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Environmental Protection Operation
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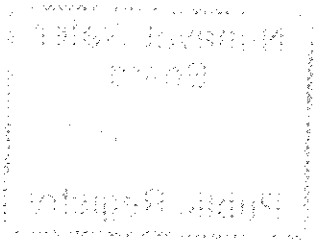
June 16, 2006

Please find enclosed the report submitted by Lupin Gold Mine entitled 'Lupin Gold Mine Environmental Effects Monitoring Cycle 1 Interpretative Report'. Please send me review comments for compilation by November 1, 2006. If this time-line presents a problem, call me at 780-951-8824.

Thank-you,

Paula Siwik, M.Sc.
Environmental Effects Monitoring Coordinator

cc Shauna Sigurdson, Regional Authorization Officer



FINAL REPORT

LUPIN GOLD MINE
ENVIRONMENTAL EFFECTS MONITORING
CYCLE 1 INTERPRETATIVE REPORT

Submitted to:
Kinross Gold Corporation
9818 International Airport
Edmonton, Alberta
T5J 2T2

Attention: Mr. C. Michael Tansey
Prepared by :
Golder Associates Ltd.

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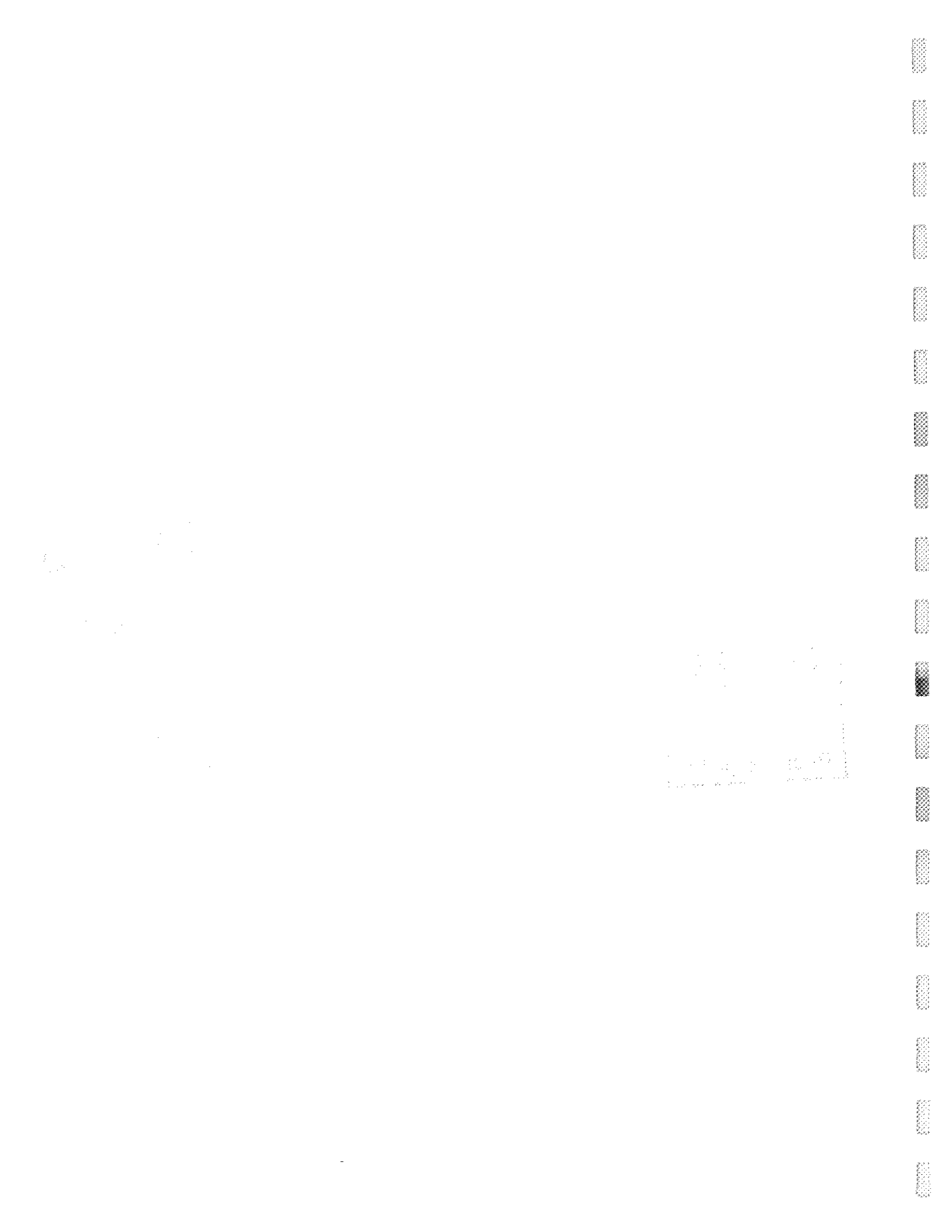


