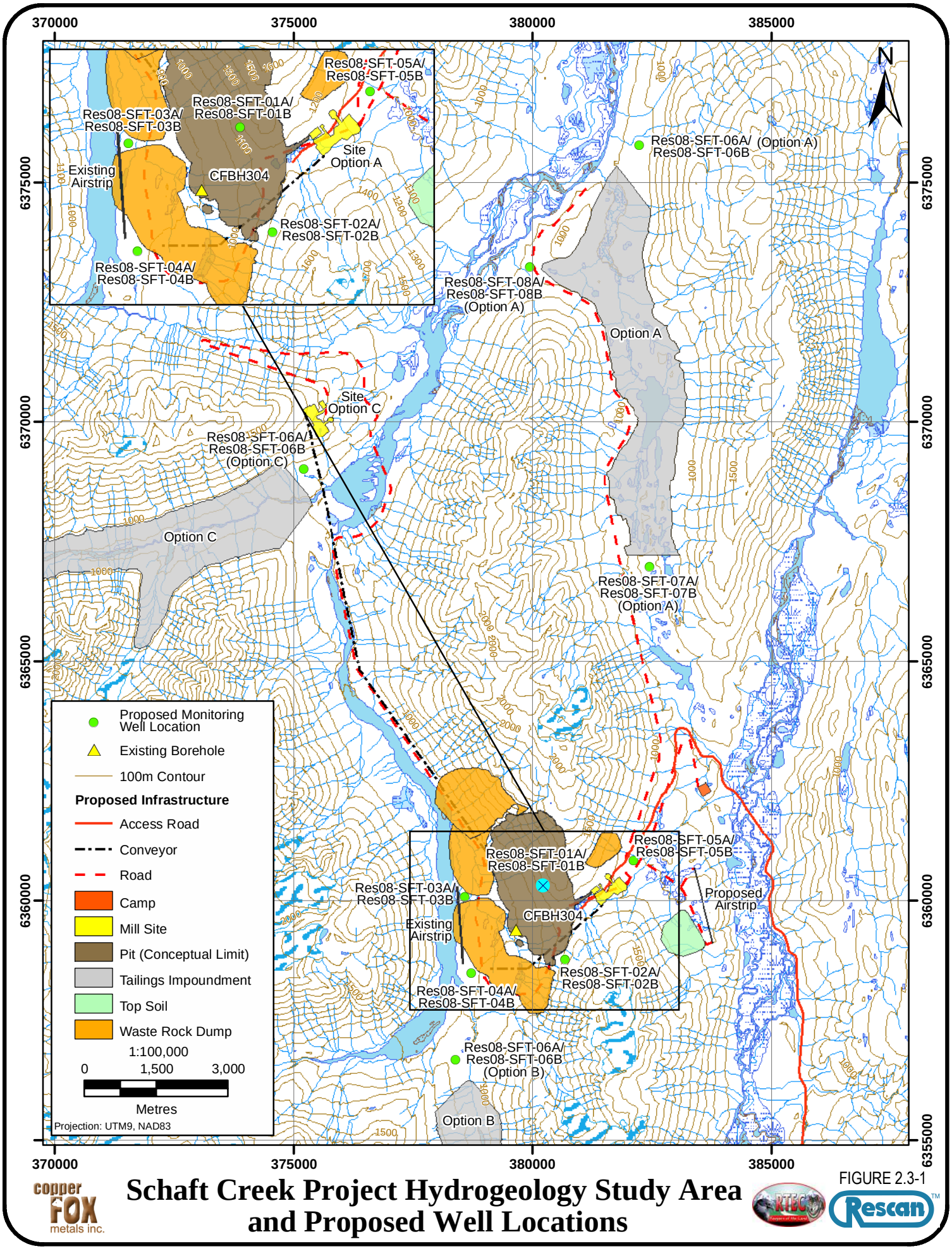
The hydrogeology program will be coordinated with the exploration and geotechnical drilling programs that are scheduled for the summer of 2008. At present, Rescan has established two nested 1" monitoring wells at the Schaft Creek property. These wells were installed late in the season of 2007 and are located in the proposed open pit area. It is the intention that 16 additional monitoring wells be installed in the summer of 2008. It is preferred that the holes used for the installations are inclined at 90 degrees to the horizontal.

Proposed locations of groundwater monitoring wells for the Schaft Creek hydrogeology baseline program are shown on Figure 2.3-1 and include the following:

- One shallow and one deep monitoring well within the area of the open pit (refer to Res08-SFT-01A/Res08-SFT-01B, Figure 2.3-1);
- One shallow and one deep monitoring well upstream of the proposed open pit (refer to Res08-SFT-02A/Res08-SFT-02B, Figure 2.3-1);
- One shallow and one deep monitoring well downstream of the proposed open pit located between the open pit location and Schaft Creek (refer to Res08-SFT-03A/Res08-SFT-03B, Figure 2.3-1).
- One shallow and one deep monitoring well downstream of the proposed waste rock dump facilities (refer to Res08-SFT-04A/Res08-SFT-04B, Figure 2.3-1).
- One shallow and one deep monitoring well in the vicinity of the proposed plant site location to monitor groundwater level and quality down-gradient of the plant site (refer to Res08-SFT-05A/Res08-SFT-05B, Figure 2.3-1).
- One shallow and one deep monitoring well downstream of each of the three dams of the main tailings impoundment (option A) (refer to Res08-SFT-06A/Res08-SFT-06B, Res08-SFT-07A/ Res08-SFT-07B and Res08-SFT-08A/ Res08-SFT-08B, Figure 2.3-1). Also, locations of monitoring wells located downstream of the alternative tailings impoundment dams (option B and C) are presented in Figure 2.3-1. It should be noted that tailings impoundment option A requires three monitoring well sites as there are 3 proposed dam sites, whereas option B and C only require one monitoring well site each as there is only one proposed dam site at these locations.

Additional wells may be required in the event that significant changes are made to the Project plan, as it currently stands.

Both Knight Piésold and Rescan personnel will coordinate the drilling and monitoring well installation programs. The drilling of holes, hydraulic conductivity testing, well completion, and well development will be performed by Knight Piésold. A Rescan hydrogeologist will supervise the commencement of the monitoring well drilling program.



Schaft Creek Project Hydrogeology Study Area and Proposed Well Locations

FIGURE 2.3-1

The proposed locations of the holes drilled for Knight Piésold's geotechnical investigations and the proposed locations of Rescan's monitoring wells were compared. It has been determined that the proposed monitoring well sites located downstream from the waste rock dump and the open pit will be installed in holes drilled for exploration and geotechnical purposes by Knight Piésold.

In order to properly characterize hydrogeological conditions on the Schaft Creek property, Rescan requires the installation of monitoring wells in multiple areas where Knight Piésold will not be completing exploration and geotechnical investigations. Holes will be drilled for these monitoring wells in the Open Pit (1), upstream from the Open Pit (1), downstream from the Mill Site (1), and surrounding the proposed Dam Site (1 to 3 depending on which dam site option is chosen). These holes will be drilled by an experienced geotechnical drilling company (*Geotech Drilling Services Ltd.*).

In the 2007 field season, artesian conditions were observed in the majority of drill holes on the Schaft Creek property, and it is anticipated that artesian conditions will be encountered again in 2008. In holes where artesian conditions are present, two 1" nested piezometers will be installed in each hole. Schedule 40 or 80 PVC pipe will be used depending on the depth and conditions encountered in each hole. Where artesian conditions are not present, two 2" nested piezometers (either schedule 40 or 80 PVC) will be installed, each in separate holes.

Following the installation of the monitoring wells in the drill holes, the wells will be developed to clear any residual sediment from the PVC casing. This will be performed no less than 24 hours following the installation of the monitoring wells.

Packer testing will be performed in each of the drill holes within which a standpipe piezometer is to be installed. The purpose of packer tests is to measure the hydraulic conductivity of bore hole sections. It is anticipated that three to four packer tests will be performed in each of the drill holes. The number and location of the packer tests will be determined in the field given observations of the recovered core (Degree of fracturing, RQD, geological structure, *etc.*). It is preferred that a "double packer" system be employed and that the testing be performed while advancing the hole. Although this methodology will be slower than other alternatives, it will likely prevent significant lengths of hole from collapsing during testing.

Following completion of the installation and development of the wells the groundwater will be allowed to return to static level and the standpipes will be slug tested. In slug testing, the water level in the well will be changed (falling or rising head test) and the recovery monitored as the level returns to static. The results obtained from the packer and slug testing will be used to develop a hydraulic conductivity profile of the subsurface. Both types of tests are needed since packer tests measure particular fracture zones in the hole (prior to installation) and the slug tests measure the overall response of the aquifer from the screened interval (after installation).

The 1" piezometers will be purged using Waterra tubes as they are too small to accommodate a submersible pump. The 2" piezometers will be sampled using a submersible pump. Groundwater samples will be analyzed for general chemistry, total metals (for artesian wells), dissolved metals, nutrients and total organic carbon. Groundwater samples will be collected quarterly over a one year period, for the Schaft Creek baseline study.

2.3.2 2008 Work Schedule

The field program is tentatively scheduled to commence in early June, 2008 (weather permitting). Rescan personnel will be mobilized to site as early as possible in the field season to allow time to make program adjustments through the summer months. A baseline report will be produced in November 2008.

2.4 Metal Leaching and Acid Rock Drainage

The metal leaching and acid rock drainage (ML/ARD) program for the Schaft Creek Project has been presented to the Schaft Creek ML/ARD Sub-Working Group. Phase 1 of the program was completed in August 2007 (*Schaft Creek Project – Prediction of Metal Leaching and Acid Rock Drainage, Phase 1, MDAG August 2007*). Phase 2 was complete in February 2008. A work plan for a third phase has been tentatively defined and presented to the ML/ARD sub-Working Group. The Phase 3 program will be revised as needed based on the findings of Phase 2.

2.5 Aquatic Resources

The following scope outlines work that will be conducted as part of the 2008 Schaft Creek aquatic resources work plan. The sampling program is designed to provide an overview and characterize aquatic resources within the Schaft Creek Project area, including water quality, sediment quality and aquatic biota. Sampling will be conducted at selected receiving environment (sites downstream of potential Project activities) and reference sites, and will include stream, river, lake, and wetland habitat.

The 2008 aquatic resources baseline report will summarize these data and supplement the information presented in the 2006 and 2007 reports.

2.5.1 Summary of Work Completed

Aquatic baseline studies have been previously completed in 2006 and 2007. Table 2.5-1 summarizes the data collected at various sites for both years. The locations of all stream, wetland and lake sites for 2006 are shown in Figure 2.5-1 and Figure 2.5-2 for 2007.

2.5.2 2008 Work Plan

Components of the 2008 aquatic resources program are based on the 2007 study design. Figure 2.5-3 presents the water quality, sediment quality and aquatic biology sampling locations. At this time, sites for all three tailings options are included in the 2008 work plan. This includes all receiving environment and road sites sampled in 2007 for tailings options A, B and C.

In total, aquatic resources studies will be conducted at 17 stream sites, 2 lake sites and 7 wetland sites. Monthly or quarterly water quality sampling will occur at stream sites while water quality sampling will occur once during the summer at lake and wetland sites. To assess the short term variability in water quality, as well as how well monthly water quality sampling captures the range of variability, the high flow freshet and a fall rain event water sampling will occur at four stream sites (Table 2.5-2).

Table 2.5-1
Summary of Aquatic Baseline work completed in 2006 and 2007

	2006		2007	
Wetlands and Lakes	**Water Quality**	**Aquatic Biology**	**Water Quality**	**Aquatic Biology**
WL1	√	√	√	√
WL2	√	√	√	√
WL3	√	√	√	√
WL4	√	√	√	√
WL5	√	√	√	√
WL6	√	√	√	√
WL7	√	√	√	√
WL8	√	√		√
WL9			√	√
WL10			√	√
WL11			√	√
Airstrip WL			√	√
L1	√	√	√	√
L2	√	√	√	√
L3	√	√	√	√
L4	√	√	√	√
L5	√	√	√	√
L6			√	√
Streams				
MC1	√	√	√	√
MC2	√	√	√	√
MC5	√	√	√	√
MC9	√		√	
MC10			√	√
HC2			√	√
HC3			√	√
SC1	√	√	√	√
SC3	√	√	√	√
SC4	√	√	√	√
SC5	√	√	√	√
SC6			√	√
SC7			√	√
MT1	√	√	√	√
SKC1	√	√	√	√
SKC3	√	√	√	√
SKC4			√	√
WC1	√	√	√	√
ST1	√		√	
ST2	√		√	
JC1			√	√
JC2			√	√
YC1			√	√

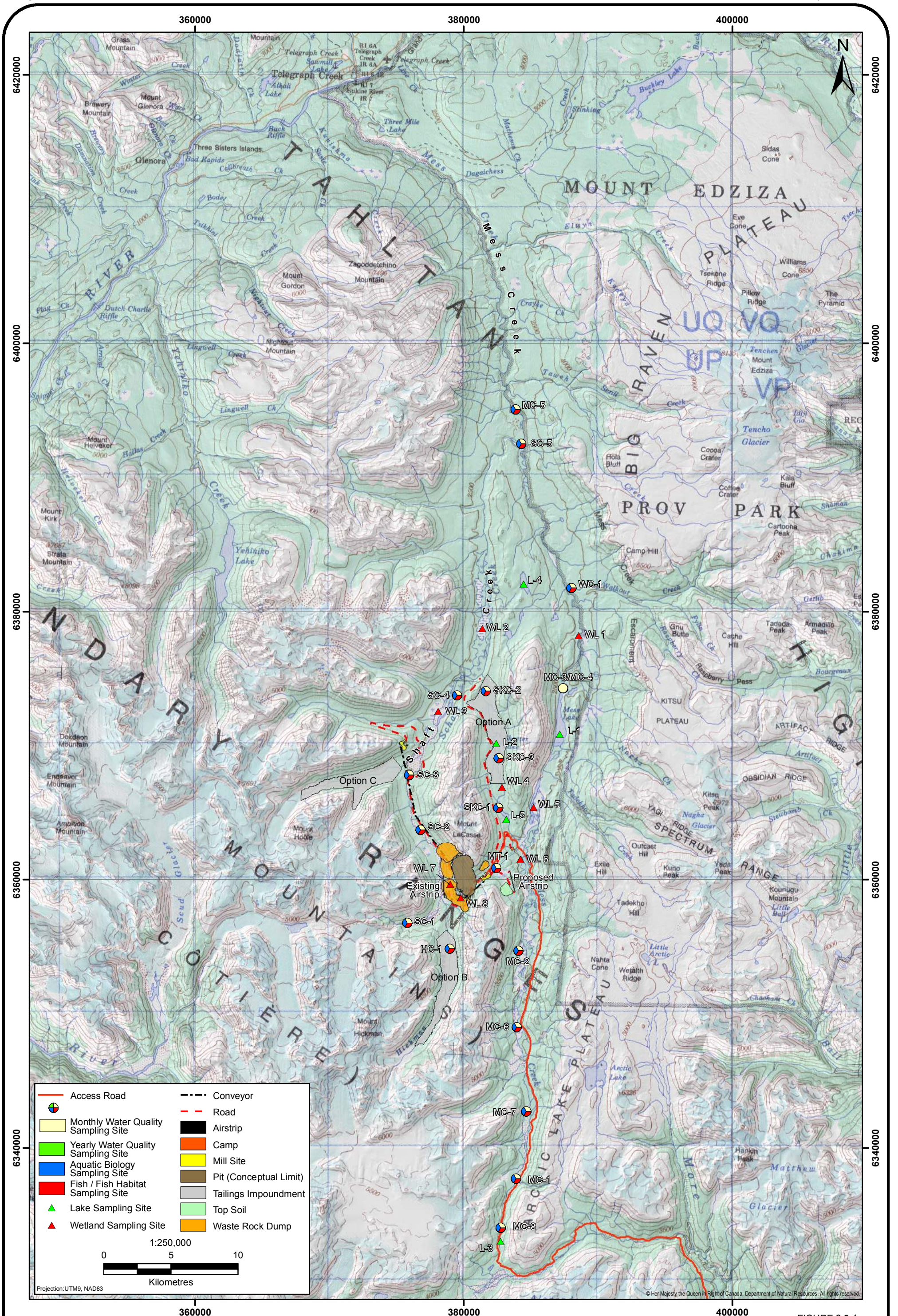


FIGURE 2.5-1

Aquatic Sampling Sites in the Schaft Creek Project Area, 2006

360000 380000 400000

6420000 6400000 6380000 6360000 6340000

N

YC1 ST1 ST2 MC9 MC5 SC5 SC7 L4 WC1 WL1 WL2 SKC4 SC4 WL3 WL11 Option A L1 L2 JC2 SKC3 JC1 Option C SC3 WL4 WL5 SKC1 L5 MC10 SC-2 WL10 SC6 MT1 WL6 Existing Airstrip WL7 WL8 Proposed Airstrip WL HC3 SC1 HC-1 MC2 Option B HC2 L6 MC-7 WL9 MC1 L3

TAHLTAN RIVER

MOUNT EDZIZA PLATEAU

BIG RAVEN UQ VQ UP VP

Mount Edziza Provincial Park

NDARY MOUNTAINS

HIGH

Conveyor
Road
Access Road
Airstrip
Camp
Mill Site
Pit (Conceptual Limit)
Tailings Impoundment
Top Soil
Waste Rock Dump
Protected Area

Sampling Sites
Stream
Monthly Water
Quarterly Water
Sediment and Aquatic Biology
Wetland*
Lake*
*Yearly Water, Sediment and Aquatic Biology

1:250,000
0 5 10
Kilometres

Projection:UTM9, NAD83

FIGURE 2.5-2

Schaft Creek Aquatics Sampling Sites, 2007

copper FOX metals inc.

