



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

February 20, 2008

File: MV2007L8-0031

Mr. William Mitchell
Manager, Giant Mine Remediation Project
5th Floor, Precambrian Building
PO Box 1500
YELLOWKNIFE NT X1A 2R3

Fax: (867) 669-2439

Dear Mr. Mitchell:

**Contaminants and Remediation Directorate, INAC, MV2007L8-0031
Not Referred to Environmental Assessment, Remediation, Giant Mine**

The Mackenzie Valley Land and Water Board (MVLWB) met on February 20, 2008 to deal with the aforementioned application. The Preliminary Screening decision was made to proceed with the regulatory process and/or implementation pursuant to the *Mackenzie Valley Resource Management Act*. The reasons for decision and the preliminary screening report are attached for your information.

If you have any questions, contact Kathleen Graham, Regulatory Officer at (867) 669-0506 or email permits@mvlwb.com.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Willard Hagen".

Willard Hagen
Chair

Attachment

Copied to: Vern Christensen, MVEIRB
Darnell McCurdy, South Mackenzie District, INAC, Yellowknife

PRELIMINARY SCREENING REPORT FORM

<p>PRELIMINARY SCREENER: MVLWB REFERENCE / FILE NUMBER: MV2007L8-0031 TITLE: Remediation, Giant Mine ORGANIZATION: Indian and Northern Affairs Canada, Contaminants and Remediation Directorate MEETING DATE: February 20, 2008</p>	<p>EIRB REFERENCE NUMBER:</p>
--	--

Type of Development:
(CHECK ALL THAT APPLY)

- | | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | New |
| <input type="checkbox"/> | Amend, EIRB Ref. # |
| <input checked="" type="checkbox"/> | Requires permit, license or authorization |
| <input type="checkbox"/> | Does not require permit, license or authorization |

Project Summary

Contaminants and Remediation Directorate, Department of Indian and Northern Affairs – NT Region is applying to reclaim the orphaned Giant Mine Site. ~5 km north from Yellowknife city center.

All activities will take place within the boundaries of the former lease L-3668T (now designated as Reserve R662T), with two exceptions, the areas of the former Giant Mine "Townsite", and an area of historic tailings deposition along the north shore of the Yellowknife Bay.

The reclamation project is based on the "Giant Mine Remediation Plan" (an action plan designed to mitigate the impacts caused during the operation of the Giant Mine from 1948-1999). The project focuses on restoring the site by addressing environmental, health and safety concerns presently associated with the former Giant Mine site.

The specific objectives of the remediation activities are:

1. To manage the underground arsenic trioxide dust in a manner that will prevent the release of arsenic to the surrounding environment, minimize public and worker health and safety risks during implementation, and be cost effective and robust over the long term;
2. To remediate the surface of the site to the industrial guidelines under the NWT Environmental Protection Act, recognizing that portions of the site will be suitable for other land uses with appropriate restrictions;
3. To minimize public and worker health and safety risks associated with buildings, mine openings and other physical hazards at the site;
4. To minimize the release of contaminants from the site to the surrounding environment; and
5. To restore Baker Creek to a condition that is as productive as possible, given the constraints of hydrology and climate.

The Giant Mine Remediation Plan consists of the following components:

- Underground freezing of the Arsenic Trioxide dust storage areas using the "Frozen Block" method.
- Clean-up and disposal of other underground mine components and waste material.
- Remediation of currently existing open pits (backfilling of B1 Pit and Brock Pit).
- The re-use of any waste rock on the surface as backfill into B1 Pit.
- The Recontour and covering of surface tailings and sludge containment areas.
- The closure and remediation of other surface mine components (mine openings and mine roads).
- The cover of the historic foreshore tailings in the Great Slave Lake is currently in place.
- The management of site water through the collection and treatment of all contaminated runoff water.
- The construction of a new channel for Baker Creek around C1 Pit.
- Quarries, borrow pits, and overburden piles to be resloped, revegetated and regraded for drainage.
- The contaminated soils will either be excavated and backfilled into the B1 Pit frozen zone or used as fill for tailings and/or sludge ponds.
- Buildings and infrastructure will be demolished and all hazardous materials will be removed.
- Waste disposal and storage to be done on-site in approved areas.

The proponent anticipates the implementation phase of this undertaking will take approximately 10 years (2010-2020), and has applied for a 10 year Water License Term.

Scope

This License entitles Indian and Northern Affairs Canada, Contaminants and Remediation Directorate (CARD) to use water and dispose of waste associated with the Closure and Reclamation of the Giant Mine, located at 62°30'00"N and 114°22'00", Northwest Territories.

