Homestake Canada Inc.

Application for Approval of Disposal of Shear Lake Waste Rock Located at the Cullaton Lake Property

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OBJECTIVE OF THIS DOCUMENT

The objective of this document is to seek approval to dispose of approximately 35-40,000 cubic metres of potentially acid generating waste rock under water in Shear Lake. This rock is currently located on the Cullaton Lake mine site alongside Shear Lake. This document will provide a history of the site and a detailed description of the proposed project.

SITE DESCRIPTION

Site Location

The Cullaton Lake Gold Mines property is located in the southern part of the District of Keewatin in the Nunavut Territory, at 61° 16' North latitude and 98° 30' West longitude. The property is 250 km west of Arviat, NU, 400 km northwest of Churchill, Manitoba and 645 km north of Thompson, Manitoba (see Figure 1). Access is by helicopter or fixed wing plane. A gravel strip is located at the north end of the property. The property consists of three surface leases and fifteen mining leases (see Figure 2 for the overall plan of the site).

Landscape and Climate

The landscape is fairly flat with only minor undulations and rocky outcrops, and has no visible mountains. The highest elevations on the mine property occur on a small hill to the northwest of the gravel airstrip (elevation 289 m) and on a hill 15 km to the southwest of the mine site (elevation 340 m). The mine site is at an elevation of 265 m. The hummocky terrain consists of either bedrock covered with shallow, surficial soils, or a bouldery glacial till cover with localized, shallow soil deposits. The property is located in a zone of discontinuous permafrost, about 100 km north of the treeline. The area is generally devoid of trees, except in the vicinity of large bodies of water and the Kognak River where stunted black spruce, tamarak and willows grow. The dominant vegetation is predominately mosses, grasses and shrubs.

The site is characteristic of Canadian Shield topography with numerous small lakes. The area between the airstrip and the mine site is dotted with small lakes, most no more than shallow depressions in the bedrock. The area's major river, the Kognak, is located approximately 2 km south of the millsite and 5 km east of the Shear Lake site. It flows in an easterly direction and drains into Hudson Bay.

The climate is characterized by low temperatures, low precipitation, strong winds and a short growing season.

Geology and Mineralization

The Cullaton Lake area lies within the Churchill Structural Province of the Canadian Shield in what is termed the Kaminak Subprovince, a Precambrian greenstone belt which extends from the Saskatchewan border to Rankin Inlet. The Cullaton Lake gold mineralization has been known since the early 1960's with the discovery of the ore body by Selco Exploration Co. Two ore zones were identified.

The B-Zone deposit is situated in a belt consisting of clastic sediments, pillow lavas and iron formations. This assemblage is indicative of an eugeosynclinal envrionment. The iron formation consists of four distinct facies, carbonite, silicate, oxide and sulphide. The gold mineralization is confined in a strata bound nature to the sulphide facies iron formation. Pyrrhotite and pyrite are the dominant sulphides, with lesser amounts of arsenopyrite and chalcopyrite. The gold occurs free in the non-metalliferous gangue and shows no preference to one sulphide.

The Shear Zone is located in a discontinuous ridge outcrop of orthoquartzite. The orthoquartzite is white with variations of pink to red, fine-grained to glassy, and varies from thin-bedded to thick-bedded or massive. Typically, the orthoquartzite is composed of 97% or more quartz with only scattered sericite, feldspar and magnetite. Gold occurs in the fractured and sheared orthoquartzite.

The B-Zone is located at the former mill site and the Shear Zone is located approximately 4 km to the north, alongside Shear Lake and close to the airstrip.

Site History

The mine was partially developed in 1975 by O'Brien Gold Mines, with the development of a 110 m decline. However, for economic reasons the project was put on hold. In 1980 plans were developed to extend the decline and drill to confirm previous metallurgical testwork. Based on the results of this testwork a decision was made to develop the mine. The Cullaton Lake mine was in operation for four years, from 1981 to 1985, under Water Licence N6L2-0940. The two ore zones were mined during this time, first the B-Zone and then in 1984, the Shear-Zone. The mine closed in August 1985. Between September 1985 and summer 1991 the mine was in a care and maintenance phase.

International Corona Corporation (property owner since 1985) began decommissioning the property in 1991/92. Activities included the rehabilitation of the Tailings Pond #1 dam including construction of a spillway in the dam, covering of the exposed tailings with water or with till/mine rock, and the elimination of Tailings Pond #2 (the polishing pond). The fresh water intake, pump house and pipelines at the old diamond drill camp on the Kognak River were dismantled and removed in 1991.