EXECUTIVE SUMMARY

Under the Metal Mining Effluent Regulations (MMER), Kinross Gold Corporation (Kinross) was required to submit either an Environmental Effects Monitoring (EEM) biological historical information report or an EEM biological monitoring study for the Lupin Mine. A historical information report was submitted in 2003 (Golder 2003), and, according to the regulations, a subsequent biological monitoring study report must be submitted no later than 42 months after the day on which the mine became subject to the EEM requirements (i.e., 6 June 2006). Kinross carried out data collections for their MMER EEM biological monitoring program in 2005, which are presented in this Cycle 1 Interpretive Report.

The goal of the biological monitoring study was to investigate the effects, if any, of mine effluent on the receiving environment. Lupin Mine conducted a benthic invertebrate community (BIC) survey and a fish population survey. Fish tissues were collected and archived for copper analysis, if required. The results from the monitoring studies will direct the mine as to the type and frequency of follow-up investigations as outlined by the environmental effects monitoring guidance document (EC 2002).

The program was based on a control/impact study design. The exposure area encompassed portions of the Seep Creek system (Dam 1a Lake, Seep Creek, and Seep Creek Ponds 1 & 2). The reference area included Fingers Lake and Fingers Creek. The timing of the biological monitoring study was scheduled to coincide with effluent discharge; however, effluent discharge was terminated on 11 August 2005 due to low effluent pH.

The mill at the Lupin Mine has one final effluent discharge point (Nunavut Water Licence Surveillance Network Point [SNP] 925-10). Treated effluent is released into the environment at one of three headwater systems to Seep Creek (Dam 1a Lake). The treated effluent passes downstream through the Seep Creek system for approximately 6.5 km. Seep Creek empties into Unnamed Lake, which is a small embayment south of Inner Sun Bay. Inner and Outer Sun bays are embayments to the West Arm of Contwoyto Lake. Inner and Outer Sun bays are separated by a narrow (approximately 25 m wide) and short (approximately 250 m long) channel. Mixing occurs in this area, primarily due to flows from Concession Creek, and the effluent plume appears to disperse into Outer Sun Bay of Contwoyto Lake.

Plume delineation modelling indicated that, under worst-case scenarios, 1% plume concentrations can extend for approximately 1600 m into Outer Sun Bay (as measured from the lake-ward side of the narrows between Inner and Outer Sun bays).

During periods of extremely low flows, treated effluent concentrations at the mouth of Seep Creek can be close to 100%. Though effluent was not being discharged during the 2005 biological monitoring study, effluent concentration was approximately 87% at 250 m downstream of the final discharge point (FDP).

Fingers Lake is located approximately 2 km east of the tailings containment area (TCA). The lake is drained by one outlet stream, Fingers Creek, which flows approximately 3 km north-east before emptying into Contwoyto Lake. Finger Lake and Fingers Creek are not impacted by mine effluent or tailings. In late summer 2005, the conductivity in Fingers Lake was 14.8 µS/cm and in Fingers Creek it was 15.3 µS/cm.

Field conductivity measurements were higher in the exposure area than in the reference area. The measured pH values were slightly below the Canadian Water Quality Guidelines (CWQG; CCME 2005), but were typical of the Nunavut barrenlands waterbodies (RCPL and RL&L 1985).

In general, water quality and sediment quality variables were elevated in the exposure area relative to the reference area. Aluminum, arsenic, cadmium, copper, lead, nickel and zinc exceeded the CWQG in the exposure water quality samples. Water quality guidelines were not exceeded in the reference area. Arsenic and chromium exceeded the Interim Sediment Quality Guidelines (ISQG; CCME 2005) in the exposure area sediment samples. In the reference area, arsenic was the only variable that exceeded the ISQG.