Land Use Eligibility - Section 18 Mackenzie Valley Land Use Regulations

- | | |
|---|------------------------------|
| Type of Disposition | Disposition Number(s) |
| <input type="checkbox"/> Mineral Claims | |
| <input type="checkbox"/> Oil and Gas: EL/SDL/PL | |
| <input type="checkbox"/> Quarry Permit | |
| <input type="checkbox"/> Timber Permit | |
| <input checked="" type="checkbox"/> Other | |

Principal Activities (related to scoping)
(CHECK ALL THAT APPLY)

- | | | |
|--|--|---|
| <input type="checkbox"/> Construction | <input type="checkbox"/> Exploration | <input checked="" type="checkbox"/> Decommissioning |
| <input type="checkbox"/> Installation | <input type="checkbox"/> Industrial | <input checked="" type="checkbox"/> Abandonment |
| <input type="checkbox"/> Maintenance | <input type="checkbox"/> Recreation | <input type="checkbox"/> Aerial |
| <input type="checkbox"/> Expansion | <input type="checkbox"/> Municipal | <input type="checkbox"/> Harvesting |
| <input type="checkbox"/> Operation | <input type="checkbox"/> Quarry | <input type="checkbox"/> Camp |
| <input type="checkbox"/> Repair | <input type="checkbox"/> Linear / Corridor | <input type="checkbox"/> Scientific/ |
| <input type="checkbox"/> Research | <input type="checkbox"/> Sewage | <input type="checkbox"/> Solid Waste |
| <input checked="" type="checkbox"/> Water Intake | | |
| <input checked="" type="checkbox"/> Other: Reclamation and Remediation | | |

Principal Development Components (related to scoping)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Access Road | <input checked="" type="checkbox"/> Waste Management |
| <input checked="" type="checkbox"/> construction | <input checked="" type="checkbox"/> disposal of hazardous waste |
| <input checked="" type="checkbox"/> abandonment/removal | <input checked="" type="checkbox"/> waste generation |
| <input checked="" type="checkbox"/> modification e.g., widening, straightening | <input type="checkbox"/> Sewage |
| <input checked="" type="checkbox"/> Automobile, Aircraft or Vessel Movement | <input type="checkbox"/> disposal of sewage |
| <input checked="" type="checkbox"/> Blasting | <input type="checkbox"/> Geoscientific Sampling |
| <input checked="" type="checkbox"/> Building | <input checked="" type="checkbox"/> trenching |
| <input type="checkbox"/> Burning | <input checked="" type="checkbox"/> diamond drill |
| <input checked="" type="checkbox"/> Burying | <input type="checkbox"/> borehole core sampling |
| <input checked="" type="checkbox"/> Channeling | <input type="checkbox"/> bulk soil sampling |
| <input type="checkbox"/> Cut and Fill | <input type="checkbox"/> Gravel |
| <input type="checkbox"/> Cutting of Trees or Removal of Vegetation | <input type="checkbox"/> Hydrological Testing |
| <input checked="" type="checkbox"/> Dams and Impoundments | <input checked="" type="checkbox"/> Site Restoration |
| <input type="checkbox"/> construction | <input type="checkbox"/> fertilization |
| <input type="checkbox"/> abandonment/removal | <input type="checkbox"/> grubbing |
| <input checked="" type="checkbox"/> modification | <input type="checkbox"/> planting/seeding |
| <input checked="" type="checkbox"/> Ditch Construction | <input type="checkbox"/> reforestation |
| <input checked="" type="checkbox"/> Drainage Alteration | <input type="checkbox"/> scarify |
| <input checked="" type="checkbox"/> Drilling other than Geoscientific | <input type="checkbox"/> spraying |
| <input type="checkbox"/> Ecological Surveys | <input checked="" type="checkbox"/> recontouring |
| <input checked="" type="checkbox"/> Excavation | <input type="checkbox"/> Slashing and removal of vegetation |
| <input checked="" type="checkbox"/> Explosive Storage | <input checked="" type="checkbox"/> Soil Testing |
| <input checked="" type="checkbox"/> Fuel Storage | <input checked="" type="checkbox"/> Stream Crossing/Bridging |
| <input type="checkbox"/> Topsoil, Overburden or Soil | <input checked="" type="checkbox"/> Tunnelling/Underground |
| <input type="checkbox"/> fill | <input checked="" type="checkbox"/> Other (describe): |
| <input type="checkbox"/> disposal | Freeze curtain installation & maintenance. |
| <input type="checkbox"/> removal | |
| <input type="checkbox"/> storage | |