Table 2.5-2
Summary of 2008 Aquatic Sampling Locations of the Schaft Creek Project

Type	Site ID	Watershed	Monthly Water Quality	Quarterly Water Quality	Yearly Water Quality	Aquatic Biology
Stream Sites	**MC10**	Mess Creek	X			X
	HC2	Hickman Creek		X		X
	HC3	Hickman Creek	X			X
	SC1	Schaft Creek	X			X
	SC3	Schaft Creek		X		X
	SC4	Schaft Creek	X			X
	SC5	Schaft Creek	X			X
	SC6	Schaft Creek	X			X
	SC7	Schaft Creek		X		X
	SC8	Schaft Creek	X			X
	MT1	Mess Tributary	X			X
	SKC1	Skeeter Lake	X			X
	SKC3	Skeeter Lake		X		X
	SKC4	Skeeter Lake	X			X
	JC1	Tailings Option C Creek		X		X
	JC2	Tailings Option C Creek	X			X
	YC1	Yehiniko Creek		X		X
Lake Sites	L2	Skeeter Lake			X	X
	L5	Start Lake (previously "Little Skeeter")			X	X
Wetland Sites	WL4	Skeeter Lake			X	X
	WL7	Schaft Creek			X	X
	WL8	Schaft Creek			X	X
	WL9	Mess Creek			X	X
	WL10	Schaft Creek			X	X
	WL11	Nagha Creek			X	X
	WL12	Airstrip Location			X	X

High flow freshet and low flow water sampling sites are bolded.

The 2008 work plan is divided into two categories: streams and rivers, and lakes and wetlands.

2.5.2.1 Streams and Rivers

The major receiving environment streams in the Project area include Schaft Creek, Hickman Creek, and Mess Creek. Mess Creek flows into the Stikine River approximately 45 km downstream of the Project area. Smaller tributaries to these systems will also be studied as part of the receiving environment.

Water Quality

A list of water quality parameters to be analyzed is presented in Table 2.5-3. The lowest detection limits available will be used for all parameters.

Table 2.5-3
Water Quality Parameters and Detection Limits

Parameter	Detection Limit (mg/L)
Physical/Dissolved Anions	
Colour (Cu)	
Conductivity (µmhos/cm)	0.2 µmhos/cm
pH	0.01 pH units
Total Suspended Solids	3
Turbidity (NTU)	0.1 NTU
Total Organic Carbon	0.5
Total Dissolved Solids	1
Hardness	1
Total Alkalinity (as $CaCO_3$)	5
Acidity	1
Bromide	0.5
Chloride	0.5
Fluoride	0.02
Sulphate	1
Nutrients	
Ammonia Nitrogen	0.005
Nitrate	0.005
Nitrite	0.001
Total Kjeldahl Nitrogen	0.05
Total Nitrogen	0.02
Total Phosphorus	0.002
Cyanides	
Total Cyanide	0.005
Total and Dissolved Metals	
Aluminum	0.001
Antimony	0.00005
Arsenic	0.0001
Barium	0.00005
Beryllium	0.0005
Bismuth	0.0005
Boron	0.001
Cadmium	0.00005
Calcium	0.02
Chromium	0.0005
Cobalt	0.0001
Copper	0.0001
Iron	0.03
Lead	0.00005
Lithium	0.001

(continued)

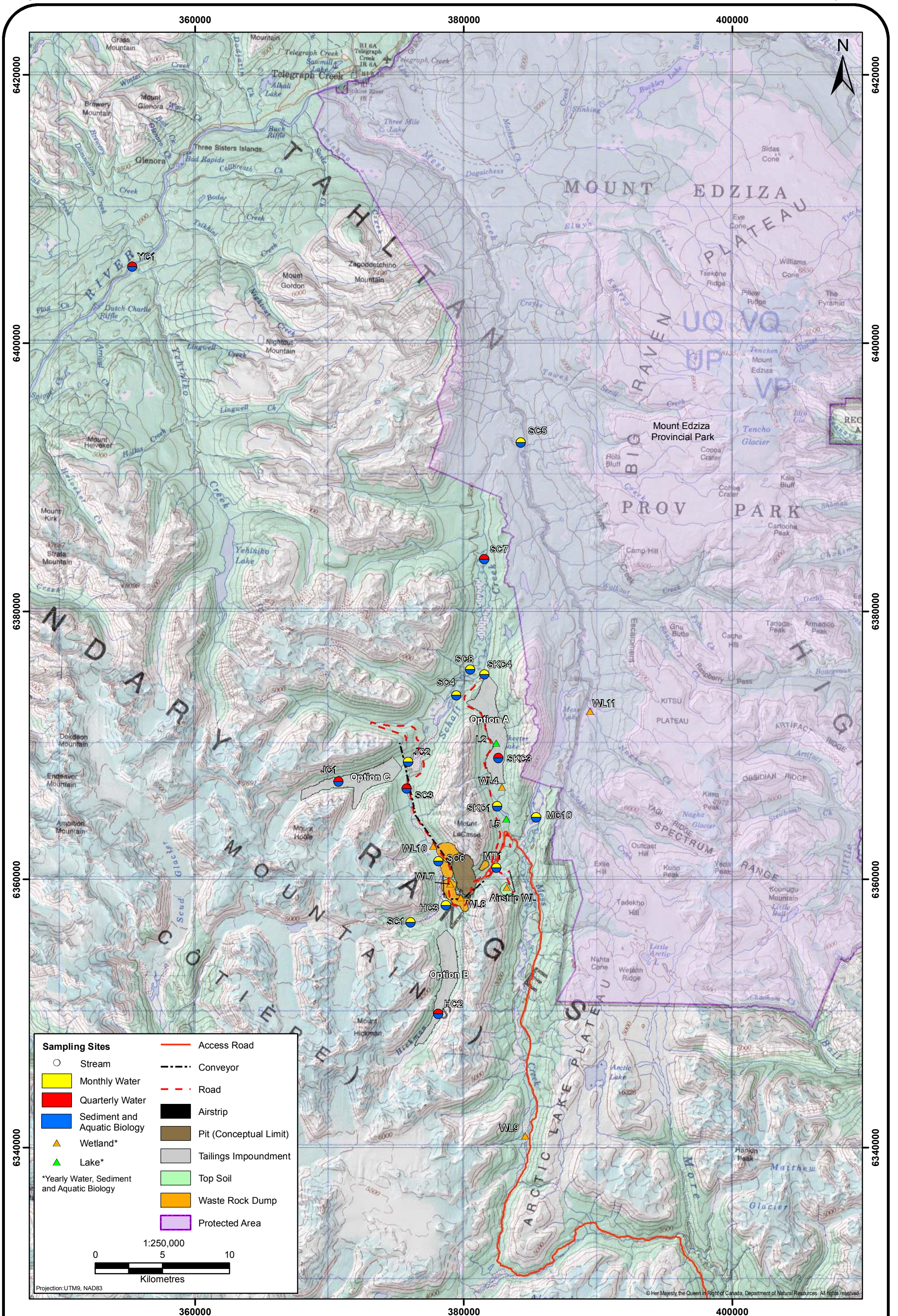


FIGURE 2.5-3

Schaft Creek Aquatics Sampling Sites, 2008

Table 2.5-3
Water Quality Parameters and Detection Limits (completed)

Parameter	Detection Limit (mg/L)
Total and Dissolved Metals (continued)	
Magnesium	0.005
Manganese	0.00005
Mercury	0.00005
Nickel	0.0001
Phosphorous	0.3
Potassium	0.05
Selenium	0.001
Silicon	0.05
Silver	0.00001
Sodium	2
Strontium	0.0001
Thallium	0.00005
Tin	0.0001
Titanium	0.01
Uranium	0.00001
Vanadium	0.001
Zinc	0.001

All stream water quality samples will be collected as single replicates from each stream site in clean, well-labelled bottles. At all streams, the scientist collecting water samples will stand downstream, rinse the sample bottles three times with stream water, and then submerge the bottles until they are almost full, leaving enough room for the addition of any necessary preservatives. Where safety considerations allow, water samples will be collected in mid-stream; however, for larger rivers it will be necessary to collect samples near the stream bank. After preservation, samples will be stored in a dark, cool place until shipment. All water samples will be shipped to Vancouver, British Columbia, and analyzed by ALS Environmental Ltd. (ALS), a fully accredited analytical laboratory.

For quality assurance/quality control (QA/QC) purposes, 10% of all samples will be collected in duplicate. In addition, several field and travel blanks will be collected on each sampling trip to assess potential contamination during transit/field work.

Table 2.5-4 summarizes sample container, preservation and handling requirements for water quality samples.

Sediment Quality

A list of sediment quality parameters to be examined from the stream sites is presented in Table 2.5-5. The lowest analytical detection limits possible for the mass of sediment submitted will be used for all analyses.

Table 2.5-4
Container, Preservation and Handling Requirements for Water Quality Samples

Analyte	Container	Preservative	Handling
Physical/Dissolved Anions	1 L plastic	None	ship in cooler with ice packs; store at 4°C
Nutrients	500 ml amber glass	None	ship in cooler with ice packs; store at 4°C
Total Organic Carbon	125 ml amber glass	HCl	ship in cooler with ice packs; store at 4°C
Total Kjeldahl Nitrogen	250 ml amber glass	H_2SO_4	ship in cooler with ice packs; store at 4°C
Dissolved Metals	250 ml plastic bottle	None	ship in cooler with ice packs; store at 4°C
Total Metals	250 ml plastic bottle	HNO_3	ship in cooler with ice packs; store at 4°C
Total Cyanide	1 L plastic bottle	NaOH	ship in cooler with ice packs; store at 4°C

Sediment samples will be collected in triplicate at each stream station using appropriate sampling equipment. A stainless steel bowl and spoon will be used to collect multiple grab subsamples within or alongside streams and river stations. Sediment will be spooned from the top 5 cm at three to four points along the river. It will be pooled (excess water drained off) and manually homogenized for one minute in the mixing bowl. Sediment will then be carefully spooned into clean, pre-labelled Whirl-Pak bags, sealed (no air bubbles), and kept cool in the dark until analysis by ALS Environmental in Vancouver. This will be conducted at three distinct areas per site (different braids, or different stretches of the main channel), covering a total stretch of 50 to 250 m, depending on site width and access, and result in three separate replicates per site. For larger rivers, sediment sampling will be conducted in a depositional area of the shoreline that can be accessed safely by wading.

Sediment description with photo-documentation of the sediment samples will be completed. Sediment chemistry and grain size analyses will be conducted by ALS. For quality assurance/quality control (QA/QC) purposes, field homogenization duplicates will be collected for 10% of all samples.

Primary Producers - Periphyton

Three periphyton samples will be collected from each of the biology stream sites. Periphyton will be gently scraped off of three rocks found in the streams. For each rock, multiple discs (*i.e.*, circular areas of known size) will be collected and combined in order to accurately characterize periphyton coverage on each rock. Periphyton results for each rock will be normalized to the area scraped. The samples from each rock or core will be split and analyzed for taxonomy and biomass (as chlorophyll *a*).

Taxonomy samples will be retained in 250 ml plastic bottles, preserved with Lugol's solution, and shipped to Biologica Environmental Services (Victoria, B.C.) for identification and enumeration to at least the genus level. Biomass samples will be field filtered onto a 0.45µm filter, frozen and kept in the dark until analysis is conducted. ALS will process and analyze all chlorophyll *a* samples.

Table 2.5-5
Sediment Quality Parameters and Detection Limits

Variable	Detection Limits (mg/kg)
Physical Tests	
Moisture	0.1%
Particle Size	n/a
Nutrient/Inorganic/Organic Variables	
Available Phosphorus	0.2
Total Nitrogen	0.01%
Total Organic Carbon	0.05%
Cyanides	
Total Cyanide	3
Total Metals	
Aluminum	50
Antimony	20
Arsenic	0.05
Barium	1
Beryllium	0.5
Bismuth	10
Boron	10
Cadmium	0.1
Calcium	50
Chromium	2
Cobalt	2
Copper	1
Iron	50
Lead	2
Lithium	2
Magnesium	50
Manganese	1
Mercury	0.005
Molybdenum	4
Nickel	5
Phosphorous	50
Potassium	200
Selenium	50
Silicon	50
Silver	2
Sodium	200
Strontium	0.5
Thallium	50
Tin	10
Titanium	1
Uranium	2
Zinc	1

Secondary Producers – Benthic Invertebrates

Benthic invertebrates constitute an important food source for fish, and serve as bioindicators of changes in environmental quality. Benthic invertebrates typically form the backbone of effects monitoring programs, and collecting quantitative baseline data will allow for future environmental monitoring. Characterizing the benthic communities is also important in assessing the productivity of streams, and providing information for environmental impact assessment.

Stream benthos samples will be collected from stream sites using a 250 µm mesh size Hess sampler. Five composite samples will be collected in 500 ml plastic jars at each site, preserved with formalin (to a 10% final concentration) and shipped to Biologica Environmental Services (Victoria, B.C.) for identification and enumeration to at least the genus level. All samples will be transferred to 70% ethanol prior to analysis and storage.

2.5.2.2 Lakes and Wetlands

A total of two lakes and seven wetlands will be sampled as part of the mine receiving environment at the Schaft Creek Project. These sites were chosen for their proximity to proposed mine facilities and roads. Physical limnology, water quality, sediment quality and aquatic biology surveys will be conducted in 2008.

Physical Limnology

At each lake, basic bathymetry (spot measurements using a hand-held device) will be first conducted to determine the deeper areas. While at each site in August 2008, temperature and dissolved oxygen profiles will be recorded to determine the degree of stratification, if present. A probe will be lowered through the water column in 1 m intervals, recording stabilized water parameter readings at each stop.

Water transparency will be measured using a Secchi disk (weighted to keep line as vertical as possible) which will be lowered on a metered line down through the water until it disappears entirely. The line will then be raised very slowly until the disk can just be seen, and the depth of the disk will be recorded.

Water Quality

Lake and wetland water quality samples will be collected and analyzed for the same parameters listed for stream water quality. Wetland water samples will be collected from the shore while lakes will be sampled at the deepest zone of the lake where limnological work was conducted. Samples for lake water chemistry will be collected using an acid-cleaned 5 L Go-Flo bottle. Samples will be collected at near surface depth (1 m below water surface) and below the thermocline (if one exists) using separate Go-Flo casts. Sample bottles will be filled directly from the Go-Flo bottle, preserved if necessary, and stored in a dark, cool place until shipping. Samples for cyanide analysis will be collected from the 1 m depth Go-Flo cast. Water samples will be preserved and handled as described for streams and shipped to ALS for analysis.

For quality assurance/quality control (QA/QC) purposes, 20% of all samples will be collected in duplicate. In addition, several field and travel blanks will be collected on each sampling trip to assess potential contamination during transit/field work

Sediment Quality

The sediment quality parameters to be analyzed are the same as those listed for streams, with the addition of sulphide. Sediment samples will be collected in three zones of each lake or wetland. To ensure that limnology, water and plankton sampling will be uncompromised, both sediment and benthos will be sampled after all other sampling to avoid contaminating the water column with drifting sediment and benthos. Within each of the three zones, one composite replicate sample will be collected, comprised of three field sub-samples taken from areas a minimum of 5 to 25 m apart (depending on size of the site).

Sediment samples will be collected using an Ekman grab sampler. Collection depth and sediment descriptions will be noted along with photographs of each sample. Sediment chemistry and grain size analyses will be conducted by ALS. For quality assurance/quality control (QA/QC) purposes, field homogenization duplicates will be collected for 10% of all samples. Sample handling requirements for lake and wetland sediment samples will be the same as described for stream samples.

Primary Producers - Phytoplankton

For each lake, phytoplankton samples will be collected in triplicate near the surface (1 m depth) by filling 1 L clean plastic bottles. Samples for phytoplankton taxonomy will be preserved using Lugol's solution and shipped to Biologica Environmental Services (Victoria, B.C.) for identification and enumeration to at least the genus level. Biomass samples will be field filtered onto a 0.45 µm filter, frozen and kept in the dark until analysis is conducted. Filters will be wrapped in foil, labelled and frozen until analyzed. Filters will be shipped to ALS for analysis.

Secondary Producers - Zooplankton

Zooplankton samples will be collected in triplicate from each lake. Samples will be collected with a standard zooplankton net. A small mesh size will be used (118 µm). All zooplankton samples will be collected in 500 ml plastic jars, preserved with formalin (to a 10% final concentration), and shipped to Biologica Environmental Services (Victoria, B.C.) for identification and enumeration to at least the genus level. All samples will be transferred to a 70% ethanol solution prior to analysis and storage.

Secondary Producers - Benthic Invertebrates

Lake and wetland benthos samples will be collected in triplicate from each lake in conjunction with sediment quality samples. Samples will be collected using an Ekman grab, noting the depth at which the sample was collected. Sediments containing benthos will be sieved through 500 µm mesh, transferred to 500 ml plastic jars, and preserved with formalin to a final concentration of 10%. All benthos samples will be shipped to Biologica Environmental Services (Victoria, B.C.) for identification and enumeration to at least the genus level. All samples will be transferred to a 70% ethanol solution prior to analysis and storage.

2.5.3 2008 Work Schedule

Table 2.5-6 summarizes the proposed schedule for the baseline aquatic sampling program in 2008. Field work is scheduled to begin in August 2008 and end in September 2008 for all studies except water quality, which will be collected on a monthly/quarterly basis. A baseline report will be produced in November/December 2008.

Table 2.5-6
Proposed Schedule for the Aquatic Resources Baseline Sampling Program, 2008

Activity/Deliverable	Schedule/Timing
Freshet Water sampling (4sites)	May/June 2008
Monthly Water sampling (11 sites)	Ongoing
Quarterly Water Sampling (6 sites)	May 2008/August 2008/November 2008/February 2008
Lake/Wetland Field work	August 2008
Stream Aquatic Biology Field work	August/September 2008
Rain event water sampling	September/October 2008

2.6 Fisheries

The 2008 fisheries baseline program is a continuation of the 2006 and 2007 baseline programs completed for the Schaft Creek Project. The baseline programs were designed to provide a detailed description of fish habitat and community within the Schaft Creek Project area. The programs include sampling at selected receiving environment sites (*i.e.,* sites located in areas that may be affected by mine development), and will include stream, river, lake, and wetland habitat.