Based on the BIC survey data, mine effluent significantly affected patterns of diversity (Simpson's Diversity Index [SDI]) and evenness of the BIC within the aquatic receiving environment (Seep Creek Ponds 1 & 2) relative to the reference area (Fingers Lake). The mine effluent did not significantly affect invertebrate density, family richness or the Bray-Curtis Index (BCI). The data had sufficient power, greater than 90%, to detect a change of plus or minus two standard deviations (±2SD) compared to the reference mean.

The fish study focused on juvenile (age 1) Arctic grayling as the target species. Arctic grayling are common to both the exposure and reference areas of the Lupin Mine EEM biological monitoring studies. This species also is commonly fished and consumed by local residents and mine personnel. Insufficient numbers of a second fish species, preferentially small-bodied, were captured in the reference area, thus ninespine stickleback data from the exposure area are included as background data for potential comparisons in future monitoring reports.

In total, 52 Arctic grayling and one ninespine stickleback were captured in the reference area, and 86 Arctic grayling and 99 ninespine stickleback were captured in the exposure

area. Overall, Catch-per-unit-effort (CPUE) was higher in the exposure area than in the reference area.

The state of general health (i.e., occurrence of abnormalities and parasites) of Arctic grayling was similar between the Fingers Lake system (reference) and the Seep Creek system (exposure). Most of the Arctic grayling and ninespine stickleback did not have any recordable abnormalities. Parasite infestations were recorded for approximately 20% of the sacrificed ninespine stickleback.

Based on information collected in the fish survey, Arctic grayling in the exposure area have been negatively impacted by mine effluent. Arctic grayling were heavier, longer and in better condition in the reference area. Liver weight relative to carcass weight was similar between reference and exposure fish, although liver weight relative to fork length was significantly greater in the reference area than in the exposure area. Power analysis indicated that there was sufficient sample size to detect a change of 10% in length, 20% in weight, 5% in condition and 10% in relative liver weight in Arctic grayling, with 90% power.

Laboratory assessments determined that mine effluent collected from station SNP925-10, did not have sublethal or acute effects on a fish species (fathead minnow). Effluent was not acutely toxic to a zooplankton species (*Ceriodaphnia dubia*), although reproductive inhibition was observed. Reproductive and growth inhibition was observed for an aquatic plant (*Lemna minor*). Growth was also inhibited for an algal species (*Selenastrum capricornutum*). Based on the plume delineation model, the potential zone of sublethal effects could extend from the final discharge point downstream as far as Outer Sun Bay of Contwoyto Lake.

The results of the Cycle 1 EEM monitoring program indicate that the BIC and fish population have been impacted by mine effluent; therefore, Lupin mine is required to continue the next phase of the EEM program, Periodic Monitoring – Surveillance, within three years.

TABLE OF ACRONYMS AND UNITS

ANCOVA	Analysis of covariance	TOC	Total organic carbon
ANOVA	Analysis of variance	TSS	Total suspended solids
AO	Authorizing Officer	UTM	Universal Transverse Mercator
ARC	Alberta Research Council	α	Alpha
BCI	Bray-Curtis index	β	Beta
BIC	Benthic invertebrate community	%	percent
CPUE	Catch-per-unit-effort	µg/L	micrograms per litre
CWQG	Canadian water quality guidelines	µm	micrometres
DO	Dissolved oxygen	µS/cm	microSeimens per centimetre
EBM	Echo Bay Mines	°C	degrees Celsius
EC	Environment Canada	Bq/L	Becquerels per litre
EEM	Environmental effects monitoring	cm	centimetres
ETL	Enviro-Test Laboratories Ltd.	g	grams
FDP	Final discharge point	h	hours
Golder	Golder Associates Ltd.	ha	hectares
GLM	General linear model	Hz	hertz
GPS	Global positioning system	km	kilometres
ISQG	Interim sediment quality guidelines	km^2	square kilometres
Kinross	Kinross Gold Corporation	L	litre
MDL	Method detection limit	m/s	metres per second
MMER	Metal mining effluent regulations	m^2	square metres
QA/QC	Quality assurance/quality control	m^3	cubic metres
NWB	Nunavut Water Board	m^3/d	cubic metres per day
SD	Standard deviation	m^3/s	cubic metres per second
SDI	Simpson's diversity index	mg/kg	milligrams per kilogram
SE	Standard error	mg/L	milligrams per litre
SNP	Surveillance Network Point	mm	millimetres
SSD	Statistically significant difference	ms	milliseconds
TAP	Technical Advisory Panel	NTU	Nephelometric Turbidity Units
TCA	Tailings containment area	s	Seconds
TGD	Technical guidance document	V	volts