NTS Topographic Map Sheet Numbers
85J

Latitude / Longitude and UTM System:
62°30'00"N/114°22'00"W

Nearest Community and Water Body:
Yellowknife/Great Slave Lake

Land Status (consultation information)

- Free Hold / Private Commissioners Land Federal Crown Land Municipal Land

Transboundary/Transregional Implications

- | | | | |
|---|---|---|--------------------------------|
| <input type="checkbox"/> British Columbia | <input type="checkbox"/> Alberta | <input type="checkbox"/> Saskatchewan | <input type="checkbox"/> Yukon |
| <input type="checkbox"/> Nunavut | <input type="checkbox"/> Wood Buffalo National Park | <input type="checkbox"/> Inuvialuit Settlement Region | |
| <input type="checkbox"/> Wek'èezhii | <input type="checkbox"/> Gwich'in | <input type="checkbox"/> Sahtu | |

Type of Transboundary Implication: Impact / Effect Development

Public Concern _____
(DESCRIBE)

PHYSICAL - CHEMICAL EFFECTS

IMPACT

1. Ground Water

MITIGATION

CONDITION SECTION
LOCATION 26(1)

Water License
Conditions will be
drafted after the Public
Hearing.

water table alteration

The mine has been allowed to flood since July 2005. The groundwater is currently set at the 1300 Level where it is pumped to the Northwest Pond through a series of pipelines to be discharged to the Northwest Pond. It is proposed to maintain the water table to below the 100 Level, which is the bottom of the deepest pit (A2 Pit). During the summer and fall of each year, it is proposed to drawdown the water table to the 425 Level to allow capacity for spring freshet. No mitigation.

"During the period when water levels in the mine are allowed to rise, water levels and quality will be monitored using the existing C-Shaft multilevel well system. Once the water reaches its long-term level below the frozen zones (425 Level), a modified minewater pumping system will be commissioned. Water quality samples will thereafter be collected from the pump discharge as it is fed to the water treatment plant." (pg. 225, Giant Mine Remediation Plan)

- EC suggests that in regards to "Openings to surface" once flooding occurs and any such holes being to flow, that their quality be confirmed as benign". (EC's public review comment)

During late spring/early summer of each year, there is a potential for groundwater to come into contact with the edges of the frozen block situated below the maximum water level at the 100 Level.

Potential impacts associated with the installation and operation of the long-term Dewatering System is anticipated to cause "some dust and noise and installation materials will generate some waste." (pg. 11, Environmental Impact Matrix). (see mitigative measure in the Air Quality section of this Preliminary Screening)

water quality changes

"If runoff and seepage from the tailings containment areas is unacceptable for direct discharge, it will be directed underground. Runoff from the South, Central and North Ponds, would be combined with runoff from the Settling and polishing Pond area, and directed underground by gravity flow into the B3 Pit and the 1-38 Portal." (pg 175, Giant Mine Remediation Plan)

Other impacts to groundwater quality can potentially occur during this life of this project through the following activities:

- Impact of flooding on underground mine workings, backfilled tailings, underground waste rock, mine wall rocks, contaminated mine components, underground residual hydrocarbons, and underground waste rock.
- Heavy equipment use
- On-site fuel storage
- Relocation of arsenic contaminated materials
- Transportation of excavated contaminated soils and waste materials enroute for disposal at an approved licensed facility.

"The mine has a large inventory of materials, located outside the arsenic trioxide dust storage areas, which contain soluble arsenic compounds, including tailings and waste rock backfill in mined out stopes, and the mine wall rocks. Flooding the mine workings will release arsenic from these materials, making the minewater unacceptable for discharge to the environment without treatment." (pg. 144, Giant Mine Remediation Plan)

"Minewater quality is expected to remain contaminated with arsenic and unacceptable for direct discharge to the environment for an extended period. In this period, contaminated water will have to be contained within the mine workings and treated prior to discharge". (Pg. 173, Giant Mine Remediation Plan). "Groundwater will be monitored in the 15 deep multilevel monitoring well systems, comprising 129 separate monitoring zones in total, which have already been installed around the mine." (Page 225, Giant Mine Remediation Plan)

"Flooding of the underground workings is likely to mobilize arsenic and other compounds that have remained after previous operation. The water in the underground workings is likely to become stratified, with the most contaminated water being in the lower parts of the profile. Furthermore the plans call for maintaining an inward gradient until it can be demonstrated that there will be no risk of contaminated groundwater reaching surface water." (pg. 6, Environmental Impact Matrix).

infiltration changes

No Mitigation. The infiltration in the vicinity of the frozen block may change as a result of the freezing activities. On site drilling activities has the potential to impact infiltration changes.