2.6.1 Summary of Work Completed

A fisheries baseline studies program was implemented in the Schaft Creek Project area in 2006. The main objective during the first year of field sampling was to determine the species composition, fish distribution and general fish habitat quality within the Project area, including the mine receiving environment and proposed road route.

The program was expanded in 2007 to include a complete assessment of all of the stream crossings along the proposed road route, as well as all of the potential tailings facility areas, downstream monitoring sites and controls. Fish distribution was confirmed by assessing the passability of barriers within major watersheds. Tissue metal concentrations and other variables required under the Metal Mining and Effluent Regulations (MMER) were collected for the first time in 2007. These samples will provide baseline conditions against which any future fish samples may be compared if necessary.

A summary of activities undertaken in 2006 and 2007 is presented below. Table 2.6-1 shows the locations of all of the receiving environment sites surveyed in 2006 and 2007.

2006

- Fish community and habitat assessments at:

- 9 major stream crossings along the proposed road route;
- 16 receiving environment stream sites;
- 8 receiving environment wetland sites; and
- 7 receiving environment lake sites;

- Project area reconnaissance.

2007

- 219 sites surveyed along proposed road route, including:
  - 137 streams;
    - 28 fish bearing or default fish bearing;
    - 109 non-fish-bearing;
  - 5 fisheries sensitive zones (FSZ);
  - 76 non-classified drainages or no-visible channels;
- Assessment of navigability at all stream crossings;
- Fish community and habitat assessments at:
  - 22 receiving environment stream sites;
  - 11 receiving environment wetland sites;
  - 7 receiving environment lakes;
- Barrier assessment;
- MMER sampling.

Table 2.6-1
Locations of Receiving Environment Sites Surveyed for Fish and Fish Habitat in 2006 and 2007

Type	Site ID	Watershed	Easting	Northing	2006	2007	Comment
Streams	MC-1	Mess Creek	383924	6337799	x	x	Road
	MC-2	Mess Creek	384033	6354994	x	x	Road
	MC-3	Mess Creek	387394	6374285	x		Road
	MC-5	Mess Creek	383637	6394871	x	x	DS of Mine
	MC-6	Mess Creek	383898	6350500	x		Road
	MC-7	Mess Creek	385140	6342460	x		Road

(continued)

Table 2.6-1
Locations of Receiving Environment Sites Surveyed for Fish and Fish Habitat in 2006 and 2007 (completed)

Type	Site ID	Watershed	Easting	Northing	2006	2007	Comment
	MC-8	Mess Creek	382812	6333580	x		Road
	MC-10	Mess Creek	385391	6364625		x	DS of Mine
	HC-1	Hickman Creek	378944	6355107	x	x	Reference
	HC-2	Hickman Creek	378106	6349973		x	Tailings
	HC-3	Hickman Creek	378676	6358066		x	Tailings
	TC-1	Tailings C Creek	370681	6367288		x	Tailings
	TC-2	Tailings C Creek	375860	6368757		x	Tailings
	TC-3	Tailings C Creek	locate in field			x	Tailings
	SC-1	Schaft Creek	376007	6356827	x	x	Reference
	SC-2	Schaft Creek	376702	6363669	x		DS of Mine
	SC-3	Schaft Creek	375738	6366769	x	x	DS of Mine
	SC-4	Schaft Creek	379430	6373500	x		DS of Mine
	SC-5	Schaft Creek	384231	6392546	x	x	DS of Mine
	SC-6	Schaft Creek	378117	6361360		x	DS of Mine
	SC-7	Schaft Creek	381535	6383897		x	DS of Mine
	MT-1	Mess Tributary	382410	6360848	x	x	Camp
	SKC-1	Start Lake	382610	6365341	x	x	Tailings
	SKC-2	Skeeter Lake	381653	6374218	x	x	Tailings
	SKC-3	Skeeter Lake	382588	6369061	x	x	Tailings
	SKC-4	Skeeter Lake	381324	6375301		x	Tailings
	ST-1	Stikine River	366523	6416438		x*	DS of Mine
	ST-2	Stikine River	372853	6419747		x*	DS of Mine
	WC-1	Walkout Creek	387801	6381800		x	Reference
	YC-1	Yehiniko Creek	355330	6405706		x	Reference
Lakes	L-1	Mess Lake	387282	6371959	x	x	DS of road
	L-2	Skeeter Lake	382513	6369658	x	x	Tailings
	L-3	Upper Mess Lake	382640	6333000	x	x	DS of road
	L-4	Lake 4	384492	6381695	x	x	Reference
	L-5	Start Lake	382619	6365120	x	x	Tailings
	L-6	Lake 6	382850	6366900	x	x	Tailings
	L-7	Lake 7	382200	6366225	x	x	Tailings
Wetlands	WL-1	Mess Creek	381229	6380189	x	x	Reference
	WL-2	Schaft Creek	388673	6377896	x	x	DS of mine
	WL-3	Schaft Creek	377833	6373037	x	x	DS of mine
	WL-4	Skeeter Lake	382138	6366184	x	x	Tailings
	WL-5	Mess Creek	385544	6365452	x	x	DS of road
	WL-6	Mess Creek	384234	6361198	x	x	Road Crossing
	WL-7	Schaft Creek	379247	6359520	x	x	Minesite
	WL-8	Schaft Creek	379590	6358207	x	x	Minesite
	WL-9	Mess Creek	384235	6341594		x	Reference
	WL-10	Schaft Creek	377689	6361601		x	DS of mine
	WL-11	Nagha Creek	389210	6372523		x	Reference

***Habitat Only**

2.6.2 2008 Work Plan

The following scope outlines work that will be conducted as part of the 2008 Schaft Creek fisheries baseline studies. Sampling will be conducted at selected receiving environment sites (*i.e.,* sites located in areas that may be impacted by mine development), and will include stream, river, lake, and wetland habitat. In addition, all streams crossing for the proposed road route were surveyed in 2007. Stream classification for some of these streams will be confirmed during the 2008 sampling season. The 2008 Schaft Creek fisheries baseline report will summarize these data and build on the information presented in the 2006 and 2007 reports.

2.6.2.1 Study Components

Fisheries surveys will be conducted at nine receiving environment sites located throughout the Project area (Table 2.6-2). These sites are located in receiving environment watersheds. Also, reference sites located in non-receiving environment watersheds will be monitored for comparison purposes. Surveys will include detailed descriptions of fish habitat and community composition at each site, as well as MMER requirements and potential HADDs and habitat compensation areas.

Three of the eleven wetlands sampled in 2007 will be re-sampled in 2008, and five of the seven lakes sampled in 2006 and 2007 will be revisited in 2008. These sites represent key receiving environment areas.

Fisheries surveys will also be conducted at selected sites along the proposed access corridor connecting the Schaft Creek mine site to the proposed Galore Creek access road to the south in More Creek valley. These sites will be revisited to confirm their fish-bearing status, which was first tested in 2007.

2.6.2.2 Study Objectives

The objectives of the 2008 fisheries baseline studies program are:

- To characterize fish habitat and community composition at key sites within the receiving environment of the proposed mine, tailings facilities and road, as well as at reference sites within each watershed;
- To confirm stream classifications and fish-bearing status at stream crossings surveyed in 2007;
- To confirm fish barriers observed in 2006 and 2007;
- To identify potential areas for fish habitat compensation and collect baseline information on those areas; and,
- To assess fish habitat and community composition in key wetlands and lakes within the Schaft Creek Project Area.

Table 2.6-2
Summary of Sampling Locations for 2008 Fisheries Baseline Studies

Type	Site ID	Watershed	Easting	Northing	Comment
Receiving Environment	MC-10	Mess Creek	385391	6364625	North Crossing
	MC-11	Mess Creek	to be located		South Crossing
	SC-3	Schaft Creek	375738	6366769	DS of Mine
	SC-5	Schaft Creek	384231	6392546	DS of Mine
	SC-6	Schaft Creek	378117	6361360	DS of Mine
	SKC-1	Skeeter Lake	382610	6365341	Tailings
	SKC-2	Skeeter Lake	381653	6374218	Tailings
	SKC-3	Skeeter Lake	382588	6369061	Tailings
	SKC-4	Skeeter Lake	381324	6375301	Tailings
Lakes	L-1	Mess Lake	387282	6371959	DS of road
	L-2	Skeeter Lake	382513	6369658	Tailings
	L-5	Start Lake	382619	6365120	Tailings
	L-6	Lake 6	382850	6366900	Tailings
	L-7	Lake 7	382200	6366225	Tailings
Wetlands	WL-4	Skeeter Lake	382138	6366184	Tailings
	WL-6	Mess Creek	384234	6361198	North Crossing
	WL-9	Mess Creek	384196	6341555	South Crossing

2.6.3 Detailed Scope of Work

2.6.3.1 Receiving Environment

Streams and Rivers

The major receiving environment streams in the Project area include Schaft Creek, Hickman Creek, Skeeter Creek, Tailings Option C Creek and Mess Creek. Most of the studies to be conducted in 2008 will focus on the key receiving environment watersheds: Schaft, Mess and Skeeter. Schaft Creek flows north and joins Mess Creek approximately 35 km downstream of the proposed mine site. Mess Creek flows into the Stikine River approximately 60 km downstream of the Project area. Smaller tributaries in the Skeeter valley are also being studied as part of the receiving environment due to their proximity to proposed tailings facilities.

Fish Habitat

Freshwater fish habitat consists of environmental components required either directly or indirectly by fish, to carry out their life processes. Habitat includes spawning and rearing areas, food supply and migration areas. Future Project activities within the Schaft Creek Project area may potentially disturb fish habitat through processes such as the smothering of spawning grounds due to increased sediment load to streams from erosion or through destruction of habitat through the construction and operation of a tailings impoundment. Therefore, the purpose of the stream habitat survey is to characterize the condition of the stream habitat within the Schaft Creek Project area and associated reference watersheds prior to any Project activities occurring.

Fish and fish habitat surveys will be carried out at nine sites within the proposed Schaft Creek receiving environment (Figure 2.6-1). Fisheries values in the Stikine River are well documented in the historical literature; therefore, it is not necessary to conduct additional fish sampling at these sites. Habitat surveys are done each year in order to document natural changes to the receiving environment.

Fish habitat assessments will be based on the Reconnaissance 1:20,000 Fish and Fish Habitat Inventory Protocol (RIC, 2001). This protocol includes measurements of channel and wetted width and depth, gradient, temperature, pH, and conductivity, as well as characterizations of substrate, stream morphology, bank texture, and habitat quality. Photos will be taken at each site and published along with the results of the baseline study.

In addition, habitat assessments based on the Fish Habitat Assessment Protocol (Johnston and Slaney, 1996) will be used to quantify habitat units and microhabitat quality at all fish-bearing sites. This procedure involves measuring individual habitat units and quantifying cover types, substrate, bank stability, and riparian vegetation. It also aids in determining the availability of pools and other habitat types within stream reaches.

Fish Community

The stream fish community will be sampled with backpack electrofishing or other appropriate techniques (*e.g.,* seining, minnow trapping). Because species composition is the primary purpose of sampling, only one electrofishing pass of a reach will be made and no stop nets will be used to prevent fish movement into or out of the sampling area. Electrofishing in spawning habitat during spawning season will be avoided by sampling during the July-August summer period. Biological data will be collected on captured fish, including relative abundance, species, fork length, wet weight and general physical observations. Scales and/or fin rays will be collected from up to 150 fish for aging purposes. Fish will then be released alive.

The Metal Mining Effluent Regulations (MMER) recommend a number of survey measurements that will be used to determine the effects of the proposed mine on fish growth, reproduction, condition, and survival in the mine receiving environment. These measurements include length, weight, age, gonad weight, egg size, fecundity (total number of eggs per female), liver weight, external condition and sex. These measurements will be used to determine survival, energy use and storage, gonadosomatic index, liversomatic index, and condition factor among fish of both sexes. These measurements will be collected in late summer when captured fish are more likely to be sexually mature. Up to 40 fish from each of four sites will be sacrificed for MMER testing. In addition, non-destructive sampling will be conducted on a number of fish to supplement the dataset with visual observations of relative fish health.

Harmful Alteration, Disruption or Destruction of Fish Habitat

Under Section 35(2) of the *Fisheries Act*, the harmful alteration, disruption or destruction (HADD) of fish habitat requires an authorization from Fisheries and Oceans Canada and habitat compensation. Although most of the tailings options are located in non-fish bearing watersheds, they flow directly into fish-bearing streams. Streams that contribute significant amounts of

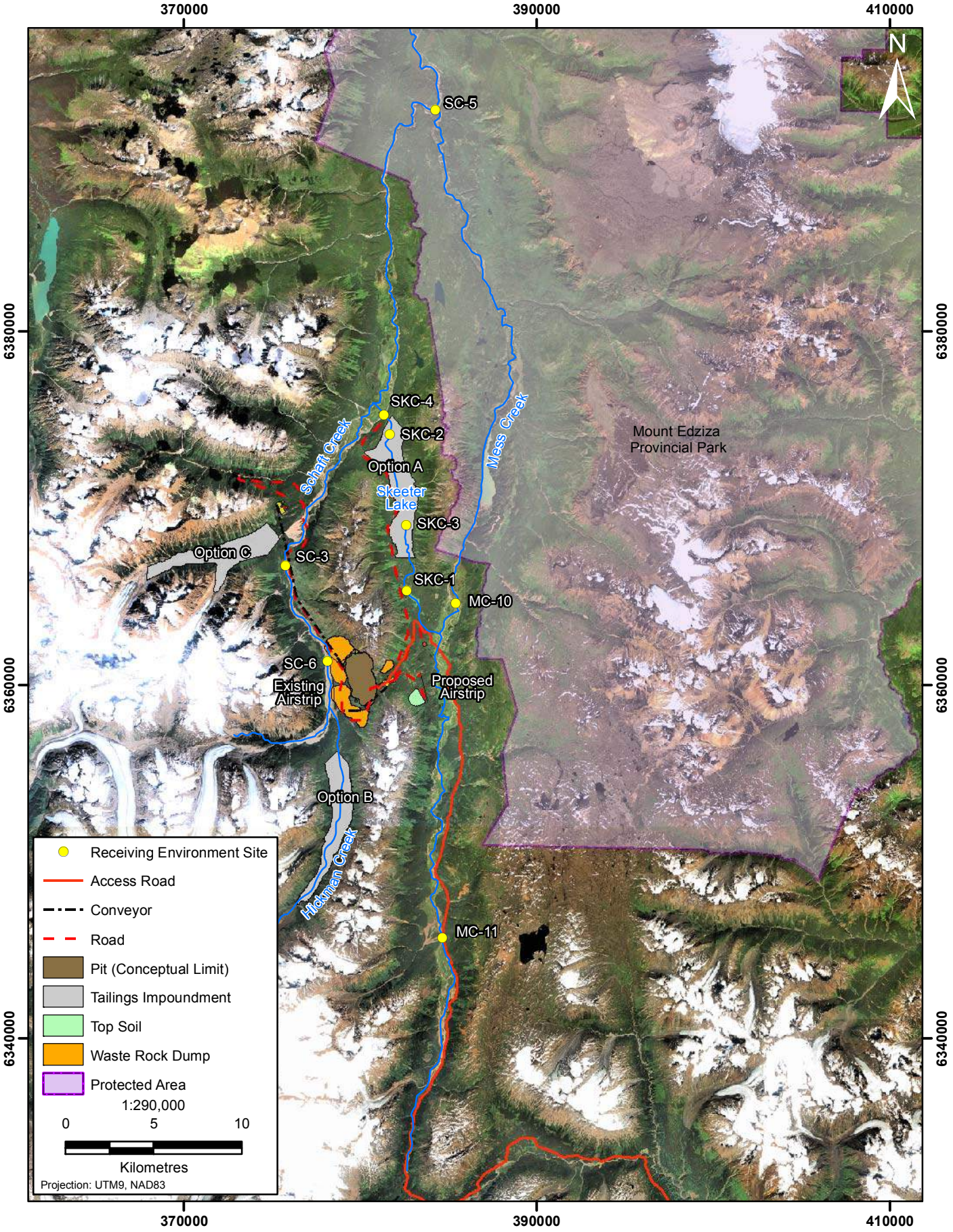


FIGURE 2.6-1

Locations of Schaft Creek Receiving Environment Sites, 2008

nutrients or food to downstream fish-bearing areas could be deemed fish habitat under the definition provided by the *Fisheries Act*. Therefore, additional studies will be conducted on streams that will be directly influenced by the tailings options.

Additional studies will help to determine the potential impacts of the tailings facilities on fish habitat and to determine if a HADD will occur as a result of the construction of a tailings facility. The potential impacts of tailings facilities on downstream areas include:

- Increased concentrations of contaminants in water, sediment, primary and secondary producers and fish;
- Decreased flow, leading to changes in available fish habitat, particularly for spawning and egg incubation; and
- Decreased inputs of nutrients and invertebrate drift, leading to decreases in downstream productivity.

To address concerns regarding contamination of fish tissues, fish tissue metals will continue to be analyzed from fish collected downstream of potential tailings areas. This will determine background tissue metal concentrations and will provide a second year of baseline values against which future tissue metal concentrations can be compared.

Detailed habitat assessments and hydrological studies will help to determine the impacts of decreased flow on fish habitat. In particular, hydrology studies will help to predict the impacts of a tailings dam on downstream water levels at critical times of the year such as during trout spawning and incubation.

Invertebrate drift is a significant source of food for stream-dwelling salmonids, and some non-fish bearing streams can be significant exporters of invertebrate drift, contributing to the productivity of downstream areas. Drift studies will include the installation of drift nets on tailings outflow streams, and studies of rainbow trout diet in downstream areas. This will determine if a) the tailings outflow streams are significant exporters of invertebrate drift; and b) if fish downstream of these streams depend on these outputs for food.