Homestake Canada Inc. acquired the property in 1993 during an amalgamation with International Corona Corporation. After a review of the site in 1994, Homestake continued with the reclamation of the property. An Abandonment and Restoration Plan was developed in 1995 and submitted to Department of Indian Affairs and Northern Development (DIAND) and the Northwest Territories (NWT) Water Board in 1996. In 1995 and 1996 the mill buildings were dismantled. Inert, non-salvageable material was crushed and placed in the quarry pit. In 1997, additional cover material was placed over the tailings cover and the tailings area was seeded and fertilized with a specialized arctic seed mix. The former mill site was also seeded and fertilized. During the winter of 1998/99 some salvageable equipment was removed from the site.

Homestake applied to the Nunavut Water Board (NWB) for a water licence renewal in April 1999. Licence NWB1CUL9902 was issued by the NWB effective September 1, 1999, and expiring October 31, 2002.

PROJECT BACKGROUND

During a review of reclamation alternatives in 1990, the waste rock and tailings material at Cullaton Lake underwent Acid Base Accounting (ABA) analysis at the CANMET, Elliot Lake, Laboratory. The tailings material also underwent kinetic testing in the form of column lysimeter leaching tests.

Although characterized by very low sulphide contents, both the B-Zone and Shear-Zone tailings had a negative net neutralization potential (NNP) and were amenable to oxidation, and thus acid rock drainage (ARD), under favourable laboratory conditions. Therefore, decommissioning included oxygen limiting barriers. As recommended by CANMET, permanent saturation under a water cover was chosen as the decommissioning alternative for a portion of the tailings. The remainder were covered with 1.4 m of overburden, also to limit oxygen ingress. The tailings have remained non acid generating.

At the same time, the B-Zone and Shear-Zone waste rock was analyzed by CANMET for total sulphide content, total acid production potential, total alkalinity and NNP (see Table 1). The sulphur content of the waste rock from both locations was low (comparable to the tailings), while the NNP of the two zones differed. B-Zone waste rock had high NNP because of its carbonate content. Shear-Zone however, had a low NNP. The CANMET study concluded that because of the high alkalinity and NNP of the B-Zone waste rock, a mix of B- and Shear-Zone waste rock would result in a combined high NNP for the waste rock.

It was the practice, during operations, to mix the B-Zone and Shear-Zone waste rock with other Cullaton Lake rejects and overburden for deposit within the tailings. However, most of the Shear-Zone waste rock was not mixed during operations and remained at the Shear Lake waste dump and low-grade ore storage area. During the mine shutdown period (October 1985) this material was contoured to match the surrounding landscape.

Waste Rock Quantity

The volume of waste rock located at Shear Lake has been compiled from monthly reports which estimated the amount of waste removed from the Shear-Zone development. The maximum volume of waste rock removed from the mine was 41,400 m^3. Some of this rock was removed during operations according to the records. Homestake estimates that approximately 35,000 m^3 remains at the Shear Lake site, spread out into a pad in front of the adit and piled adjacent to (and into) the lake.

Onset of Acidic Drainage

No evidence of ARD was identified during periodic inspections of the Shear Lake site in the years since mine closure. However, during the September 2000 site inspection an area of dying vegetation was identified along the toe of the waste rock. Eleven rock samples, as well as two soil samples were collected for ABA analysis and ICP metals in October, 2000. At the same time seven water samples were collected and analyzed for total and dissolved metals, pH, sulphate, acidity, chloride and hardness.

Acid Base Accounting (ABA) Data and SWEP Test Results

The waste rock samples were characterized by paste pH values of 4.0 to 5.5. Sulphide sulphur concentrations ranged from detection limit (0.02%) to 1.2% while sulphate sulphur concentrations were below detection. Neutralization potentials (NP) of the samples were very low, indicating that there is virtually no capacity for these materials to neutralize acid, and net neutralization potentials were near zero or negative. Although the acid generation potential for approximately one half of the samples is very low, there is no neutralizing capacity in the rock and therefore they are classified as Potentially Acid Generating (PAG). Total metal concentrations of the samples were also low. This was expected due to the type of rock (orthoquartzite) which is essentially pure quartz with accessory sulphides. (See Table 2).

The two soil samples (Soil A-00 and Soil B-00) contained no neutralizing capacity. One sample contained approximately 0.1% sulphate, the other 0.03%, and the paste pH was 3.1 and 4.1. The soil samples had higher metal concentrations than the rock samples, but still at low concentrations.

A modified SWEP test was conducted on the waste rock and soil samples. The SWEP tests confirmed that there are low concentrations of leachable metals in the waste rock (Table 3).

Surface Water Data

Seven water samples were collected from the site in October; three from the Kognak River and four from the immediate area around the waste rock dump (Table 4). The Kognak River samples were characterized by low concentrations of total and dissolved metals, and neutral pH, both upstream and downstream of the mine site.