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

The Metal Mining Effluent Regulations (MMER) of the *Fisheries Act*, promulgated in June 2002, stipulates conditions under which owners/operators of metal mines may deposit or discharge effluent to the aquatic environment (GC 2002). The regulations apply to all operating metal mines in Canada, and impose limits on release of cyanide, metals, radium-226, suspended solids, and prohibit the discharge of effluent that is acutely lethal to fish. Schedule 5 of the MMER requires that all mines subject to the regulations develop and implement an environmental effects monitoring (EEM) program to assess the effects of metal mining effluent on fish, fish habitat, and the use of fisheries resources. Where there is no pre-existing biological data, the first study design must be submitted within 12 months of a mine becoming subject to the regulations. Where there is pre-existing biological data the first Study Design must be submitted with 24 months. In the latter scenario, the mine must prepare a report that summarizes the biological monitoring studies and supporting documentation within 12 months of becoming subject to the regulations.

The Lupin Mine, owned and operated by Kinross Gold Corporation (Kinross), is subject to the MMER. Consequently, Kinross is required to conduct biological monitoring studies in the aquatic receiving environment for its operations. Because numerous studies have been conducted since initial environmental assessments in the late 1970s and early 1980s, Kinross submitted a summary of historical biological monitoring data in December 2003 in compliance with the MMER. In December 2004, the Fish Study Design for Lupin Mine's Cycle 1 EEM program was submitted to Environment Canada (EC), as required under the MMER. Recommended changes to the Cycle 1 study design were reviewed during a meeting with EC's Technical Advisory Panel (TAP), Kinross, and Golder Associates Ltd. (Golder) in April 2005, and a revised field survey and study design was approved by the TAP in August 2005. Following approval of the Cycle 1 study design by the TAP, Kinross contracted Golder to conduct a comprehensive aquatic monitoring program during the summer of 2005. Study components included a sentinel fish survey, a benthic invertebrate community survey, water quality and sediment quality monitoring, and sublethal toxicity testing. The present report summarizes results of the Cycle 1 biological monitoring program, water quality monitoring, sediment quality monitoring and sublethal toxicity testing in fulfilment of the MMER requirements.

2.0 SITE CHARACTERIZATION

This section provides an updated summary of the site characterization that is provided in the Lupin gold mine EEM study design (Golder 2004).