Fish habitat will also be assessed in detail at streams and wetlands at the sites of the proposed Mess Creek crossings. These sites will be chosen once the crossing locations and structures have been confirmed by engineers near the end of the summer. Detailed habitat assessments, including schematic diagrams will be prepared for each site in order to accurately quantify the amount of habitat lost or altered at the proposed crossings.

Once an estimate of the number and extent of HADDs is obtained, a preliminary survey with a water resource engineer will be conducted to identify potential areas for habitat compensation.

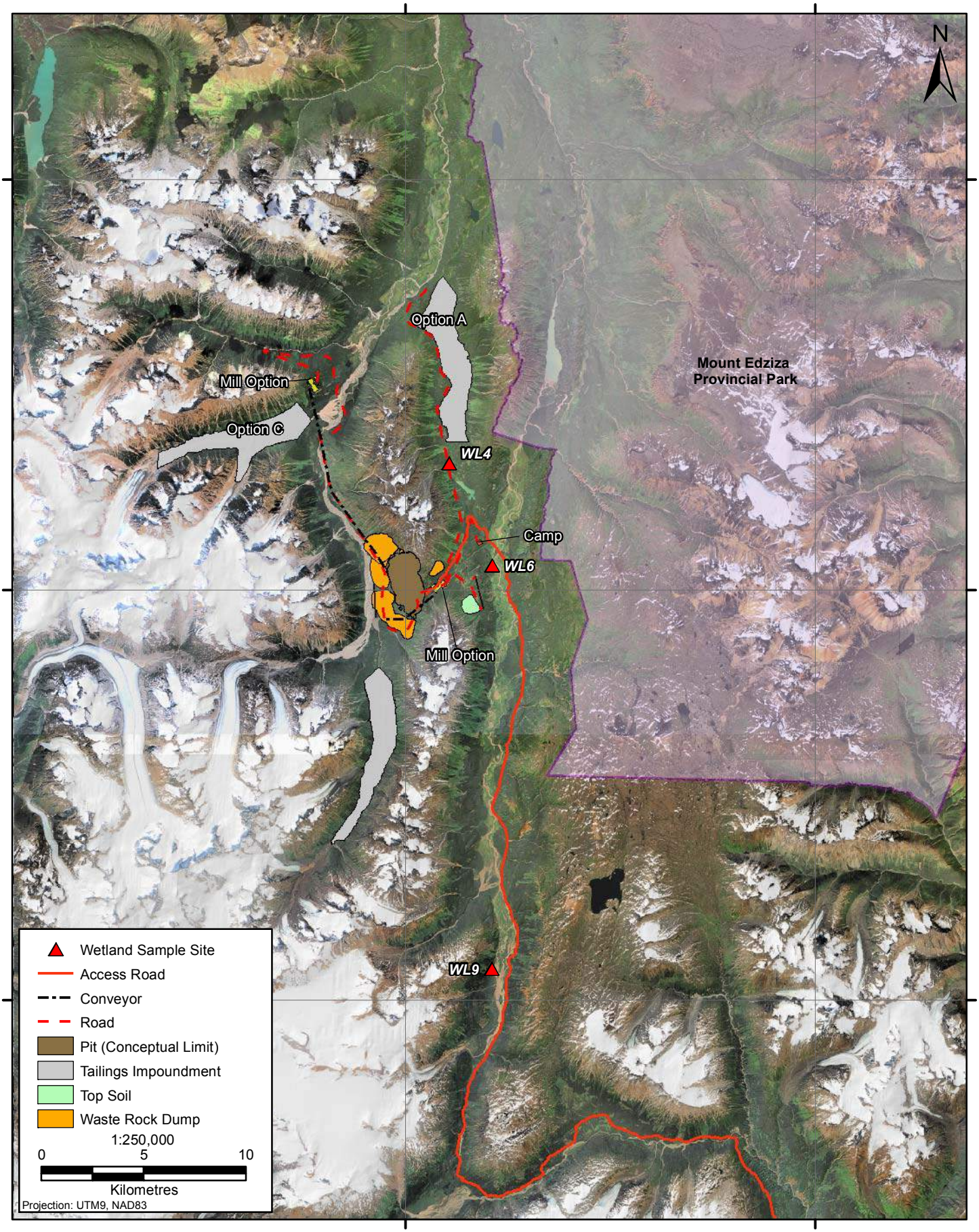


FIGURE 2.6-2

Locations of Wetland Sampling Sites in the Schaft Creek Project Area, 2008

2.6.3.2 Wetlands

Fish Community

Three wetlands will be resampled in 2008 in order to supplement data on fish community collected in 2006 and 2007 (Figure 2.6-2). These sites were chosen for their proximity to the proposed mine site and to the proposed access corridor. Fish habitat surveys will not be conducted again in 2008, except where HADDs may occur because they were conducted at most sites in 2006 and 2007, and fish habitat in wetlands does not change much from year to year.

The fish community in each wetland will be sampled using a combination of electrofishing, gillnetting and overnight minnow trap sets. Electrofishing will be conducted in narrow or shallow channels, while minnow traps and gillnets will be set in deeper water habitats and ponds. Gillnets will consist of panels of different mesh sizes to catch different size classes of fish. The location and set times of each net will be recorded. Sets will be of short duration to minimize mortality. Fish will be identified, measured, and weighed and released back into their habitat. Fin clips and/or scales will be collected from a sub-sample of fish for aging purposes.

2.6.3.3 Lakes

Fish Community

A total of five lakes will be sampled as part of the mine receiving environment at the Schaft Creek Project (Figure 2.6-3). Fish community surveys will be conducted once in 2008. Fish habitat surveys will not be conducted in 2008 because they were conducted in 2006 and 2007, and habitat in lakes does not change substantially from year to year.

The fish community in each lake, if present, will be sampled to obtain information on fish species richness, size distribution, fish condition and relative abundance. Gillnets, minnow traps, beach seines and angling will be used to sampled the lakes. Gillnets will consist of panels of different mesh sizes to catch different size classes of fish. The location and set times of each net will be recorded. Sets will be of short duration to minimize mortality. If no fish are captured by short sets, set time will be increased. Minnow traps will be used to catch smaller fish. They will be installed along the shorelines near the sampling stations and will be set for up to 24 hours before being retrieved. Lengths, weights, aging structures and reproductive status will be collected on each fish. All live fish will be released back into the waterbodies.

2.6.3.4 Access Corridor

Fish-Bearing Status

Stream crossings along the proposed access corridor were surveyed and classified in 2007. At stream crossings where no barriers were present, the classification was defaulted to fish-bearing, even if no fish were caught. In order to confirm the fish-bearing status of these streams, sampling must occur during at least two seasons. Therefore, defaulted streams will be revisited in 2008 to confirm their fish-bearing status.

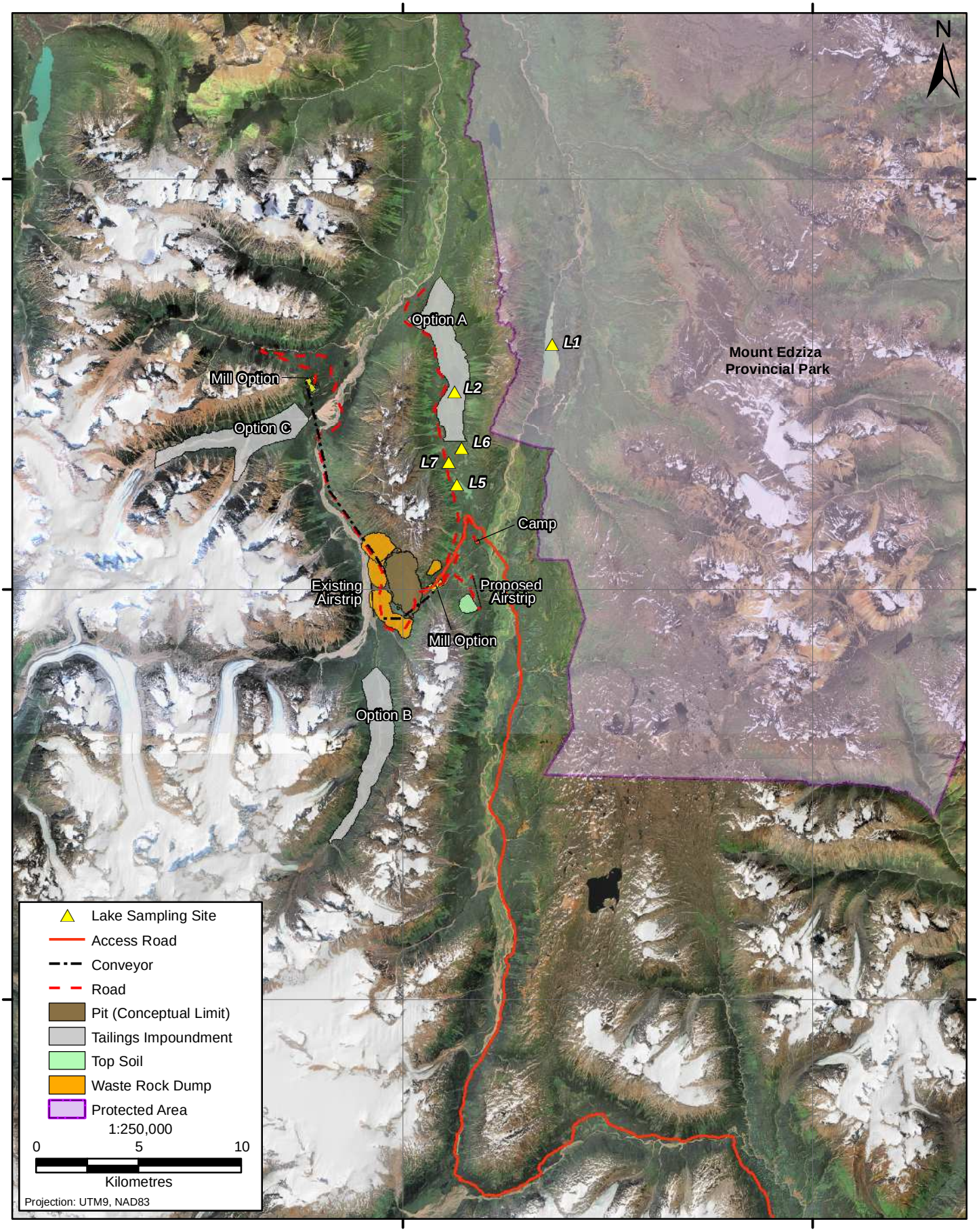


FIGURE 2.6-3

Locations of Lake Sampling Sites in the Schaft Creek Project Area, 2008

The stream fish communities will be sampled using backpack electrofishing. If no fish are captured at the road crossing, then sampling will continue downstream until either a barrier or a fish is encountered. Headwater ponds and lakes may provide overwintering refuge for fish in streams that dry up during certain times of the year. If upstream ponds or lakes are present, they will be sampled during the lake and wetland surveys. Barrier features will be noted, photographed and measured, and sampling will take place both upstream and downstream of the barrier to determine if it prevents fish passage. Biological data will be collected on captured fish, including species, relative abundance, fishing effort, fork length, wet weight, and general physical observations. Scales and/or fins rays will be collected from captured fish for aging purposes. Fish will be released alive back into their habitat.

Harmful Alteration, Disruption or Destruction of Fish Habitat

Under Section 35(2) of the *Fisheries Act*, the harmful alteration, disruption or destruction (HADD) of fish habitat requires an authorization from Fisheries and Oceans Canada and habitat compensation. In order to determine the amount of habitat compensation required, and to describe the type and quality of habitat being lost, detailed surveys will be conducted at each stream crossing where a HADD is proposed. This survey will describe individual habitat units around the crossing structure in terms of size, depth, substrate, cover and riparian vegetation. Schematic drawings of the site will be prepared showing important habitat features and scale so that biologists are able to determine exactly what is altered during the construction process. This will allow for an accurate estimation of HADD areas for compensation.

2.6.3.5 Barrier Assessment and Fish Distribution

During the 2007 field season, a single specimen of what is believed to be a juvenile chinook salmon (*Oncorhynchus tshawytscha*) was captured in Mess Lake (Plate 2.6-1). The possibility that anadromous salmonids are capable of accessing the upper reaches of Mess Creek and Schaft Creek could have an impact on the Project; therefore, it is important to determine the distribution of these fish in Mess Creek. During the 2008 lake survey of Mess Lake, extra effort will be expended with minnow traps, gillnets and electrofishing to attempt to capture more of these fish and establish their distribution in the lake and in surrounding streams. During chinook spawning season, the main barrier to fish migration (a waterfall approximately 11 km upstream from the Stikine River confluence) will be monitored to determine if adults are able to successfully navigate over the falls. Spawning surveys with beach seines may also be conducted above the falls during spawning season to catch and enumerate adult fish.

Other barriers identified during the 2007 field season will continue to be assessed for passability, including the canyon barrier on Schaft Creek and the waterfall barrier on Skeeter Creek. Fish communities will continue to be assessed upstream of these barriers during receiving environment studies to confirm that fish are not present.

2.6.4 2008 Work Schedule

Field work at the Schaft Creek Project will be completed between May and September 2007.

The Chinook salmon migration peaks in early June in northern BC (McPhail, 2007), and fish typically appear in the upper Stikine and its tributaries between the last week in May and the first

week in June (Der Hovanisian and Etherton, 2006). Thus, Chinook salmon spawners will be enumerated during the first week of June. Juvenile Chinook salmon will likely be present throughout the year, and should be present during lake surveys in July.

Plate 2.6-1. Suspected juvenile chinook salmon captured in Mess Lake, July 2007.

Receiving environment stream sites will be surveyed in June and in August, while lakes and wetlands will be surveyed in July. Sampling for MMER requirements will occur in the fall in order to maximize the probability that fish will be sexually mature.

Stream crossings will be assessed in June to maximize the probability that water will be present in the streams.

2.7 Wildlife and Wildlife Habitat

The following scope outlines work to be conducted as part of the 2008 Schaft Creek wildlife baseline studies. These baseline studies are designed to build on the information presented in the 2006 and 2007 reports and address potential information gaps. The objectives of the 2008 work plan for wildlife baseline studies are to:

- Identify and investigate locations exploited by breeding birds of prey, specifically northern goshawk, and if detected locate nesting habitat areas;
- Confirm mountain ungulate distribution in areas previously surveyed in 2006 and address information gaps identified by regulators through survey of additional areas within the Schaft Creek wildlife study area;
- Produce habitat suitability mapping products for focal species, identified by regulatory agencies and representatives of the Tahltan Nation, with the Schaft Creek wildlife study area; and

- Conduct a literature review on feasibility and effectiveness of moose collaring programs to assess movement patterns and distribution relative to roads and industrial development.

2.7.1 Summary of Work Completed

In 2006 a series of studies were initiated to assess the wildlife resources within the Schaft Creek study area (Figure 2.7-1). The species of highest concern amongst regulating agencies and the Tahltan Nation were chosen for the initial investigation. These species included:

- Moose (winter aerial surveys)
- Mountain ungulates including mountain goat, Stone's sheep, and caribou (winter and summer aerial surveys)
- Waterfowl including harlequin duck and riverine birds (aerial and ground surveys)
- Cliff and riparian dwelling raptors (call playback and stand watch surveys)
- Forest and alpine breeding birds (variable radius point count surveys).

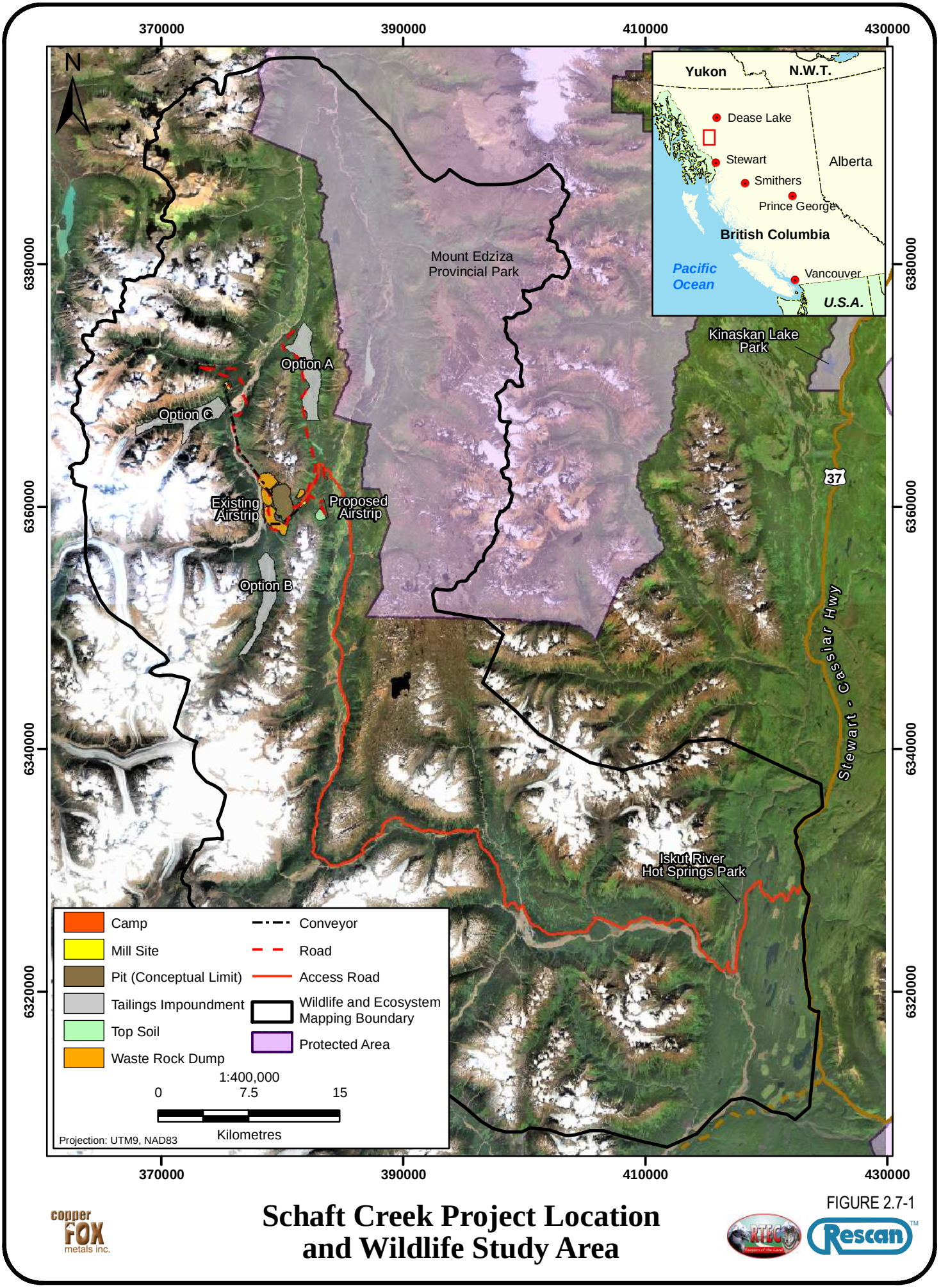
In 2007 additional wildlife baselines were conducted for:

- Western toad (aerial and ground survey)
- Bats (mist-netting and echolocation)
- Wildlife habitat suitability mapping for moose (late winter, early winter), mountain goat (winter, summer), Stone's sheep (winter, summer), grizzly bear (spring, summer, fall), marten (winter), Hoary Marmot (growing), western toad (growing, breeding).