other

N/A

IMPACT
2. Surface Water

MITIGATION

CONDITION SECTION
LOCATION 26(1)

flow or level changes

No Mitigation. Changes to the flow and level in surface water will or can potentially occur during the life of the project through the following project activities:

- The construction of a new channel for Baker Creek will result in a new flow regime for the creek.
- Surface water storage levels will decrease with the proposed underground contaminated water storage.
- All flow of surface water in contact with potential contaminants will be directed underground for storage until treatment.

water quality changes

Surface water catchment areas will be graded so that they drain by gravity underground. "Runoff from the South, Central and North ponds, would be combined with runoff from the Settling and polishing Pond area, and directed underground by gravity flow into the B3 Pit and the 1-38 Portal. Runoff within the catchment of the Northwest Pond would be collected in a small pool on the west side of the basin, and pumped to the Akaitcho Shaft for discharge into the underground mine." (pg, 175, Giant Mine Remediation Plan).

Changes to the quality of surface water can or will potentially occur during the life of the project through the following project activities:

- Heavy equipment/vehicle and other equipment uses and the risks associated with fuel spills/leaks.
- Earthwork activities (Blasting, road construction, vehicle movements, transportation of contaminate materials) have the potential to increase the suspended solids in Baker Creek and could possibly increase the rate of erosion of the creek.
- Dust from construction/blasting activities may enter water systems.
- Initial sediment loading in run off water is anticipated during South, Central, and North Ponds remediation.
- Further contamination associated with the proposed work on the Historic Foreshore Tailings which includes "the extension of the existing geotextile and rip-rap cover below the lake surface to cover the tailings were they occur in littoral zone" (pg. 160, Giant Mine Remediation Plan)
- There will be an initial increase in stream sediments as rock dust enters the streams. (page 9, Environmental Impact Matrix)

"Water quality monitoring onsite currently follows the Surveillance network Program or SNP requirements set out in previous Water Licenses." (pg. 221, Giant Mine Remediation Plan).

The proposed remediation plan for Baker Creek involves:

- " The diversion away from the west side of the C1 Pit will either be upgraded to a permanent channel by blasting back the slope or it will be abandoned and a new channel constructed to the east of the pit along the current highway alignment. As the new eastern alignment would be built on overburden next to the C1 Pit, it may be necessary to build a rock abutment to ensure long term stability of the new channel." (pg. 181, Giant Mine Remediation Plan).

"The remediation of Baker Creek will also need to facilitate implementation of ground freezing around Stope 212, where the creek currently runs directly above the stope." (pg. 181, Giant Mine Remediation Plan). The potential for impact associated with the rehabilitation Baker Creek as planned is "an initial increase in waterborne sediments in the Foreshore tailings surface cap extension in for the form of rock dust and disturbed sediments. This will be temporarily degrade the fish habitat and may mobilize some arsenic and other contaminants (antimony, chromium, copper, zinc, lead, nickel, vanadium)." (pg. 13, Environmental Impact Matrix)

The construction and operation of the discharge pipe to the bay via diffuser (includes the raw water supply system to plant) will result in "an initial increase in waterborne sediments in the form of disturbed sediments. This will temporarily degrade the fish habitat and may mobilise some arsenic and other contaminants (antimony, chromium, copper, zinc, lead, nickel, vanadium)." Treated water will enter into the bay and this will have a short term initial impact until the area stabilises to the new water inflow regime." (pg 12, Environmental Impact Matrix).

The extension of the Foreshore tailings surface cap has the potential to "initial increase in waterborne sediments in the form of rock dust and disturbed sediments. This will temporarily degrade the fish habitat and may mobilise some arsenic and other contaminants (antimony, chromium, copper, zinc, lead, nickel, vanadium)." (pg. 11, Environmental Impact Matrix).

"Water from the underground mine, if the level is not controlled, would form contaminated ponds within the pits. Baker Creek, if not controlled could flow into the pits and disappear into the underground mine." (pg. 149, Giant Mine Remediation Plan)

water quantity changes

The amount of raw water to be drawn from Yellowknife Bay to the Great Slave Lake is expected to be ~90-180 m³/day (between 32850m³ and 65700m³ per year in 2008 and 2009 and will drop to ~20m³/day (7300m³/year) in the following years

Drainage pattern changes

Changes to the current drainage pattern will occur from:

- the relocation of the current Baker Creek Channel; and
- South, Central, North, Northwest, Polishing, and Settling Ponds will be regraded to direct surface run-off water into the underground for water storage.

temperature

wetland changes / loss

other:

N/A

IMPACT
3. Noise

MITIGATION

*CONDITION SECTION
LOCATION 26(1)*

noise in/near water

No Mitigation. Noise in and near water will temporarily increase as a result of vehicle movement, construction activities, pumping of water, and blasting activities.

other: noise increase

No Mitigation. The activities expected to increase the localized noises are:

- road realignment;
- Noise from chiller unit operation may cause noise which will impact on sound quality for as long as chillers operate (pg. 3, Environmental Impact Matrix);
- modification of Baker Creek Channel;
- earth moving activities;
- decommissioning of mine infrastructure;
- blasting/drilling activities;
- operation of heavy equipment and vehicles;
- demolition and removal of buildings currently on site; and
- Construction and use of access roads to new borrow sources and quarry areas.

N/A

IMPACT

4. Land

MITIGATION

**CONDITION SECTION
LOCATION 26(1)**

geologic structure changes

No mitigation. Changes to geologic structures during this project are anticipated in the construction of a new channel for Baker Creek. Other activities which have the potential to result in scarification and modification of local terrain include earth moving, blasting and drilling activities. Backfilling of current pits will leave a positive impact to the current geologic structures.

soil contamination

The blasting activities associated with this project have the potential to contaminate soil through the deposition of residue blasting materials, contaminated dust, and contaminated blasted materials.

"Vehicles leaving the underground drilling operations may carry contaminated dust". (pg. 5, Environmental Impact Matrix)

Soil contamination is probable with the use of all vehicle and heavy equipment; therefore, a spill contingency plan will need to be submitted to the MVLWB to mitigate this concern.

Haul activities associated with the relocation of contaminated surficial materials from areas 1 (Mill), Areas 4 (Baker Creek & below Dam 1), Areas 8 (Back Bay Tailings), Areas 2(arsenic contamination and likely tailings spill going to tailings north); 3 (arsenic contamination and likely tailings spill going to tailings north); 5 (wind blown tailings in the area of the propane tank farm;); 6 (town site arsenic and arseno pyrite); 7 (former hydrocarbon tank farm with hydrocarbon material and arsenic); 9 (east of dam 3) will cross the highway and has the potential to lead to road interference and spillage. (Page 17, Environmental Impact Matrix)

buffer zone loss

soil compaction & settling

Heavy equipment and vehicle movements have the potential to increase localized soil compaction and settling. "Construction vehicles may increase traffic loads and may damage poor road surfaces further". (page 2, Environmental Impact Matrix)

destabilization / erosion

permafrost regime alteration

No Mitigation. Changes to the current permafrost regime are associated with the freezing of underground chambers using the frozen block method.

other: explosives/scarring

The impacts of blasting/scarring activities during the project are expected to have a localized impact on the land. "Dust and rock cuts will cause visual impacts". (pg. 2, Environmental Impact Statement).

N/A

IMPACT

**5. Non Renewable
Natural Resources**

MITIGATION

**CONDITION SECTION
LOCATION 26(1)**

resource depletion

other:

N/A

The proposed application does not deal with any extraction of a non-renewable resource.

IMPACT

**6. Air/Climate/
Atmosphere**

MITIGATION

**CONDITION SECTION
LOCATION 26(1)**

Other: Emissions

There will be some emissions from vehicles and pumps. This will be minimal, short term and reversible, as the vehicles should meet the standards for emissions.

Other: Dust (TCA's and road construction)

The earth moving activities associated with: blasting activities, backfilling of pits, road construction, remediation of existing quarries, and other decommissioning activities has the potential to remobilize arsenic and other residual contaminant materials into the air and the surrounding vegetation. (Environmental Impact Statement).

The re-suspension of contaminated material via wind and water erosion from the Polishing and Settling Ponds as well as the South, Central, Northwest and North Ponds will be partially prevented through the construction and establishment of a self-sustaining vegetative cover.

Mitigation of dust during dry and dusty conditions can be mitigated through dust suppression with water or chemicals. (Environmental Impact Matrix).