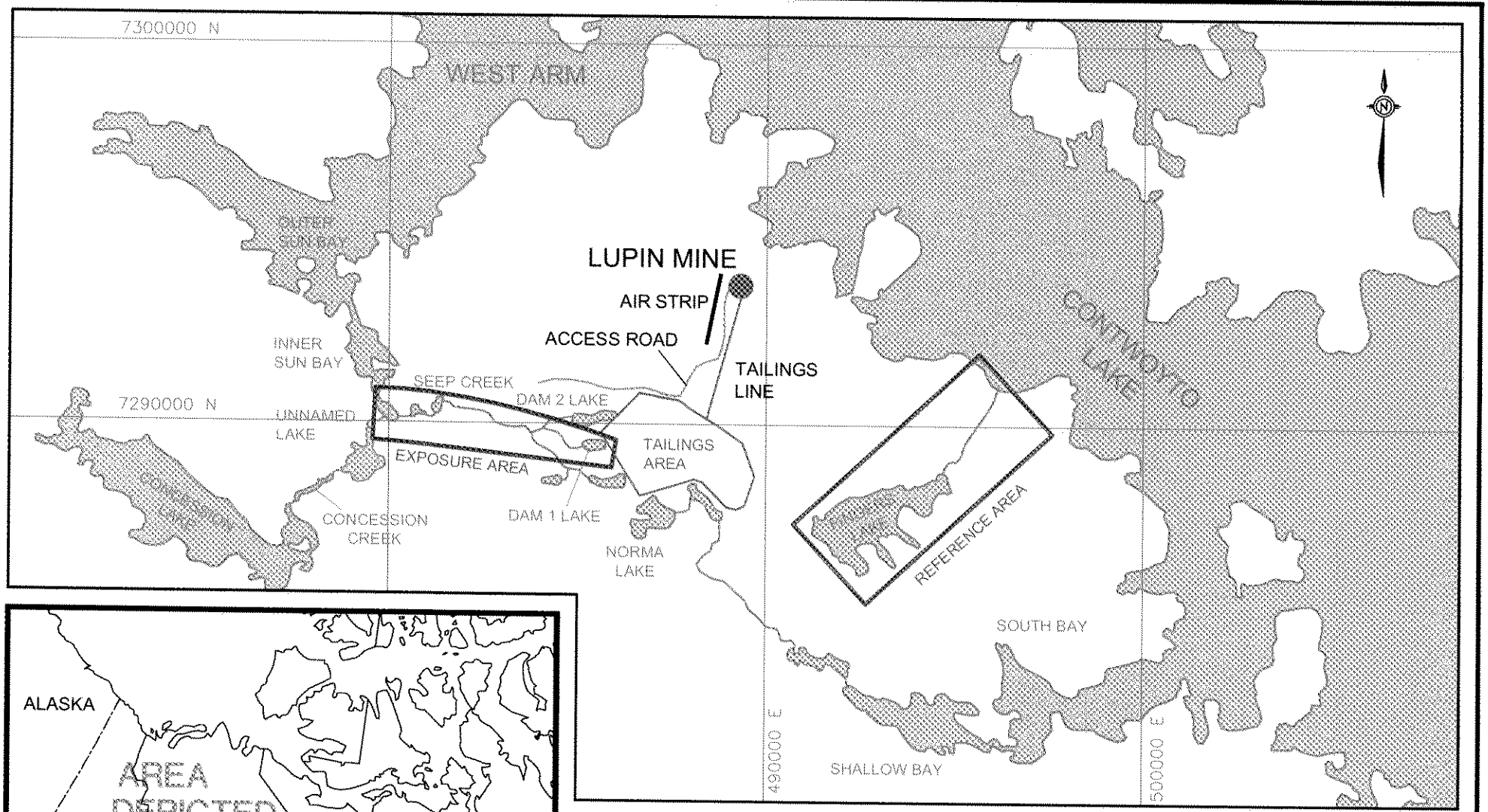
2.1 General Mine Site Description

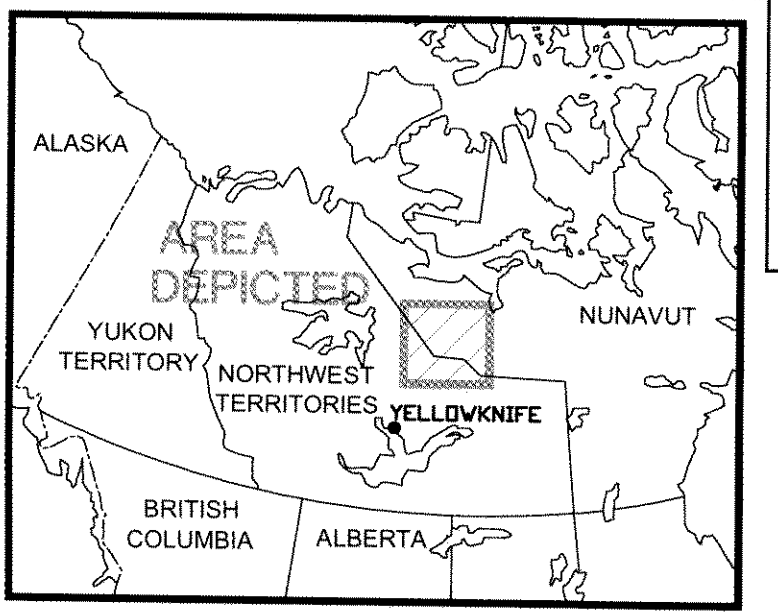
The Lupin Mine is located on the west shore of Contwoyto Lake, Nunavut, approximately 300 km south-east of Kugluktuk and 80 km south of the Arctic Circle (65°46' N, 111°15' W) (Figure 2.1). Between April and late December each year, the only access to Lupin is by air, and from January to March the mine can also be accessed from Yellowknife via an ice road.