2.7.2 2008 Work Plan

The proposed work for the 2008 field season includes plans to complete the Projects initiated in 2006 that were unable to be completed in 2007 and address comments raised by the Tahltan Nation and regulating agencies. These projects include:

- Mountain ungulates including mountain goat, Stone's sheep, and caribou (winter and summer aerial surveys)
- Harlequin duck (aerial and ground surveys)
- Northern goshawk (call playback surveys)
- Wildlife habitat suitability mapping and modeling for moose (late winter, early winter), mountain goat (winter, summer), Stone's sheep (winter, summer), grizzly bear (spring, summer, fall), marten (winter), Hoary Marmot (growing), western toad (growing, breeding)
- Furbearer questionnaire
- Literature review of feasibility and effectiveness of moose collaring programs
- Reporting of baseline studies will be completed in early November 2008.



Schaft Creek Project Location and Wildlife Study Area

FIGURE 2.7-1

2.7.2.1 Mountain Ungulate Survey

Aerial surveys for mountain ungulates (mountain goat, Stone's sheep and caribou) in the wildlife study area have been conducted over a period of three days during March 2006 and three days during late July/early August 2006. An additional survey effort of five days is planned for March/April 2008 and one day for July/August.

The field methods used to inventory mountain ungulates will adhere to the aerial survey protocol identified by BC MSRM (2002). This will include the use of a Bell 206 helicopter with two observers, a pilot, and navigator. The helicopter rate will average approximately 100 km/hour when on survey; however, this rate will change with conditions. Flight lines will be surveyed on a spacing of approximately 200 m, however greater or more narrow spacing of flight lines will be completed as conditions dictate. Survey effort will be directed from valley bottoms to height of land, and effort will include samples of low suitability habitat in addition to areas believed to be highly suitable.

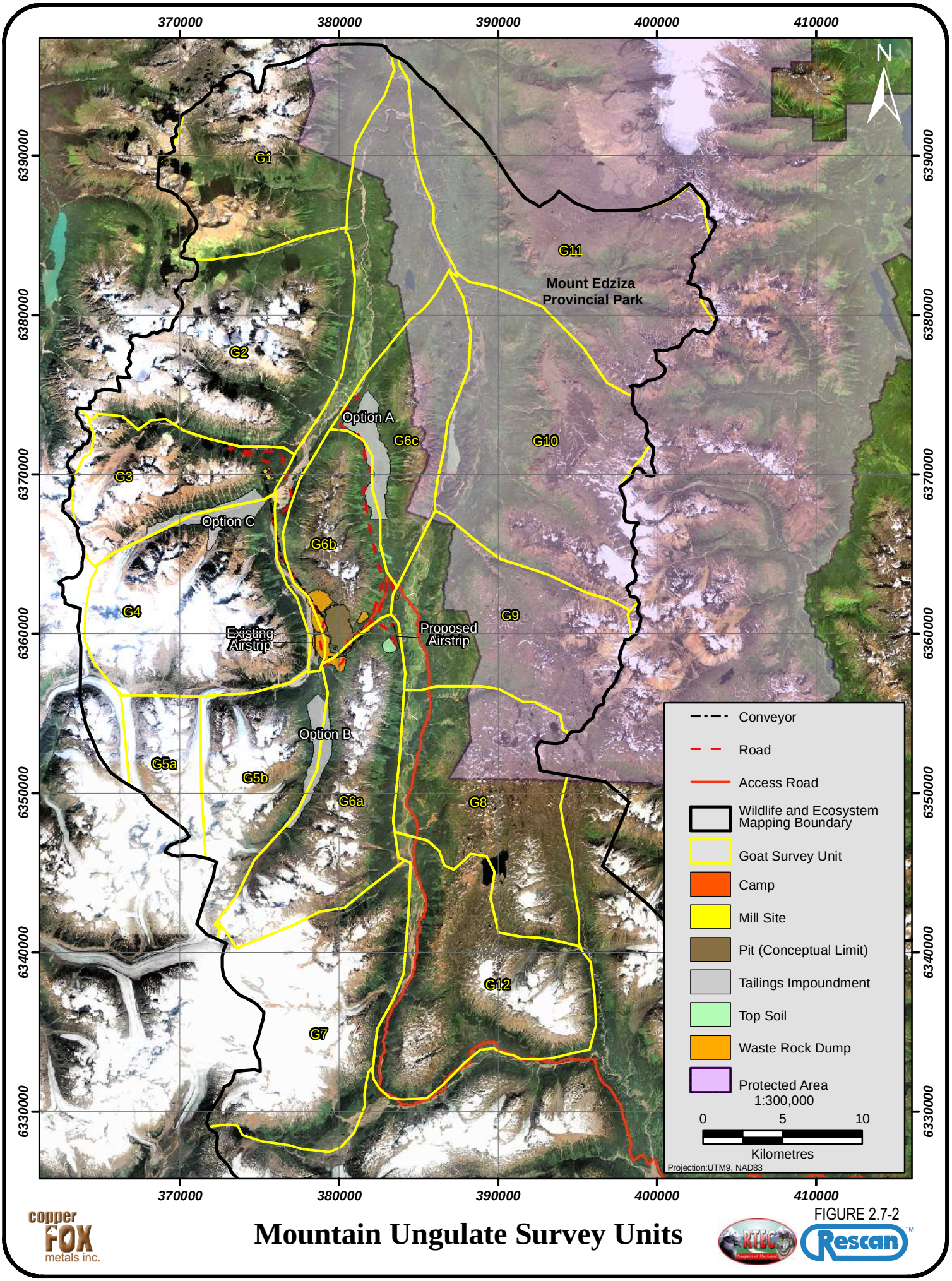
Goats observed will be classified as adults or kids, Stone's sheep will be classified as lambs, ewes or rams. Caribou, if observed during survey flight, will be recorded as incidentals and classified as bulls, cows or calves. There is currently no suitable model for establishing sightability for goat. As such, populations can not be adjusted from observations made, and variance associated with baseline populations can not be estimated. This remains one of the shortfalls in the inventory of goat populations and subsequent monitoring of populations. However, at this time aerial surveys represent the best available technology for goat monitoring.

Winter

The 2008 winter survey will primarily focus on survey units not completed during the winter of 2006 (G3; G2; G1) and will attempt to duplicate efforts made in 2006 through re-survey of areas in the vicinity of the mine, proposed mill and airstrip (Figure 2.7-2). Survey units proposed for re-survey are listed in order of priority with respect to weather conditions and time allowance: G4; G5b; G6a, b, c; G8 (north-end only); G9 (west side primarily), and G10 (weather/time permitting). It is likely that all survey units will not be completed due to weather and logistical constraints.

Summer

The summer survey will focus on survey units not completed in summer 2006 including G1 and G2 (Figure 2.7-2). Terrain in survey units G5a and G7 is comprised of a glacier, consequently is not considered high quality habitat for mountain goats and will not be surveyed in either winter or summer. Survey unit 12 will not be surveyed as this area has recently been surveyed for mountain ungulates as part of environmental work for another development in the Schaft Creek watershed (3 goats were observed in summer 2004, 2 adults and 1 kid) (Rescan, 2006).



Mountain Ungulate Survey Units

FIGURE 2.7-2

2.7.2.2 Waterfowl and Raptor Bird Survey

Harlequin Duck Survey

Harlequin duck is a species of riverine bird requiring increased consideration. This species, identified as a species of concern by Environment Canada – Canadian Wildlife Service, nests near fast flowing rivers and mountain streams. In 2006, surveys for harlequin duck pairs were completed during early May 2006 and subsequent surveys for harlequin duck broods were conducted during mid-July and mid-August. Since no harlequin duck broods were detected during these surveys, an additional brood survey was planned for July/August 2007 to confirm the occurrence and location of breeding within the area. However no survey was completed in 2007 due to poor survey conditions attributed to deep winter snowpack.

A harlequin duck brood survey is again planned for July/August 2008 through one day of aerial survey. Survey effort will be directed at rivers and associated streams, wetlands and lakes. Field methods will adhere to Resource Inventory Committee (RIC) standards for riverine birds (RIC, 1998). The species, number, sex of individuals (where possible) of all riverine birds and waterfowl will be recorded. General habitat will be recorded for each observation. Observations will be geo-referenced using a hand-held Garmin 76 GPS and flight tracks will be obtained with an external antenna adapted for use within a helicopter.

Northern Goshawk Survey

The identification of locations exploited by breeding birds of prey has been established as important to the Tahltan Nation as well as to regulating agencies. A preliminary inventory of raptors was conducted in 2006 at a presence/not-detected level to identify the species that exist within the area potentially affected by the development. One detection of northern goshawk was recorded along Mess Creek in June 2006, however surveyors suspected that the bird was not the *laingi* subspecies, a red-listed sub-species of northern goshawk (*Accipter gentiles*) (RTEC, 2007; B.C. Conservation Data Centre (CDC), 2008). An additional objective will be to identify the potential locations which may support nesting by sensitive birds of prey.

During the breeding season, many bird species use certain calls to establish and defend territories, and to attract mates. Using pre-recorded calls or call playbacks to stimulate the presence of an "intruder" into an already claimed territory will elicit a response of some type in the target species. The response of the bird, whether it is a close approach, sometimes accompanied by an aggressive behaviour, or a distant vocalization, allows the observer to record the presence of the species. Call playbacks are typically used for inconspicuous, scarce, or nocturnal species known to respond to calls during the breeding season. Call playback surveys for northern goshawk will occur during July (nestling/post-fledge period) at stations separated by 200 to 400 m, depending on availability of appropriate habitat. Northern goshawk begging calls will be employed and if a bird responds to playback, the area from which the bird called or the direction from which the bird flew towards the playback will be searched thoroughly. Call playback survey methodology used will adhere to RISC standards.

2.7.2.3 Ecosystem Mapping: Wildlife Habitat Suitability

Ecosystem mapping is an effective way of stratifying the landscape into meaningful ecological units that reflect a combination of attributes, such as climate, surficial material, soil and vegetation (RIC, 1998a). Field crews will consist of a plant ecologist, soil scientist, wildlife biologist and Tahltan assistant. All data will be collected in accordance with the procedures outlined in the Field Manual for Describing Terrestrial Ecosystems using the appropriate field forms (RIC, 1998b). Two field trips will be required to properly assess the study area during the 2008 field season; these trips are expected to last up to 2 weeks in length and are expected to occur between the months of July and August.

Wildlife interpretations of the ecosystem map product will be necessary to assist in identifying the habitats which may be impacted (or which may support species which could be impacted) by certain aspects of the development. Specifically, the focal species for interpretation will include grizzly bear, mountain goat, Stone's sheep, caribou (although this species may not receive further consideration if none are detected during additional winter surveys), moose, American marten, hoary marmot, and western toad. These species have been selected for their importance to the Tahltan Nation and regulating agencies.

Suitability mapping will be developed following the procedures outlined in *British Columbia Wildlife Habitat Rating Standards Version 2.0* (RIC, 1999). A six-class rating scheme will be applied to the specific life requisites of grizzly bear (LI-P, S, F), mountain goat (LI-W, S), Stone's sheep (LI-W, S) and moose (LI-W).[1] Mountain caribou shift habitat from lower elevation forested areas in early winter to alpine areas during mid-to late winter depending on seasonal snow conditions (Hatler, 1986); this habitat will be assessed for LI-WE and L-WL. A four-class rating scheme will be applied to the specific life requisites of American marten (LI-W) and hoary marmot (LI-G). A two-class rating scheme will be applied to western toad habitat (LI-G).

Breeding habitat for toad will be evaluated using toad and wetland inventory conducted in summer 2007, as standard ecosystem mapping is not adequate for classifying standing water. Species accounts and habitat suitability ratings will be completed for the species of interest and for ecosystem, structural stage combinations. Ratings interpretations will be based on the Terrestrial Ecosystem Mapping (TEM) and Predictive Ecosystem Mapping (PEM) conducted for the Project, as well as fieldwork conducted in 2007 and proposed for 2008. Habitat ratings will be based on a combination of expected vegetation phenology schedules during a chronological season. Chronological seasons refer to seasonal shifts that follow the calendar year. In the RIC standards (RIC, 1999), months of the year are assigned a particular season based on the ecoprovince in which the study is being conducted. Developing habitat ratings based on vegetation phenology and chronology allow for the identification of habitat with the greatest value during a period of time. Rating for certain species in certain seasons may also be modified to account for the effect of variables such as elevation, slope, and aspect. Each ecosystem unit visited will be assigned a wildlife habitat rating (WHR) for focal species, based on life requisites

[1] F fall, G growing LI living, P spring, S summer , W winter, WE early winter, WL late winter

during chronological seasons. In addition to WHR, wildlife observations (direct species observation and/or wildlife signs) will also be documented in the field to assist with the inventory.

2.7.2.4 Furbearer Questionnaire

The harvest of furbearers has been established as economically and socially important in the region. All species of commercial furbearers in British Columbia are anticipated to exist within the study area with the exception of opossum, bobcat, and raccoon. The furbearer questionnaire will be designed by joint effort between the wildlife staff and socio-economics staff, however field interviews and the majority of report writing will be conducted by Rescan socio-economic staff.

To accommodate the conservation of furbearers within the Project, species of greatest importance should be identified via trapper questionnaires and the use of data from the provincial fur-harvest database. Trappers with affected trap lines will be identified from the ministry records and presented a questionnaire to identify the species they are harvesting as well as the importance of the harvest to the individuals. An overview of the fur harvest database may confirm species harvested, as well as potentially identify trends in abundance for more complete harvest records. An additional objective of this approach will be to assess the importance of this resource to the local economy through the consideration of recent activity on trap lines and the importance of areas to the trappers. These data will focus the study towards species that require greater consideration with respect to future mitigation.

The fur harvest database, trapper questionnaires and meetings will be used for developing an inventory of species present within the study area. Marten is a species that is anticipated to be identified by trappers in the study area as an important furbearer due to its value and abundance. Therefore, identifying important marten habitats will be an important component for assessing environmental and socio-economic impacts. Suitable habitat of this species may be modelled using ecosystem mapping in combination with alternative methods using digital databases such as Terrain Resource Inventory Mapping (TRIM) and Forest Cover to delineate habitats. This will be incorporated into the wildlife habitat suitability mapping.

2.7.2.5 Literature Review-Moose Collaring

A literature review will be conducted to assess feasibility or effectiveness of moose collaring programs to gather information on migration routes, movement patterns, and seasonal distribution relative to roads and industrial development. The review will present available science and grey literature on the effects of roads on moose population parameters and distribution and will evaluate the usefulness of a moose collaring program to assess short and long-term effects of development in the Schaft Creek watershed.

2.7.3 2008 Work Schedule

Table 2.7-1 shows a preliminary field schedule for the 2008 baseline wildlife work.

Table 2.7-1
2008 Wildlife Work Schedule

Tasks	Time	Survey Duration	Personnel Required
Mountain ungulate aerial surveys	Mar/April 2008	5 days	1 Wildlife Biologist 1 Wildlife Technician 1 Tahltan Field Assistant
	July/August 2008	1 day	1 Wildlife Biologist 1 Wildlife Technician 1 Tahltan Field Assistant
Northern Goshawk	July 2008	2 days	1 Wildlife Biologist 1 Wildlife Technician
Harlequin duck brood aerial survey	Late July / Early August 2007	1 days	1 Wildlife Biologist 1 Wildlife Technician
Ecosystem Mapping: Wildlife Habitat Suitability	Late July / Early August 2008	24 days	1 Wildlife Biologist 1 Soils Biologist 1 Vegetation Biologist 1 Tahltan Field Assistant
Furbearer Questionnaire	Mar/April 2008	5 days	1 Wildlife Biologist
Baseline Report	November 2008	-	Wildlife Biologists

2.8 Soils and Terrain

The soils and terrain baseline program for the Schaft Creek Project will provide a description of the soils and terrain in the Project area. The baseline data will also be relevant when developing soil handling plans for reclamation and for closure planning.