N/A

BIOLOGICAL ENVIRONMENT

IMPACT	MITIGATION	CONDITION SECTION LOCATION 26(1)
1. Vegetation		
<input checked="" type="checkbox"/> species composition	The Northwest, South, Central and North Ponds will be recontoured and revegetated to achieve a self-sustaining vegetative cover that will be dominated by native plant types within several years. Overall, impacts in the vegetation associated with this project will be positive changes.	
<input checked="" type="checkbox"/> species introduction	The ponds will be planted with native species with fast growing species to establish initial growth. It is expected that the vegetative cover will be dominated by native species in the longer term.	
<input checked="" type="checkbox"/> toxin / heavy accumulation	"Soil will be disturbed during construction, possibly mobilizing arsenic dust but at least soil dust, impacting plants, animals and possibly human safety. Dust covers plants, soil, water, and the surrounding area (possibly with contaminated material), which could slow plant growth due to reduced light absorption." (page 3, Environmental Impact Matrix)	
<input type="checkbox"/> other:		
<input type="checkbox"/> N/A		

IMPACT	MITIGATION	CONDITION SECTION LOCATION 26(1)
2. Wildlife & Fish		
<input type="checkbox"/> effects on rare, threatened or endangered species		
<input type="checkbox"/> fish population changes		
<input type="checkbox"/> waterfowl population changes		
<input type="checkbox"/> breeding disturbance		
<input type="checkbox"/> population reduction		
<input type="checkbox"/> species diversity change		
<input checked="" type="checkbox"/> health changes (Identify)	The health of wildlife & fish can be impacted through the remediation of Baker Creek and the Back Bay Tailings by the "initial increase in waterborne sediments in the form of rock dust and disturbed sediments. This will temporarily degrade the fish habitat and may mobilize some arsenic and other contaminants (antimony, chromium, copper, zinc, lead, nickel, vanadium)." (pg. 13, Environmental Impact Matrix)	
<input checked="" type="checkbox"/> behavioural changes (Identify)	Blasting activities has the potential to scare wildlife out of the area.	
<input checked="" type="checkbox"/> habitat changes / effects	Project activities that have the potential to impact on Habitat changes/effects for wildlife & fish are: <ul style="list-style-type: none"> • Construction and installation of discharge pipes (raw water supply system to plant) will go across the land surface and may interfere with animal passage across the site. (pg 13, Environmental Impact Matrix) • The following project activities has the potential to impact fish/wildlife habitat due to "blasting is also likely to cause (arsenic dust and other contaminant dust) and dust mobilisation impacting road users and covering plants, soil, water, and the surrounding areas possibly with contaminated material but at least with dust," 	

(Environmental Impact Matrix): Realignment of Highway 4; Development of underground access for horizontal freeze pipes; construction of roads and pads; Drilling and installation from surface freeze pipe casing; distribution line from freeze plant to freeze pipe collars and casings installation and operation; Construction of Fence/Pit Berms; Regrading of the South/Central/North/Northwest ponds; Remediation of existing quarries; Extraction and rehabilitation of borrow sites; Remediation of contaminated surficial materials; decommissioning of hazardous buildings

- Modifications and alterations to both Baker Creek and the shoreline of the Great Slave Lake have the potential to disturb fish habitat. (Giant Mine Remediation Plan).
- The construct and complex Baker Creek channel reconstruct covering of tailings and construction of wetland; divert trapper creek runoff into new Baker Creek Channel. Will result in "an initial increase in waterborne sediments in the form of rock dust and disturbed sediments. This will temporarily degrade the fish habitat and may mobilise some arsenic and other contaminants (antimony, chromium, copper, zinc, lead, nickel, vanadium)." (page 13, Environmental Impact Matrix)

game species effects

toxins / heavy metals

The South, Central, North and Northwest tailings ponds will be capped with a two-layer cover (bottom layer will be a crushed material and the upper layer will be locally borrowed silt and silty clay) with the potential of including a geotextile layer. "The final design will define all cover materials and depths, and such details as access, monitoring, and sediment control during construction. Studies to select vegetation species and define seeding and fertilization requirements are still needed." (pg. 158, Giant Mine Remediation Plan).

"The Settling and Polishing Ponds will be closed with the construction of a spillway through the bedrock outcrop south of Dam 1, and construction of a cover similar to that proposed for the tailings (details same as above). To minimize settlement damage to the cover, it would be underlain with a filter cloth placed directly on the sludges. The option of using contaminated soils to consolidate the sludge is also under consideration." (pg. 159, Giant Mine Remediation Plan).

"The calcine layer is covered with fine-grained clayey silt material that is effectively isolating the calcine. It is proposed that this material remain in place. Should it be determined during closure activities that the overburden material is required elsewhere on the site, the calcine layer would be excavated and disposed with other soils identified as contaminated". (pg. 160, Giant Mine Remediation Plan).