Mine site construction started in August 1980 and was completed in March 1982, when pre-production commissioning began. The mine operated continuously from 1982 to January 1998, when operations were suspended and the mine was placed in care and maintenance status due to low gold prices. Production resumed in April 2000. Following Echo Bay Mine's merger with Kinross in 2003, the mine was re-closed and placed under care and maintenance while undergoing feasibility studies to re-commence operations. Lupin Mine re-started operations during March 2004. In February 2005, the mine returned to care and maintenance.

The Lupin Mine included underground mining and production systems, as well as an ore handling system. Mining and processing equipment was designed to handle up to 2300 tonnes per day. During the mine's most recent operational period, processing rates were approximately 1200 tonnes of ore per day. Since the start of production in 1982, the Lupin Mine produced over 100 million grams of gold.

Other than transportation requirements for materials and supplies necessary to sustain the workforce and operations, the Lupin site is completely self-contained. It is comprised of two principal clusters of buildings: the residential complex, which consists of accommodations, a kitchen and recreation center; and the industrial complex, which houses the mine, mill, powerhouse, maintenance facility, warehouse and offices. Ancillary features include a sewage lagoon immediately to the south of the industrial complex, a 1.9 km long airstrip, and a tailings containment area (TCA) located approximately 7 km south of the mine (Figure 2.1).





3 0 3
Scale Km

PROJECT
Kinross Gold Corporation
Environmental Effects Monitoring Interpretive Report, Lupin Gold Mine

TITLE
Lupin Mine Location Plan

Golder Associates
Edmonton, Alberta

PROJECT No.		05-1373-019	FILE No.		1730630
DESIGN	AH	23/05/06	SCALE	As shown	REV. 0
CADD	RW	23/05/06			
CHECK					
REVIEW					

Figure: 2.1

2.2 Environment Laws and Regulations

The territorial and federal laws that apply to the operations of the Lupin Mine, and are applicable to effluent and environmental monitoring, are summarized below.

The Nunavut Water Board (NWB), which operates under regulations in the *Nunavut Land Claims Agreement*, governs the use of water and the deposition of waste in the Lupine Mine's area. Kinross holds a water license with criteria for limiting the amount of water drawn from Contwoyto Lake, and discharge of deleterious substances and other water quality constituents under these regulations from the NWB. Kinross also has an Emergency Spill Response and Contingency Plan developed under these regulations. Some of the conditions in the NWB license comply with the *Northwest Territories Waters Act*.

The federal *Territorial Lands Act*, and Land Use Regulations pertaining to the *Act*, applies to Crown lands in the Northwest Territories and Nunavut. The Lupin Mine received a Land Use Permit with conditions related to waste disposal under these regulations.

The federal *Fisheries Act* is applicable to effluent discharges from the Lupin Mine. The main objective of the *Fisheries Act* is to conserve and protect fish and fish habitat from harm caused by physical alteration or pollution. The MMER, administered within the *Fisheries Act*, restricts the release of deleterious substances to maximum discharge concentrations, regulates the requirements for release of non-acutely lethal effluent, and through the EEM program, assess the effectiveness of these limits with regards to environmental protection.

2.3 Local Environment

2.3.1 Climate

Climate in this region (Environment Canada Station 23026HN, Lupin A) is classified as semi-arid subArctic, with a mean daily temperature of -11.1°C and an average annual precipitation of 299 mm (Canadian Climate Normals 1961-2000). Average temperature for the months May through September is 4.6°C (Canadian Climate Normals 1961-2000). Precipitation is heaviest in the months of June through September. Snowfall can occur during any month, although heaviest snowfalls generally occur in October. The average total annual snowfall is 138.1 cm (Canadian Climate Normals 1961-2000). The project area is subject to frequent strong winds from the northwest (Beak Consultants Ltd. and Mary Collins Consultants Ltd. 1980; Geocon Ltd. 1980).