The main objectives of the study are as follows:

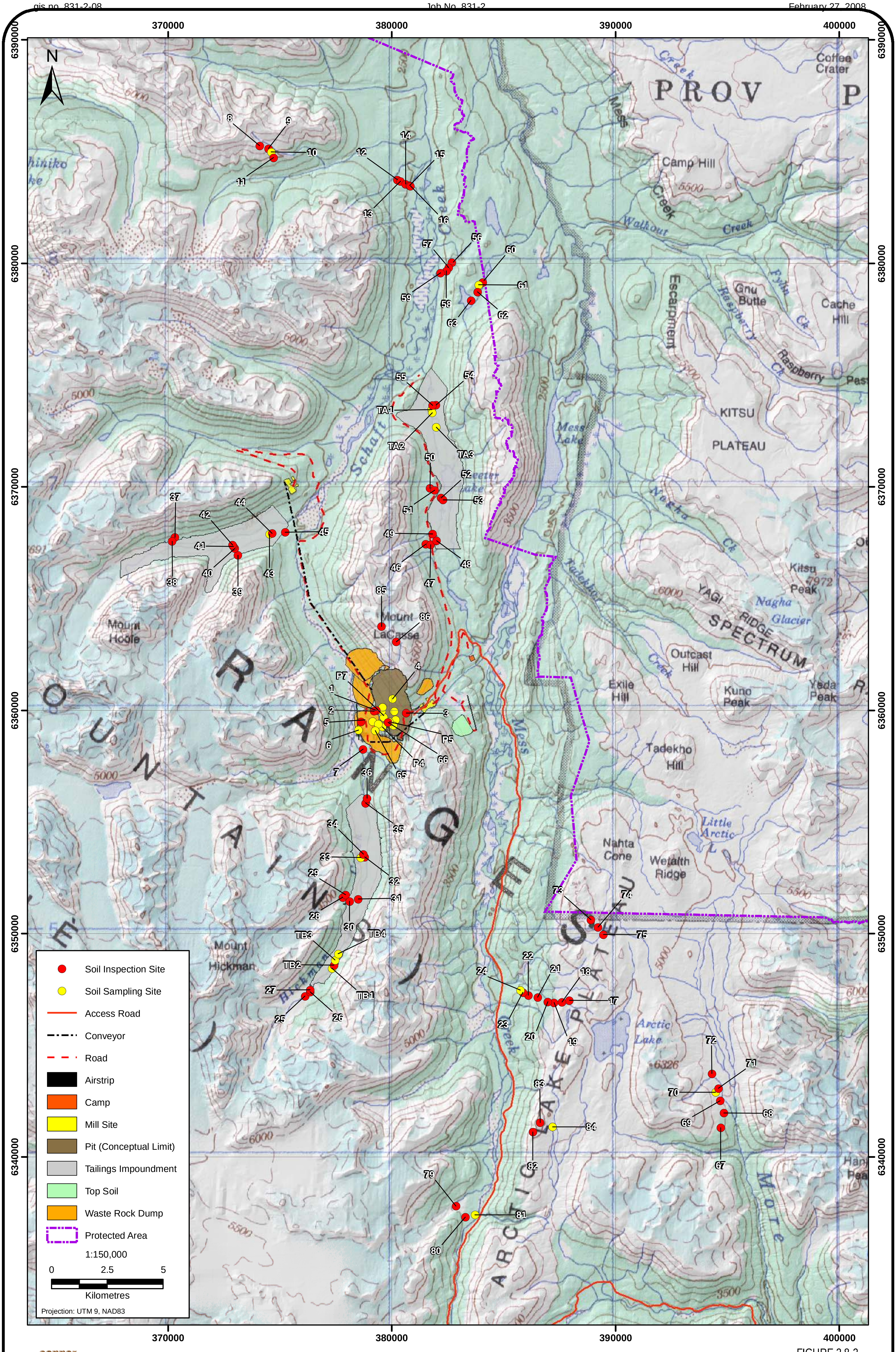
1. Map and characterize the soils at the proposed mine site, road routes, and tailings options; and

2. Identify soil baseline metal concentrations and compare them to the BC guidelines for soil contaminant concentrations.

A summary of baseline work completed in 2007 is provided below.

2.8.1 Summary of Work Completed

In 2007, two field programs were carried out between July 23 and August 3 and between August 27 and August 31. Field crews consisted of a soil scientist, vegetation ecologist, wildlife biologist, and a First Nation assistant. A total of 104 soil inspection sites were completed. Inspection sites were located at the proposed mine pit, tailings Options A, B, and C, the study area east of Yehiniko Lake , at the north end of Schaft Creek, and along the proposed road route from Arctic Lake to Mess Creek (Figure 2.8-1). Vegetation and wildlife habitat were also assessed at each soil inspection site.



Copper Fox metals inc.

FIGURE 2.8-2

Schaft Creek Soil Sample and Inspection Locations

RTEC Rescan

Soil samples were collected at 27 representative locations within potentially impacted areas and adjacent non-impacted areas. Background information on the geology and surficial geology was also collected.

All samples collected were analysed for fertility parameters, which include:

- available phosphate (P);
- cation exchange capacity (CEC);
- organic parameters, including $CaCO_3$ equivalent, total organic carbon, total carbon by combustion and inorganic carbon;
- pH; and
- total sulphur.

In addition, samples were tested for a suite of 28 metals (Table 2.8-1).

Table 2.8-1
Parameters Included in Soil Metal Analysis

Metals[1]	Symbol	Detection Limit (mg/kg)
Aluminum	Al	50
Antimony	Sb	10
Arsenic	As	5
Barium	Ba	1
Beryllium	Be	0.5
Bismuth	Bi	20
Cadmium	Cd	0.5
Calcium	Ca	50
Chromium	Cr	2
Cobalt	Co	2
Copper	Cu	1
Iron	Fe	50
Lead	Pb	50
Lithium	Li	2
Magnesium	Mg	50
Manganese	Mn	1
Mercury	Hg	0.05
Molybdenum	Mo	2
Nickel	Ni	5
Phosphorus	Pb	50
Potassium	K	200
Selenium	Se	0.1
Silver	Ag	2
Sodium	Na	200
Tin	Sn	5
Titanium	Ti	1
Vanadium	V	2
Zinc	Zn	1

The results of the soil sample analysis will be documented in a preliminary baseline report. Terrain mapping using aerial photos is currently being completed along the road and in the mine facilities area.

2.8.2 2008 Work Plan

The 2008 baseline program will follow the approach of the 2007 field program. Features that are locally or regionally rare and/or sensitive to disturbance will be identified. The proposed approach is based upon a combination of field studies developed using standards and methods established in British Columbia (BC MELP and MOF, 1998; RIC, 1998, 2000).

The soils and terrain information will be displayed spatially using Geographic Information System (GIS) and can also be linked with other spatial data, resulting in a useful resource management and planning tool. Soils maps will be prepared for the mine site and the proposed road route.

The 2008 work plan will contain the following key tasks:

- Completion of pre-typing of terrain on aerial photographs;
- Preparation of preliminary terrain/soil maps;
- Field checking of terrain and soils mapping;
- Soil sample collection for fertility and metal analysis;
- Preparation of final soils/terrain maps; and
- Baseline report writing.

2.8.2.1 Mapping

The terrain mapping for the mine site and road will be completed in early 2008. Mapping will focus on areas of proposed development, *i.e.,* in the areas surrounding mine facilities and within a 500 m corridor (250 m on either side) along the potential access route. Terrain polygons will be delineated based on surficial material, topography, slope, modifying processes, and drainage characteristics. Polygons will be mapped as pure units or as a complex of several units. Typically up to three terrain types can be identified in a single polygon.

The terrain mapping will be used to prepare a preliminary terrain and soils map for the mine site and access road. The map for the road will be developed for soil handling purposes related to road construction. Data collected in the field will be used to refine the terrain polygon boundaries and attributes. Following the completion of field studies, the information collected will be compiled and analyzed and a final list of terrain and soil units will be prepared along with final soils maps.

2.8.2.2 Field Program

Field studies will follow methods and standards developed for British Columbia as was done in 2007 (BC MELP and MOF, 1998; RIC, 1998). Soils will be described according to the Canadian System of Soil Classification Agriculture (Agri-Food Canada, 1998). The field

program for the mine site will be carried out in conjunction with the vegetation and wildlife programs as part of the Terrestrial Ecosystem Mapping program, following the methods established in 2007. This program involves the collection of relevant data from the three disciplines at the same sites to allow for interpretation of the components, which are highly interconnected. Selection of sites that are representative of the Schaft Creek Project area will be based on air photo interpretation and preliminary TEM maps.

At each sampling location, coordinates will be obtained, along with site, terrain, and soils information. At a minimum, general site information will include slope, aspect, elevation, and the assessment of relative slope position (*e.g.*, crest, upper slope, mid-slope, *etc.*). Terrain information will include the identification of surficial materials, texture, surface expression, and geomorphic process. Soils information will include drainage, texture, organic horizon thickness, the identification of root restrictions, an assessment of coarse fragment content, and delineation of the soil horizons. Efforts will be made to assess unique terrain features in the field that were identified during the air photo interpretation stage of the mapping process. Because the field survey includes three disciplines, the surveys will be conducted at a time that optimizes the identification of flowering plants. Surveys will likely be conducted during July and August.

2.8.2.3 Baseline Metal Concentrations in Soils

Soil samples will be collected from sites within the potential mine footprint and along the proposed road alignments to establish baseline metals concentrations. Soils will be collected from 0-10 cm depth and 10-20 cm depth. Metals analysis will identify metal concentrations that occur naturally in the soils at the surface and at depth within the mine footprint area. This information will feed into post-closure soil monitoring plans. The metals in the soils will be assessed based on the BC Contaminated Site Regulations (CSR) guidelines for soils, which are listed in Table 2.8-2. These are defined for industrial land levels and residential/parkland uses.

Table 2.8-2
Soils Metal Levels Criteria, BC Contaminated Site Regulations

Metal	CSR PARK	CSR INDUSTRIAL
	Criteria mg/kg	Criteria mg/kg
Antimony	20	40
Arsenic	50	100
Barium	500	2000
Beryllium	4	8
Cadmium	70	500
Chromium	300	700
Cobalt	50	300
Copper	150	250
Lead	1000	2000
Mercury	100	150
Molybdenum	10	40
Nickel	100	500

(continued)

Table 2.8-2
Soils Metal Levels Criteria, BC Contaminated Site Regulations (completed)

Metal	CSR PARK	CSR INDUSTRIAL
	Criteria mg/kg	Criteria mg/kg
Selenium	3	10
Silver	20	40
Thallium	2	2
Tin	50	300
Vanadium	200	200
Zinc	450	600

Notes: CSR: BC Contaminated Site Regulations

Baseline information concerning metal concentrations in soils is important particularly for a mine related project because metals concentrations in soils are frequently inherently higher in the vicinity of ore deposits. Baseline data can be used to assess changes in soil metal concentrations for future monitoring during mine operations, closure, and reclamation. Increased metal levels in soils may result in plant tissue uptake which may affect wildlife. Soil reaction (pH) and carbon will also be assessed.

2.8.3 2008 Work Schedule

The field program will be completed in late July/early August in conjunction with the wildlife habitat suitability mapping surveys and the ecosystem and vegetation mapping surveys (Sections 2.7 and 2.9, respectively).

A baseline report will be produced which will include a summary of background information, methodology, soils data collected in both 2007 and 2008, presentation of analytical data, and soils maps. All data collected will be appended. The baseline report will be completed by October or early November, 2008. The schedule for delivery of the baseline report may be extended if the engineering schedule changes.

2.9 Ecosystem Mapping and Vegetation

The ecosystems and vegetation baseline program for the Schaft Creek Project will provide a description of the ecosystems and plants (including provincially-listed plant communities and provincially and federally-listed plant species) present in the study area. The proposed approach is based upon a combination of ecosystem mapping and field surveys.

2.9.1 2008 Work Plan

The following study components will be included in the 2008 mapping and vegetation baseline study:

- Ecosystem Mapping (Predictive and Terrestrial Ecosystem Mapping);
- Listed ecological communities and plant species;

- Field surveys including:
  - General site and ecosystem unit description;
  - Vegetation species lists;
  - Surveys for provincially-listed natural plant communities;
  - Surveys for provincially and federally-listed plant species/habitat; and
- Collection of plant tissue samples for metals analysis.

2.9.1.1 Ecosystem Mapping

Ecosystem mapping in British Columbia is based on standards and procedures that have been in place and tested throughout the province for a number of years (*e.g.*, Howes and Kenk, 1997; RIC, 1998, 1999). The methodology stratifies the landscape into ecological units and allows for the display of their spatial extent and distribution. The maps are generated using Geographic Information System (GIS) technology and can be easily linked to other spatial data, making them a useful planning tool.

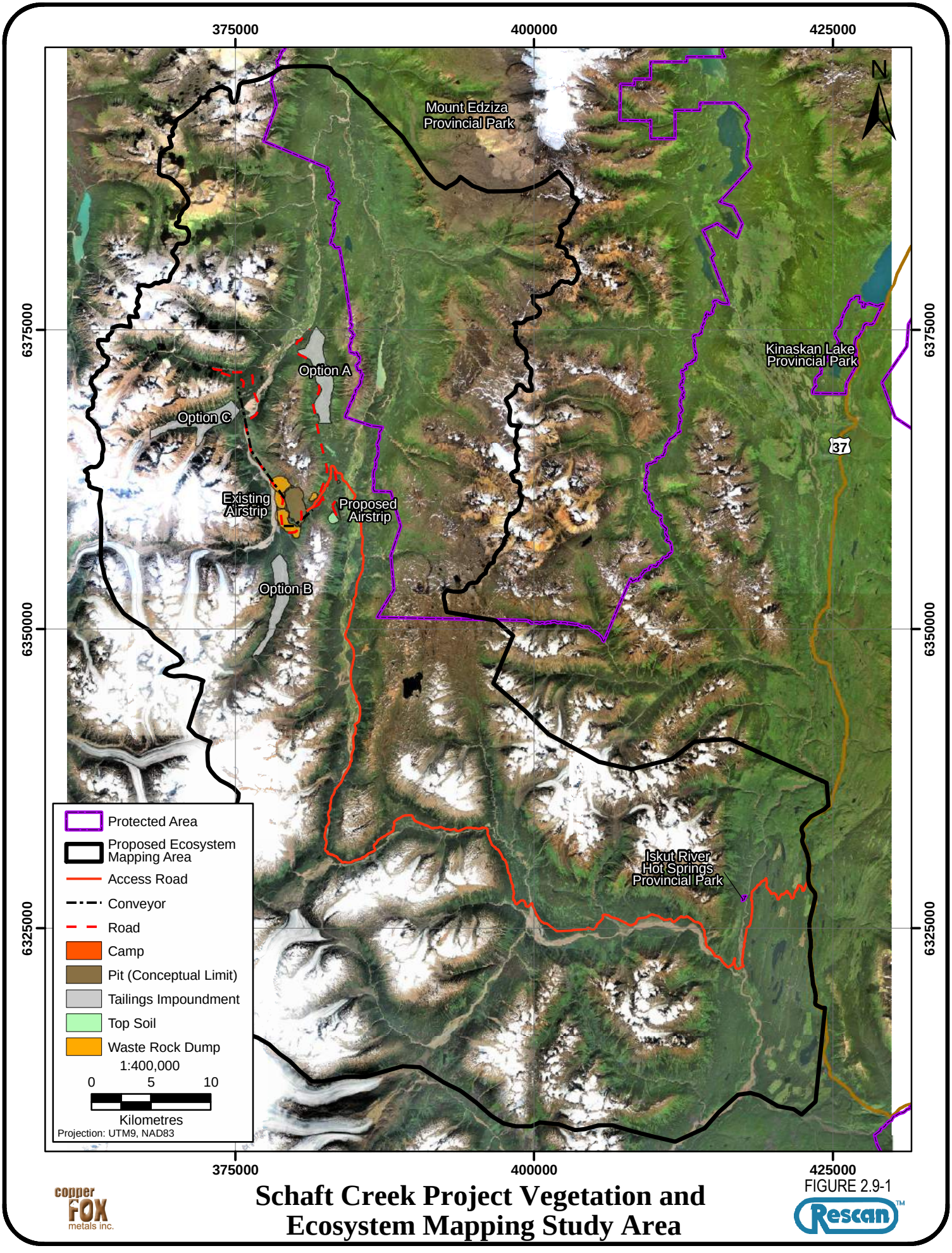
Predictive Ecosystem Mapping

Predictive Ecosystem Mapping (PEM) is generally used to map extensive areas and is one of the inputs used in wildlife habitat modelling. Various landform and topographic attributes derived from provincial Digital Elevation Model (DEM) data form the basis of ecosystem models. Additional input to ecosystem models include moderate resolution (12.5m pixel) satellite imagery, TRIM features such as waterbodies and wetlands, and provincial biogeoclimatic zone maps. The current PEM Standards (RIC, 1999, 2000) acknowledge the use of non-RIC inventories such as satellite image analysis as a thematic input to PEM provided adequate documentation and meta-data is submitted as part of the final product. All methodologies used to generate the input layers and final PEM will be documented and referenced appropriately.

Figure 2.9-1 shows the vegetation and PEM study area. The final PEM map will show the distribution of forested and non-forested ecosystems in the study area. Mapped entities will follow the conventions identified in the PEM Standards (RIC, 1999) and units from Land Management Handbook #26 developed for the Prince Rupert Forest Region (Banner *et al.*, 1993) to facilitate the application of wildlife habitat ratings. The map will be at an approximate scale of 1:25,000. This scale provides a level of detail comparable to 1:20,000 ecosystem mapping commonly applied throughout the province.

Terrestrial Ecosystem Mapping

As specified in the mine permit application requirements (B.C. Ministry of Energy and Mines, 1998) Terrestrial Ecosystem Mapping (TEM) will be used to characterize the mine footprint area. Figure 2.9-2 shows the area included in the TEM for the mine footprint. Mapping will be conducted at a scale of 1:10,000 and will use the most current provincial standards (Howes and Kenk, 1997; RIC, 1998). The final map will identify the types and distribution of ecosystems within the footprint area that will likely be disturbed by mine development.