There is a potential for continued erosion of the beached tailings into Yellowknife Bay. "The proposed Remediation Plan is to further stabilize the beached tailings by extending the existing geotextile and rip-rap cover below the lake surface to cover the tailings where they occur in littoral zone." (pg. 160, Giant Mine Remediation Plan).

forestry changes

agricultural changes

other:

N/A

INTERACTING ENVIRONMENT

IMPACT	and	MITIGATION	CONDITION SECTION
1. Habitat Communities			LOCATION 26(1)

predator-prey

wildlife habitat / ecosystem

Composition changes

reduction / removal of keystone or endangered species

removal of wildlife corridor or buffer zone

other:

N/A

IMPACT
2. Social and Economic

planning / zoning changes or conflicts

increase in urban facilities or services use

rental house

airport operations / capacity changes

human health hazard

impair the recreational use of water or aesthetic quality

affect water use for other purposes

affect other land use operations

MITIGATION

"Construction of the onsite road may preclude the construction of the off site road resulting in lower economic benefit and could be in conflict with the regional development plan." (page 2, Environmental Impact Matrix)

- The Freeze Plant will require industrial grade power installation of up to 2.7 megawatts which has the potential to impact the current power system.
- Heavy equipment/truck movement has the potential to increase traffic and reduce the quality of the road surfaces in the area. "Construction vehicles may disrupt traffic, may increase traffic loads and may damage poor road surfaces further". (pg 2, Environmental Impact matrix)

"Air and Road traffic disruption due to blasting activities requiring exclusive zones". (pg. 1, Environmental Impact Matrix)

- Post closure access to any areas potentially dangerous to human health and/or safety will be identified by appropriate signage and, predicted on site-specific circumstances, may be fenced or otherwise controlled in an acceptable manner. Mitigation includes: controlled inadvertent access to the site. This controlled access will address public health and safety issues and ensure optimum conditions for initiating vegetation growth on the mine lease area.
- "Dust is likely to contain arsenic so air quality will be reduced during dry dusty conditions and may pose short term public health and safety impacts." (page 8, Environmental Impact Matrix)

Access to the marina may be impacted or compromised through project activities.

"Blasting activities will disrupt traffic and possibly air traffic. Blasting is also likely to cause (arsenic dust and other contaminant dust) and dust mobilization impacting road users and covering plants, soil, water, and the surrounding area possibly with contaminated material but at least with dust. Construction vehicles may disrupt traffic, may increase traffic loads and may damage poor road surfaces further." (page 2, Environmental Impact Matrix)

- Movement of 170 000m³ of highly contaminated surface material from Area 1 (the mill) to the B1 Pit (via the public highway) has the potential to interfere with highway traffic. (pg. 16, Environmental Impact Matrix)
- Movement of 110 000m³ of highly contaminated arsenic materials from Area 4 (Baker Creek & below Dam 1) to the North Pond (via the public highway) has the potential to interfere with highway traffic (pg. 17, Environmental Impact Matrix).
- Movement of 2300m³ of highly contaminated arsenic materials from Area 8 (original Back Bay Tailings) (via public highway) has

CONDITION SECTION
LOCATION 26(1)

the potential to interfere with highway traffic. (pg 17, Environmental Impact Matrix)

- Movement of tailings and highly contaminated arsenic materials from Areas 2(arsenic contamination and likely tailings spill going to tailings north); 3 (arsenic contamination and likely tailings spill going to tailings north); 5 (wind blown tailings in the area of the propane tank farm;); 6 (town site arsenic and arseno pyrite); 7 (former hydrocarbon tank farm with hydrocarbon material and arsenic); 9 (east of dam 3) will cross the highway and has the potential to lead to road interference and spillage. (Page 17, Environmental Impact Matrix).

quality of life changes

public concern

The Yellowknives Dene First Nations have made the following statements:

- "We believe that there are a large number of unresolved issues and indeed some of the impacts of the remediation are not well known."
- "While extensive studies have been conducted we believe that the technology which is being proposed is relatively new, is untried and must be examined in depth."
- "We believe that it is essential that there be a full impact review and Public Hearing of this Application so that there be a complete and open discussion that all interested parties may attend and provide their input"
- "We nonetheless feel that full Environmental Assessment be conducted of the proposed project before it is allowed to proceed."

The City of Yellowknife has made the following statement:

- "Due to the proximity of this site to the City and it's residents, it is imperative that remediation be carried out properly and the City would appreciate ongoing involvement either through a Working Group or other process."

other:

Highway realignment activities have the potential to disrupt air and road traffic due to blasting activities.