2.3.2 Geology and Topography

The Lupin Mine is located in the tundra zone of the Canadian Shield, the geological core of the continent that occupies almost half of Canada's surface. The mine is located within the Slave province of the Shield, a province that features intrusive igneous material, such as granite (Natural Resources Canada 2003). Terrain in the vicinity of the mine is generally low and undulating, ranging between 450 and 530 m elevation. Numerous shallow lakes and streams occur in depressions throughout the area (Beak Consultants Ltd. and Mary Collins Consultants Ltd. 1980; Geocon Ltd. 1980).

2.3.3 Vegetation

The Lupin Mine is located in the subArctic tundra vegetation zone, an area characterized by continuous permafrost and typical "barren ground" vegetation of moss, lichens, heather, and dwarf shrub communities. These types of vegetation are predominant on the more well-drained areas, whereas grasses and sedges are dominant in the wet ground adjacent to stream courses and around the perimeters of lakes. Dwarf willow shrubs up to 1 m high occur adjacent to some stream courses (RCPL and RL&L 1985).

2.3.4 Hydrology

Contwoyto Lake is the major waterbody in the region, with a surface area of approximately 95 900 hectares (ha) and a drainage area of 8000 km^2 (Roberge et al. 1986). Contwoyto Lake has two outlets – the Burnside River, which flows from the northwest end of the lake towards Bathurst Inlet, and the Back River at the southeast end of the lake, which flows into Pellatt Lake (Roberge et al. 1986). The main body of Contwoyto Lake lies to the east and south of the mine site (Figure 2.1). To the north of the mine, a portion of the lake (known as the West Arm) extends to the west and south, terminating in a narrow bay (Sun Bay), which lies directly west of the mine site (Moore 1978; Roberge et al. 1986).

Seep Creek is a small stream (approximately 6.5 km in length) that flows in a westerly direction into Inner Sun Bay of Contwoyto Lake (Figure 2.1). The Seep Creek watershed includes three lakes (colloquially known as Dam 2 Lake, Dam 1a Lake and Unnamed Lake), three headwater streams, two ponds (Seep Creek Ponds 1&2), and two embayment areas (Inner and Outer Sun bays). Dam 2 Lake is a small lake (maximum depth of 7 m), bordered on the north by a gravel pit and on the east by the TCA. Dam 1a Lake is a small lake (maximum depth of less than 1 m) that is located to the south of Dam 2 Lake. This waterbody freezes to the bottom in winter. A southern branch of Seep Creek, originating from Dam 1a Lake, enters Seep Creek approximately 2 km downstream of Dam 2 Lake.

A third branch of the creek arises to the south of Dam 1a Lake and joins the mainstem about 400 m downstream of the confluence of Dam 2 Lake and Dam 1a Lake branches.

2.4 Description of Production Processes

The ore body at the Lupin Mine extends from the surface to about 2000 m below the surface. Gold is found primarily within a sulphide rich iron formation. The gold is fine grained (generally less than 100 µm in diameter) and is associated mainly with pyrrhotite and arsenopyrite. Lupin Mine uses cyanidation processing to leach gold into solution. A detailed description of the underground mining and milling techniques used at the Lupin Mine is provided in Golder (2003) and Echo Bay Mines Ltd. (2001).

2.5 Environmental Protection Practices

A waste management program for the handling, disposal and tracking of contaminated and non-contaminated waste generated by the Lupin Mine has been established, which complies with applicable federal and territorial laws and regulations. While the storage and disposal of non-contaminated waste does occur at the Lupin Mine, the value of the 4Rs system (reduce, reuse, recycle, and recover) is recognized and actively promoted. Following is a summary of the waste management program as it relates to wastewater management.

2.5.1 Waste Rock

While the Lupin Mine was in operation, waste rock was used as roadbed material, in dams, in the airstrip, or as backfill. During the past few years, very little development waste has been produced in the underground operation; as a result, a surface waste stockpile no longer exists.

2.5.2 Management of Mine Water

Relative to most underground mining operations, Lupin is a dry mine, having an average water inflow of between 45 and 95 L per minute. Most of this water seeps into workings below the permafrost level (500 m below surface). The main de-watering system consists of four main sumps located at the 250, 650, 890, and 1105 m shaft stations. The discharge line is 15.24 cm diameter, and is located in the shaft. The mine discharge water is pumped to the TCA via the mill.

Both drill water and potable water is supplied to the mine via separate pipelines located in the shaft. A brine line services the upper levels, in permafrost. A 3% to 6% brine solution