Schaft Creek Project Vegetation and Ecosystem Mapping Study Area

FIGURE 2.9-1

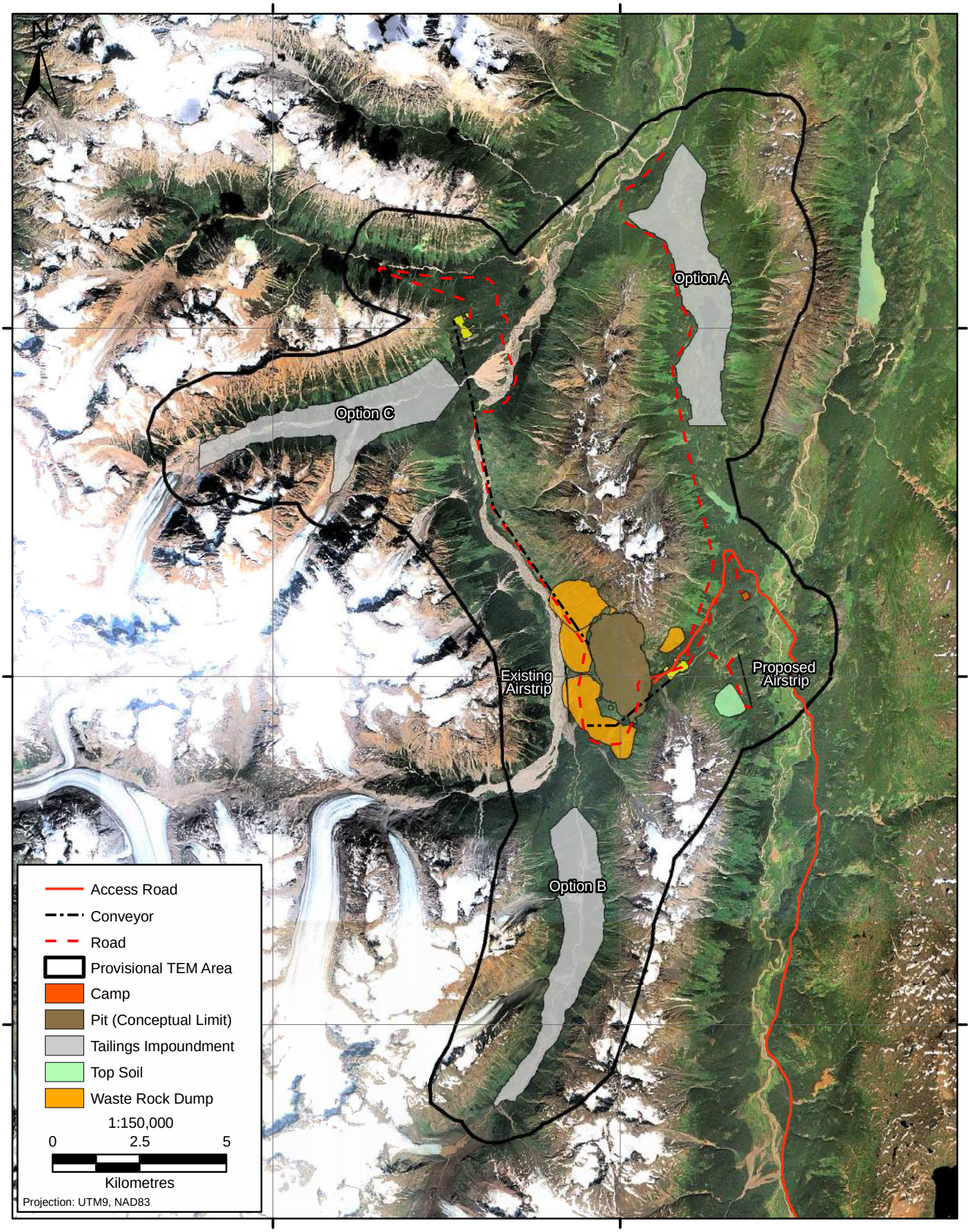


FIGURE 2.9-2

Mine Site TEM Area for the Schaft Creek Project

Terrain and ecosystem polygons are identified through air photo interpretation. Ecosystem polygons are delineated within terrain linework that has been typed first. Ecosystem units will follow those identified for the Prince Rupert Forest Region (Banner *et al.*, 1993). As air photos are a required input for TEM, photos at an appropriate scale (*e.g.*, 1:10,000) have been acquired for the mine footprint area and landforms and vegetation communities are being identified on these photographs.

2.9.1.2 Listed Ecological Communities and Plant Species

Lists of ecological communities and plant species that are considered rare within B.C. are compiled by the B.C. Conservation Data Centre (B.C. CDC), a division of the Ministry of Sustainable Resources Management (MSRM). Additionally, lists of plant species tracked federally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Species at Risk Act (SARA) are also available.

Listed Ecological Communities

The location of candidate areas that may be associated with provincial red and blue-listed ecological communities can be identified through the use of ecosystem maps. Many listed ecological communities share features in common with site series and ecosystem units identified in the regional field guides and can thus be identified during map development. Potential areas will be flagged for confirmation in the field in 2008. Information detailing the characteristics and diagnostic features of red and blue-listed ecological communities will be compiled for use in map development and field surveys.

Listed Plant Species

The potential location of provincially and federally-listed plants cannot be identified using ecosystem maps, however, rare plant habitat is often associated with fine-scale and uncommon landscape features that can be linked to the types of features identified during the ecosystem mapping process. The identification of unusual substrates and vegetation patterns during the air photo interpretation stage of TEM is one way to locate potential field inspection sites for rare plants. Features such as wetlands, rock outcrops, and seepage areas are examples of uncommon landscape attributes that have a higher potential of supporting rare plant habitat.

A master list of rare plant species potentially occurring within the study area has been compiled along with descriptions of likely suitable habitat. Species will include vascular and non-vascular plants, as well as lichen. The available air photos will be used to help identify anomalous landscape features and areas with high plant diversity that will serve to direct field survey locations.

Information pertaining to the habitat and morphology of listed plant species possibly occurring within the study area will also be compiled prior to the conduct of fieldwork. Specimens from the UBC herbarium will be consulted to assist with the identification of rare plants and rare plant habitat in the field.

2.9.1.3 Field Surveys

General Site Description

Field surveys will be conducted throughout the study area but will target potential development areas. Surveys will occur during the summer of 2008 and will be timed to optimize plant identification (*e.g.*, during flowering and/or fruiting).

Survey plots will measure approximately 20 m x 20 m. Data collected from each plot will include at a minimum a:

- geographic location (UTM coordinate);
- biogeoclimatic ecosystem classification (BEC) unit;
- site series/ecosystem unit;
- structural stage; and
- representative plot photograph(s).

Additional information collected may include:

- slope;
- aspect;
- elevation;
- detailed plant list; and
- estimate of plant species abundance (as percent cover).

All data will be collected in accordance with the procedures outlined in the Field Manual for Describing Terrestrial Ecosystems (BC MELP and MOF, 1998) using the appropriate field forms.

Listed Ecological Communities and Plant Species

Field surveys for listed ecological communities and plants will be conducted in conjunction with general field surveys. Communities and plants identified in the field will be described and photographed. The appropriate B.C. CDC field forms will be filled out and submitted to the B.C. CDC for confirmation. Voucher specimens of plant species will be collected when more than one individual is present, as specimens are almost always required for identification confirmation. If only a single specimen is present, detailed photographs will be taken along with diagnostic plant parts, however, a complete specimen may not be collected.

2.9.1.4 Plant Tissue Chemistry

Characterizing the metal levels in plant tissue is a requirement of the mine permit application (B.C. Ministry of Energy and Mines, 1998) and is used to guide reclamation planning and end land use objectives.

Plant species targeted for collection are usually those commonly found throughout the study area and likely to be a food source for wildlife or people. Whenever possible, the same plant species

are collected, however variability within the area often requires the collection of several different species.

Only the above-ground portion of herbaceous plants and newest/younger growth of woody species (shrubs) are sampled. Samples consist of several individual herbs of the same species or the stems and leaves from shrubs of the same species. Berries are sometimes collected, depending on availability, time of sampling, and distribution in the study area.

Sampling is conducted by hand. Nitrile gloves are worn during sampling and any dirt or root material is removed prior to the sample being placed into a pre-labelled plastic bag. Samples are sealed and kept frozen, as per laboratory specifications, prior to their submission to ALS Environmental in Vancouver, B.C. The list of metals analyzed is shown in Table 2.9-1.

Table 2.9-1
Plant Tissue Metals Analyzed and their Associated Detection Limits

Metal	Abbreviation	Dry Weight Detection Limit (mg/kg)	Wet Weight Detection Limit (mg/Wkg)
Aluminum	Al	20	2.0
Antimony	Sb	0.10	0.010
Arsenic	As	0.10	0.010
Barium	Ba	0.10	0.010
Beryllium	Be	0.60	0.10
Bismuth	Bi	0.60	0.10
Cadmium	Dc	0.060	0.0050
Calcium	Ca	20	2.0
Chromium	Cr	1.0	0.10
Cobalt	Co	0.20	0.020
Copper	Cu	0.10	0.010
Lead	Pb	0.20	0.020
Lithium	Li	1.0	0.10
Magnesium	Mg	6.0	1.0
Manganese	Mn	0.10	0.010
Mercury	Hg	0.0050	0.0010
Molybdenum	Mo	0.10	0.010
Nickel	Ni	1.0	0.10
Selenium	Se	2.0	0.20
Strontium	Sr	0.10	0.010
Thallium	Tl	0.060	0.010
Tin	Sn	0.40	0.050
Uranium	U	0.020	0.0020
Vanadium	V	1.0	0.10
Zinc	Zn	1.0	0.10

Plant tissue metal concentrations are used for future monitoring during mine operations, closure and reclamation. Future metal levels in plant tissue will be compared to baseline values in order to determine if changes in metal levels are occurring. Noticeable changes in metal levels over time can be analyzed further using a risk assessment approach that identifies the potential exposure risks to wildlife or human consumers that may be using the plants of the area as a food source.

2.9.2 2008 Work Schedule

Selection of the field survey plots will be based on the PEM and TEM maps produced for the study areas, which will be completed by mid-May, 2008. The field program is scheduled for late July/early August and will be completed in conjunction with the wildlife habitat suitability mapping surveys and the soils surveys (Sections 2.7 and 2.8, respectively). Surveys will be timed to optimize plant identification (e.g., during flowering and/or fruiting). An ecosystem mapping and vegetation baseline report will be completed by November, 2008. The schedule for delivery of the baseline report may be extended if the engineering schedule changes.

2.10 Wetlands

2.10.1 Summary of Work Completed

The wetlands baseline program for the Schaft Creek Project began in June 2006 with hydrological monitoring and continuous water level logging in shallow wells installed at wetland sites in the Schaft and Mess valleys. Hydrological monitoring continued until October 2006 and was repeated starting in July 2007.

The wetlands that could potentially be affected by the development of the Schaft Creek Project were identified and classified in 2007. Aquatic biological samples of primary and secondary production communities were collected in the summer of 2007 from 11 wetlands; water and sediments from these sites were also collected to identify the chemical properties of the wetlands. The hydrological, aquatic biological and chemical sample results were assessed with ecosystem survey results to identify wetland function. The ecosystem survey followed provincial methodologies which incorporates provincially relevant ecosystem description methodologies and the federal descriptions of wetland class from the Canadian Wetland Classification System. The ecosystem survey data was also used to map the location and size of wetlands in the study area.

The ecosystem data was combined with the hydrological and aquatic biological survey data to support the function description. All four Environment Canada (2003) functions were identified in wetlands in the study area. Wetland function descriptions were then assessed against known current land use practices to identify and describe wetland value. The two values most important to wetlands in the study area are economic/social/cultural and maintenance of ecosystem health.

A total of 131 wetland ecosystems were mapped using ecosystem survey and TRIM GIS data. All five federally recognized wetland classes (bog, fen, marsh, swamp, and shallow open water) encompassing 23 provincial wetland ecosystem associations covering a total of 844 ha were mapped in the study area. Five provincially blue-listed ecosystems of concern (Wf05, Wf08,

Wf13, Wb07, and Wb10) and one COSEWIC listed species of concern (western toad) were found in the study area.

Unless the proposed mine plans available in June 2007 are significantly altered no new baseline work is required for 2008. Wetland water and sediment chemistry as well as wetland fish habitat will be studied in 2008 as part of the aquatics and fisheries baseline programs (see sections 2.5.2.2 and 2.6.3.2). If changes to the mine plan are made wetland identification and classification will follow the same methods used in 2006 and 2007.

A baseline report describing the 2006 and 2007 wetland survey and classification data will be completed in early March, 2008.

2.11 Archaeology

The main objectives of the archaeological baseline studies for the Schaft Creek Project are: (1) to identify (locate and map) the distribution and density of cultural materials and deposits that are associated with the proposed Schaft Creek Project impact zones and access corridor; (2) to evaluate the overall integrity and heritage significance value of identified cultural deposits within the proposed impact zones; (3) to determine the nature, extent, intensity and duration of proposed land-altering activities and access how they could potentially affect intact cultural deposits; and (4) to formulate and present recommendation options subsequent to the fieldwork that will ensure effective management, protection, and/or mitigation of significant archaeological deposits within proposed impact zones that will be subjected to land-altering activities. The archaeological testing program has been conducted under a *Heritage Conservation Act, Heritage Inspection Permit*, issued by the Archaeology Branch, Victoria.

The archaeology baseline study involves the following:

1. Background research including review and evaluation of archaeological, traditional use, historical and ethnographic literature relevant to the proposed impact area and locality in general.

2. A systematic foot traverse, visual ground surface inspection, within the proposed impact zones to identify any surficially exposed archaeological materials or deposits. Identified archaeological concerns will be described and plotted on a plan map, and some selected items may be surface collected.

3. Artifacts collected will have their recovery location plotted on a plan map, and will be analyzed and described in the final report.

4. A systematic and judgmental shovel testing program within the proposed impact zones will be conducted with the majority of shovel testing in areas where natural deposits remain relatively intact, and archaeological site potential is considered medium or greater.

5. Evaluative testing (if considered necessary) *may* be conducted in areas containing cultural materials that are deemed to have medium to high archaeological/heritage significance value.

6. The overall heritage significance value of cultural deposits identified in the study will be assessed.

7. The report will identify conflicts between identified archaeological sites and the proposed Project plan and will formulate management recommendation options for archaeological/heritage deposits in potential conflict with presently proposed land-altering development activities.

2.11.1 Summary of Work Completed

In 2006 and 2007 the archaeological baseline studies for the Schaft Creek Project included archaeological survey and subsurface testing in the areas of identified as being the locations of the proposed open pit, various mining facilities, ancillary buildings, drill locations, and access roads located within the Project area and an overview assessment for the Mess Creek access corridor. The majority of background research was completed; however, traditional use information from the TCC is still pending. In the absence of traditional use information from the TCC we have relied upon ethnographic literature and previous studies in the area to inform our studies. Site forms for archaeological sites recorded in 2006 and 2007 have been submitted to the Archaeology Branch and artifacts recovered have been examined and catalogued. An interim report summarizing the findings of the 2006-2007 field work will be issued in March 2008.

2.11.2 2008 Work Plan

The baseline studies in 2008 will focus on completing the archaeological assessment for the Schaft Creek Project's Mess Creek access corridor and any revisions to the proposed mine site layout and access roads located within the Project area. In addition, site specific archaeological assessments will be conducted at proposed drill locations prior to deploying drill equipment. The archaeological assessment for 2008 will be conducted under the existing Heritage Inspection Permit issued by the Archaeology Branch in Victoria.

2.11.3 2008 Work Schedule

Field studies will be conducted in the summer of 2008. The archaeology baseline report for the project will be completed in November/December 2008.

2.12 Traditional Use/Knowledge Studies

The Traditional Use (TU)/Traditional Knowledge (TK) study will aim to:

- Perform Tahltan TU/TK research as it relates to the Copper Fox Schaft Creek Project study area;
- Incorporate Tahltan TU/TK into the Schaft Creek EA at along side scientific observations and findings, including identification of valued components, baseline conditions, potential project effects and recommended mitigation and management measures, and

- Combine findings from the TU/TK study and the Tahltan Central Council (TCC) archival work and mapping to write up a TU/TK report with generalized, non-site specific findings, which preserves and protects Tahltan confidentiality.

2.12.1 Summary of Work Completed

The background and planning components of the Schaft Creek TK and TU study began in 2007. The tasks completed in 2007 were as follows:

a. ***Negotiation and Development of Work plan to Access Tahltan Land Use and Occupancy Database***: The Tahltan Land Use and Occupancy study from the mid-1980s and the Traditional Use Study as part of the Cassiar Iskut-Stikine Land and Resource Management Plan in the late 1990s contain traditional use and knowledge information relating to the Schaft Creek study area. Access to information has been negotiated between Copper Fox and the Tahltan Central Council and culminated with the signing of the *Tahltan Knowledge Agreement* on November 14, 2007. TCC-RTEC work plan and timeline developed during meeting with TCC Manger of Heritage in late October. TCC agreed to generate a report and map based on a geographic specific search of the Tahltan Knowledge Database.

b. ***Identification of participants:*** In association with TCC Manager of Heritage, identification and agreement on who holds relevant knowledge and information on the study area was be sought. Participants consist of individuals and families who have knowledge of the area through previous or current use by themselves or their family. This includes Elders and other users such as hunters, trappers and outfitters. A table was produced with the rationale for inclusion of each participant.

c. ***Ethnographic research***: Collation of ethnographic and other background research on the Tahltan Nation and the Schaft Creek study area was conducted and completed.