N/A

IMPACT
3. Cultural and Heritage

MITIGATION

CONDITION
SECTION LOCATION
26(1)

effects to historic property

increased economic pressure on historic properties

change to or loss of historic resources

It is implied that there may be a potential conflict between Mining Heritage's intentions to maintain A Shaft/Compressor House/Museum. "A Shaft (heritage society would like to retain this and the compressor house in addition to the museum)". (pg. 20, Environmental Impact Matrix)

change to or loss of archaeological resources

There are 3 known archaeological sites within the Giant Mine property. The current integrity of the sites are unknown and may have been disturbed or destroyed, and Prince of Wales Northern Heritage Center has requested access to these sites in the spring to assess the sites further and mitigate the sites (if necessary) by collecting any remaining artifacts.

The Proponent has committed to work with Prince of Wales Northern Heritage to mitigate potential damage to the sites.

increased pressure on archaeological sites

change to or loss of aesthetically important site

effects to aboriginal lifestyle

other:

N/A

NOTES:

Consultation

- Pursuant to Section 1.6 (a) and (b) of the **Akaiitcho Territory Dene First Nations** (ATDFN) Interim Measures Agreement, the MVLWB determined that written notice was given to the ATDFN and that a reasonable period of time was allowed for ATDFN to make representations with respect to the application.
- Pursuant to Schedule 4.1 of the **Northwest Territory Métis Nation** (NWTMN) Interim Measures Agreement, the MVLWB determined that written notice was given to the NWTMN and that a reasonable period of time was allowed for NWTMN to make representations with respect to the application.

PRELIMINARY SCREENER / REFERRING BODY INFORMATION

October 26, 2007

Application MV2007L8-0031

DISTRIBUTION LIST by Fax NORTH SLAVE REGION**FIRST NATIONS**

Chief Edward Sangris	Yellowknives Dene First Nation (Dettah)	29	873-5969
Chief Fred Sangris	Yellowknives Dene First Nation (Ndilo)	30	873-8545
Chief Adeline Jonasson	Lutselk'e Dene First Nation	34	867-370-3143

COMMUNITY

Mayor Gordon Van Tighem	City of Yellowknife	54	920-5649
-------------------------	---------------------	----	----------

ABORIGINAL ORGANIZATIONS

Camilla Zoe-Chocolate	Dene Nation	40	920-2254
Dora Enzoë	Akaiicho Pre-screening Board	52	867-370-3209
President Bill Enge	North Slave Métis Alliance		867-669-7442
Director	Tli Cho Lands Protection Environment	22	867-392-6862
President North Douglas	Rae-Edzo Métis Local #64	26	PREFERS EMAIL rae_edzometisnation@theedge.ca 371-5406
President Vern Jones	Northwest Territory Métis Nation	45	867-872-2772

GOVERNMENT

Darnell McCurdy	South Mackenzie District Office	57	669-2720
Kathleen Racher	DIAND – Water Resources		669-2716
Angela Norris	Mineral & Petroleum Resources Directorate	59	669-2705
Julie Jackson	Policy & Planning – INAC		669-2736
Janice Murphy	Intergovernmental Affairs – INAC		MurphyJ@inac-ainc.gc.ca
Dave Jones	GNWT - MACA	62	920-6343
Erica Nyssonen	GNWT- ENR		873-0221
Claire Singer	GNWT - ENR	63	873-4021
Rhonda Batchelor	GNWT - DOT	64	920-2565
Duane Fleming	GNWT - Health	65	669-7517
Tom Andrews	GNWT – PWHM		873-0205
Josephine Simms	GNWT – WCB		873-4596
Greg Brady	GNWT – ITI		873-0645
Mike Fournier	Environment Canada	66	873-8185
Ernie Watson	DFO	68	669-4940

OTHERS

Vern Christensen	MVEIRB	50	766-7074
Jane Howe	NWT Chamber of Mines		669-9293

REASONS FOR DECISION

(LIST ALL REASONS AND SUPPORTING RATIONALES FOR PRELIMINARY SCREENING DECISION)

DECISION:

Detailed Reasons for Decision will be issued under a separate cover.

PRELIMINARY SCREENING DECISION	
<input checked="" type="checkbox"/>	Outside Local Government Boundaries
<input type="checkbox"/>	The development proposal might have a significant adverse impact on the environment, <i>refer it to the EIRB.</i>
<input checked="" type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input type="checkbox"/>	The development proposal might have public concern, <i>refer it to the EIRB.</i>
<input checked="" type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input type="checkbox"/>	Wholly within Local Government Boundaries
<input type="checkbox"/>	The development proposal is likely to have a significant adverse impact on air, water or renewable resources, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>
<input type="checkbox"/>	The development proposal might have public concern, <i>refer it to the EIRB.</i>
<input type="checkbox"/>	<i>Proceed with regulatory process and/or implementation.</i>

Preliminary Screening Organization

Mackenzie Valley Land and Water Board

February 20, 2008

Signatures