2.12.2 2008 Work Plan

In order to acquire thorough and comprehensive information regarding TU/TK of the Tahltan landscape within the Schaft Creek study area, the following program is proposed for 2008. Studies will be conducted with community members and Elders from the Tahltan Nation. Local community researchers will be used to undertake TU/TK studies.

a. ***Information distribution:*** It is essential that the identified Tahltan knowledge holders are informed about the TU/TK study, why they are being conducted and how the information will be used. A package consisting of a letter of introduction and invitation, study area map, interview questions will be sent to each identified participant to explain the studies, the project and process. Community researchers will allow people time to consider information and knowledge being sought. This process will also allow people to self-identify themselves for participation.

b. ***Interview consent and set up:*** Contact will be made with each identified participant by the community researchers to seek consent to interview and record knowledge. A draft information consent form has already been developed. A convenient time and place for interview will be agreed or, if there is enough interest and consent, a workshop and/or site visit will be organized.

c. ***Conducting interviews/workshop:*** Depending on the approval of TU/TK participants, there may be an opportunity to collectively interview participants in a workshop setting. Otherwise, participants will be interviewed individually at a time and location convenient to them. The interview process will be guided using a number of tools that have been developed in 2007. These include: an introduction sheet to explain the process; a series of TCC-approved interview questions divided into categories such as landscape and resources, climate, wildlife, fish, plants, traditional and current use; maps of the study area to record sites and geographical information. The interviews will focus on the study area, and within that, the areas most relevant to the participant. Interviews will be tape recorded, unless refused.

d. ***Site Visits/Fly-Over:*** There may be an opportunity to conduct part of the interviews and transfer of knowledge during a site visit or aerial fly-over of the area. This would allow for ground-truthing of information and can be a more useful and realistic experience for Elders and community members. It is likely that this will occur in 2008.

e. ***Digitization, transcription and verification of interviews:*** Interviews, along with mapping information, will be returned by the community researcher to Rescan for transcription and digitization. These will then be returned for verification with the participants. A copy will be made available to the member and the TCC Manager of Heritage.

f. ***Dissemination and incorporation***: The collated and summarized TU/TK information, including a combined TU/TK map, will be presented and distributed to Rescan discipline leads at a meeting, during which strategies for and challenges to incorporating will be discussed. Ongoing support will be provided to disciplines to ensure confidential and appropriate incorporation is achieved. Examples of incorporation for each discipline are summarized in the TU/TK report.

2.12.3 2008 Work Schedule

Table 2.12-1 summarizes the tasks and timelines associated with completing the Tahltan TU/TK study. The timelines are subject to change based on unforeseen obstacles and challenges, such as issues related to recruitment and timing. The following tasks and timelines may be significantly reduced and advanced if they can integrate with other pre-established relationships or consultation processes (*e.g.*, PR Associates' Elder Luncheons).

2.12.4 Contingency Plan

The proposed tasks and timelines are subject to change in the case of unforeseen obstacles and challenges, such as issues related to recruitment and timing. Every effort will be made to address any of these matters in collaboration with the TCC Manager of Heritage, Tahltan leadership, and Copper Fox. However, in the case that TU/TK interviews are not possible, the contingency plan, as recommended by the BC Environmental Assessment Office (EAO), will consist solely of Tahltan ethnographic and historical overviews.

Table 2.12-1
Tasks and Timelines for TU/TK Studies for the Schaft Creek Project

Task/Activity	Status	Timeline
Hire and train Tahltan community researcher	In progress	February 15, 2008
Tahltan community researcher to recruit possible participants via phone, in person and e-mail	In progress	February 29, 2008
In collaboration with community researchers, conduct TK interviews, focus groups or workshop and map work	Outstanding	March 3-14, 2008
Transcribe and/or translate interviews, focus groups or workshop content	Outstanding	March 10-21, 2008
Digitize maps and create composite map and database	Outstanding	March 10-21, 2008
Transfer electronic and original versions of TK to TCC	Outstanding	March 24, 2008
Disseminate discipline-specific TK reports for inclusion in discipline baseline, effects assessment and mitigation measure reporting	Outstanding	March 24, 2008
Work with disciplines to integrate general statements of TK throughout their reporting requirements	Outstanding	Throughout April 2008

Note: Timelines are subject to change based on unforeseen external circumstances, such as issues related to recruitment and timing.

The ethnographic and cultural information is high level and broad and it is difficult to obtain site specific information from these sources. It is also recognized that ethnographic information and observations have limitations and should not be considered conclusive or complete. Ethnographic sources were recorded by Euro-Canadians in the late 1880s and early 1990s, who were largely informed by a western worldview and their own particular agenda. However, their work provides important accounts (even if incomplete and subjective) into daily life, social and political structures and subsistence methods employed by citizens of the Tahltan Nation at the turn of the twentieth century.

2.13 Country Foods

2.13.1 Objectives

It is anticipated that the Schaft Creek Project will trigger the Canadian Federal Government Environmental Assessment process. Subsequently, Health Canada will likely request an assessment of the potential for country food contamination problems associated with the development of the mine. Country foods are animals, plants or fungi used by humans for medicinal or nutritional purposes that are harvested through hunting, gathering or fishing. Currently, there is harvesting of country foods within the Project study area. Thus, changes in the quality of country foods due to mining activities have the potential to effect human health.

The objectives of the country foods assessment will be to evaluate the quality of country foods in the project area. It is important to evaluate baseline risks prior to mine development so that there

is a basis for future evaluations if the environmental media chemical concentrations change due to mine activity.

2.13.2 Summary of Work Completed

A baseline country foods assessment for the Project was conducted in 2007. Monitoring of country foods will continue during 2008. The focus of the 2008 study will be on areas that were not evaluated and/or on foods where no data was collected in 2007. Results of the additional monitoring will be added to the existing data base and the 2007 baseline will be amended to include the 2008 data.

The following work plan outlines the framework for conducting the country foods baseline.

2.13.3 2008 Work Plan

2.13.3.1 Country Foods Assessment Framework

The country foods assessment will follow the guidance provided by Health Canada (2004a). The following tasks will be conducted for the country foods baseline assessment.

Problem Formulation

The purpose of the problem formulation is to create a conceptual model for the country foods baseline assessment. This involves identifying: the country foods, contaminants of potential concern and human receptors to be assessed.

The identification of the country foods consumed is based on interviews previously conducted by the country foods harvesters, thus, no new interviews are proposed for 2008.

Identification of the contaminants of potential concern (COPCs) produced by Project development and operation will be based on a comparison of the baseline soil and water chemistry data to the appropriate CCME guidelines. In addition, if there are particular chemicals that will be used during mine operations that have the potential to reach the receiving environment; they too will be identified. However, since this evaluation is of baseline conditions, the only COPCs for which there are data for are metals. Thus the focus of the assessment will be on metals. Additional COPCs that are identified will be monitored in soil and water upon mine development and operation.

The human receptors evaluated will be selected based on Health Canada guidance (Health Canada, 2004a).

Exposure Assessment

The amount of metals exposure that people would get from the country foods will be determined for the food ingestion pathway. The amount of exposure depends on:

- the concentration of metals in terrestrial wildlife resulting from wildlife ingestion of environmental media (vegetation, water and soil);

- the concentration of metals in plants resulting from plant uptake of metals in soil and water;
- the concentration of metals in fish resulting from uptake of metals in water; and
- human receptor characteristics (body weight, consumption amount and consumption frequency).

Identifying the metals concentrations in terrestrial wildlife, plants and fish is key to the exposure assessment. Data from the rainbow trout tissue sampling program conducted in 2007 is considered adequate for the baseline study. Therefore, no additional sampling of fish is proposed for 2008. Plant tissue will be collected with the assistance of Kenneth Cottrell (a resident of the Schaft Creek area). Plant tissue sampling efforts will be focused in areas where limited sampling was completed in 2007. These areas are primarily the mine-site camp, pit area and road route.

Previous interviews conducted with the country foods harvesters have indicated that moose are the most frequently consumed country food. Moose will be selected for evaluation in the country foods study. Moose tissues samples will be collected from country foods harvesters that have harvested moose from the Schaft Creek Area (moose tissues will be collected from moose that have already been killed *i.e.,* moose will not be killed for sampling purposes). Collection of the samples will be completed in conjunction with the Rick Mclean of the THREAT Committee. All moose tissue samples will be analysed for metals.

Collection and analysis of country foods tissues will follow the protocols outlined in the following document "*Guidance Document for Country Foods Surveys for the Purpose of Human Health Risk Assessment*" (Golder, 2005). For QA/QC purposes, duplicate tissue samples will be collected randomly in 10% of the tissues collected. This will provide a measure of in-field variability in tissue parameters. Tissue samples will be kept cool and in the dark (stored in coolers) in the field, and kept refrigerated or frozen prior to shipping to ALS Environmental (Vancouver, BC) for analyses. Samples will be shipped with blue ice packs and completed chain-of-custody (COC) forms detailing sampling site, date, time, medium, analyses required, sampler names, and specific instructions as needed (*i.e.*, the lowest detection limit for mercury is required). A copy of the COC will be kept by the sampler. All personnel will be trained in proper sampling techniques so that cross contamination of tissue does not occur.

The calculated exposure (estimated daily intake) of each metal from ingestion of the selected country foods will be based on: environmental media baseline data; country food tissue concentrations; contaminant uptake models (for country foods where tissue could not be obtained); food consumption amounts; and food consumption frequencies.

Effects Assessment

Effects assessment involves identification of the potentially toxic effects of metals and determination of the amount of metal that can be taken into the body without experiencing adverse health effects. The amount of a chemical that can be taken into the body without experiencing adverse health effects is the toxicity reference value (TRV).

The TRVs used in the country foods baseline assessment will be obtained from government agencies such as Health Canada, the U.S. EPA's Integrated Risk Information Service Database (IRIS), the Risk Assessment Information System (RAIS), the Joint FAO/WHO Expert Committee on Food Additives and Contaminants (JECFA), and the Agency for Toxic Substances and Disease Registry (ATSDR).

Risk Characterization

The exposure and effects assessment will be combined to make quantitative baseline risk estimates and provide recommended maximum weekly intakes for each country food evaluated. A formal evaluation of the degree of certainty about the various assumptions used throughout the assessment and identification of how these assumptions may effect the conclusions will be conducted.

The results of the country foods assessment will form the basis of a monitoring program for potential contamination of country foods, to be developed as part of the environmental assessment and implemented subsequent to the environmental assessment process.

2.13.4 2008 Schedule

Vegetation collection will occur in mid to late August 2008. Rescan anticipates receiving moose tissue from Rick Mclean between now and beginning of September 2008. A report detailing the findings of the country foods baseline assessment will be prepared in October 2008. The report will include and analysis of all the data collected on country foods.

2.14 Socio-Economics

The goal of the socio-economic baseline study is to compile the most accurate and up-to-date information on the study communities, including the following components:

- Historical and cultural context;
- Economy and labour force;
- Education, skills and training;
- Health and social services/issues;
- Infrastructure; and
- Governance.

Information will be collected from literature, statistical and government publications, and other desk-based sources; as well as through interviews with community members, leadership and service providers. Where required, discrepancies among data sources will be discussed and clarified.

2.14.1 Summary of Work Completed

Desk-based socio-economic/cultural studies began in 2006. The following activities have been undertaken to date:

- Collation of available statistical information from provincial and federal agencies on the primary study communities (Dease Lake, Iskut, Telegraph Creek, Stewart), the secondary study communities (Smithers, Terrace) and on the regional and provincial study area. Statistical data is very limited due to the small size of study communities. Information is also often out-of-date or non-comparable between communities.
- Complete census information is most recently available for 2001. The 2006 census is being released in stages, with full release in May 2008.
- Collation of existing issues-scoping information from previous studies and environmental assessments, consultation activities by other projects, Terms of Reference comments from study communities on other projects and media reports. These will be supplemented by comments and issues raised during Schaft Creek Project consultation activities.
- Desk-based research on the Tahltan Nation, including governance, social structure, policies and planning processes, culture, modern history and involvement in the mining sector.
- Participation with Tahltan Socio-Cultural Working Group to develop a local census of the Tahltan Nation. The results of this census are intended for use in the Schaft Creek Project assessment process.

2.14.2 2008 Work Plan

The 2008 work plan will build on the activities to date, with a goal of completing the socio-economic/cultural baseline study report in Q3, 2008.

Activities this year will be guided by a study of existing information, and a detailed gap analysis. One of the main variables – which will largely determine the scope of work for 2008 – is the forthcoming Tahltan Census. Rescan has agreed to wait until the release of this information before conducting further socio-economic/cultural field studies, to help mitigate research fatigue among community members. Thus, a gap analysis will be conducted following review of the Tahltan Census, which will guide further research and interviews.

If the Tahltan Census does not become available by June 30, 2008, an alternative approach will be developed. The Tahltan Socio-Cultural Working Committee will be consulted regarding an alternative approach, which may include select interviews and/or a compilation of existing data.

The key activities in 2008 are presented below.

2.14.2.1 Desk-Based Research

Desk-based research will continue to ensure the most up-to-date information is collected. For example, the final results of the 2006 national census (Statistics Canada, 2007) and the Skeena Native Development Society's Labour Market Census (SNDS, 2007) will be included. Following gap analysis and issues identification, the field schedule and tools will be developed (*e.g.*, identification of participants, scope of work).

To balance a lack of community-specific data, desk-based research will also draw upon a detailed literature review. Identification and review of pre-existing studies (*e.g.,* Iskut thesis report) specific to the region (and similar mining/First Nations case studies) will be included, with a focus on economic and social characteristics of resource-based First Nations communities in northern B.C.

When the forthcoming Tahltan Census is available, it will be reviewed and a gap analysis will be conducted. Any statistics provided by this census will be analysed and compared with existing data sources (*i.e.*, Statistics Canada, SNDS, BC Stats); qualitative information will also be compared with existing sources. A field plan will be developed to fill identified gaps.

2.14.2.2 Field Research

Field studies will be undertaken to complement and enhance the desk-based research, and will include First Nations and non-Aboriginal participants. Research methods may comprise the following activities:

Interviews: Face-to-face and telephone interviews will be conducted with key community members, service providers and other informants in each study community. These will focus on areas identified in the gap analysis to seek additional quantitative information from local service providers as well as qualitative context to groundtruth existing data. This information is especially important to inform the effects assessment and development of mitigation measures.

Focus groups: Small focused group discussion may be held with key groups in the study communities. This will facilitate a greater understanding of community profiles, dynamics and capacities; and ensures that all potentially affected groups participate in the environmental assessment process. Focus groups may be held with Elders, youth, mine workers (and their families) and women.

2.14.2.3 Input/Output Model

Rescan will work with Copper Fox to compile the necessary information for the BC Stats Input/Output model (BCIOM). This model provides the most accurate picture of output and economic impact from the Project in terms of employment, income, GDP and taxes. Two models will be required, for construction and operations phases. BCIOM results will inform the effects assessment, and should be completed by Q3 2008.

2.15 Land and Resource Use

The goal of the land and resource use baseline study is to identify existing land users, uses, and values which may be affected by the development of the Project. The following components will be included:

- Land management;
- Land/resource tenures (*e.g.*, guide outfitting, traplines, water users, recreation, mineral);
- First Nations land use; and

- Economic and cultural benefits of activities.

Land/resource uses and values may overlap with other biophysical disciplines, including wildlife and fisheries studies, traditional use/knowledge, and socio-economics. This information will be shared between disciplines.

2.15.1 Summary of Work Completed

The land use baseline study began in 2006. The following desk-based research has been completed to date:

- Identification and mapping of the relevant Tahltan Nation communities
- Identification of relevant trapline license holders
- Identification of relevant guide outfitting territories and outfitter license holders
- Identification of grazing, recreational, forestry and other relevant tenure holders
- Examination of the Cassiar Iskut-Stikine Land and Resource Management Plan; Resource Management Zones; and Cassiar Timber Supply Area

2.15.2 2008 Work Plan

The 2008 work plan will focus on primary research and field-based studies. Information will be generated through interviews with land users and tenure holders to complement the secondary research completed in 2006. In addition, on-going desk-based research will be done in collaboration with GIS software for the purposes of stakeholder, license and tenure holder area mapping, as well as the generation of visual aids and maps for field studies (*e.g.,* during interviews). The Land and Resource Use Baseline Report will be completed by November, 2008.

2.15.2.1 Desk-Based Research

Adept use of available ecosystem mapping and internet-based government information will continue to form the basis of desk-based research. This will be supplemented by values and objectives stated in the relevant land management plans; as well as the outcomes of ongoing consultation. Maps will be developed to identify land use patterns, stakeholders, and areas of particular interest or concern. The use of water resources (*e.g.,* domestic water licences) will also be included.

The Tahltan are also working towards the development of a land management strategy for the Tahltan territory. If available, this information will also be used to identify contemporary Tahltan activities and values associated with the land and natural resources. As such, participation and consultation with the Tahltan Socio-Cultural Working Group and the Tahltan land and resource planning committee will occur on an on-going basis to identify the vision, policies and management directions the Tahltan are developing. Understanding the interdependent elements of these two groups' mandates and plans will also inform the Project's effects assessment and development of enhancement and mitigation measures.

2.15.2.2 Field Research

Field studies within the Schaft Creek Project study area will follow preliminary desk-based research. Studies will aim to address information gaps and obtain a comprehensive understanding of the various ways in which land surrounding the Project area is used and valued. This information will be analysed and will inform ways in which the Project's possible negative effects could be mitigated and how positive effects could be enhanced.

Land use studies will include contemporary Tahltan land use activities and values, which will supplement TU/TK studies. Hunting, trapping, fishing and gathering activities will be included, focusing on the Project area, and downstream drainage to Mess Creek and the Stikine River.

Field study research methods will include face-to-face and telephone interviews will be conducted with land users, license and tenure holders and other relevant stakeholders. Interviews will seek additional information from relevant stakeholders regarding their use/value of the land and resources. Maps and visual aids will be used, with the intention of incorporating stakeholder information into GIS analysis. Quantitative data will be collected when available (*i.e.*, number of kills, number of land users, dates/seasons, specific areas of use, *etc.*).

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