The Shear Lake sample had a pH of 6.0 and the creek exiting Shear Lake had a pH of 4.2. Similar sulphate concentrations of 15 mg/L and 14 mg/L respectively, characterized both samples. Dissolved metal concentration from the lake and creek were generally at or below detection. (See Table 5 for 1998 data)

The 'A-00' and 'B-00' water samples were collected from the tundra down gradient of the waste rock dump in the area of dying vegetation. The A-00 sample had a pH of 2.9 a sulphate concentration of 830 mg/L and elevated metal concentrations, most notably dissolved zinc (0.3mg/L). The B-00 on the other hand, had a neutral pH and sulphate concentration of 45 mg/L, with metal concentrations generally below detection.

Consultants Recommendations and Additional Information

URS Corporation, environmental consultants, reviewed the ABA and water quality data. Their conclusions were as follows.

- The Shear Zone waste dump is composed mainly of orthoquartzite containing variable amounts of sulphide, primarily in the form of pyrrhotite and pyrite. Sulphide contents run up to 1.2%. The dump rock appears to have no neutralizing capacity. Approximately one-half of the rock samples analyzed are potentially acid generating (PAG).

- Water discharging from the waste rock dump is acidic, but appears to be low in metals. However, the B-00 sample suggests that zinc concentrations could be elevated.

- The recent appearance of the dying vegetation is likely related to the consumption of the available NP within the waste rock dump over the last 15 years and the subsequent production of acidic leachate.

- The data suggests that acidic water is leaching from the waste rock dump and entering Shear Lake Creek via Shear Lake and possibly through dump runoff directly into the creek. There is no apparent influence on the Kognak River.

URS Corporation recommended that Homestake complete additional testing to characterize the acidic leachate. Humidity cells were started in December using two rock samples, originally collected for the ABA tests, that contained enough material for the additional testing. Preliminary results (1 month) have been received and are appended to this document (Table 6). The humidity cell test results indicate a trend of decreasing metals.

A number of options for remediation of the acidic, low metals waste rock found at Shear Lake were reviewed by Homestake. These options are listed in the next section.

CONSTRAINTS AND ALTERNATIVE SOLUTIONS

Principal Constraints

- ***Remote Location and Limited Support.*** The remote location and difficulty of mobilizing/demobilizing equipment to the site for this project favours a solution that can be completed in one field season.

- ***Desire to Complete Remediation concurrent with Site Clean-up.*** Heavy equipment and contractors will be on site during the summer, 2001 to complete the site clean-up. It is practical to complete both projects at the same time, when equipment to do so is available on site.

- ***Requirement for No Long Term Maintenance.*** Due to the remoteness of the site Homestake wishes to implement a solution that will require no long-term maintenance.

- ***Confidence in Remediation Option.*** Each option carries with it some risk of failure. The option chosen should minimize that risk.

Assessment of Alternatives

Homestake reviewed a number of remediation options, and a preferred option was chosen. The alternatives and assessment of each one are listed below.

- ***Do Nothing.*** Depending upon the expected length and load of acid generation, the waste could be left as is. This options assumes that the impact from the runoff will be minimal and/or not exceed the present impact. Not preferred. Runoff will continue to impact vegetation until the acidity in the rock is exhausted. Detailed evidence (such as long term kinetic testing) that the impact from acidic runoff will be minimal or will not exceed the present impact, is not yet available.

- ***Increase pH/alkalinity of Shear Lake.*** Lime addition to Shear Lake would increase the pH and alkalinity of the lake. Discharge of this lake water down the creek would serve to neutralize seepage from the waste rock dump that entered the creek downstream. Lime addition would likely have to be done several times per year until the acid generation ceased. Not preferred. Lime addition would not prevent acid generation. Although the water in the lake and creek would most likely remain neutral, runoff from the rock pad would still impact the tundra vegetation downgradient of the site. Also, considering the constraints above, lime addition would mean making several trips to the site each year for an undetermined number of years. The remoteness of the site would make this difficult to accomplish.

- ***Consolidate Waste and Cap.*** The waste rock could be consolidated into a single pile and capped with local material, preferably with a high neutralizing capacity. Once the cap was in place, infiltrating precipitation would pick up alkalinity from the cap rock and help neutralize the waste rock acidity. Not preferred. Cover material is scarce in this location. Minimal topsoil exists over bedrock, and, across much of the landscape, the bedrock is exposed. Geological reports indicate some dolomite rock located two to three kilometres northeast of the site. Covering the waste rock with this material would not prevent acid generation, but the dolomite would lessen the impact. However, bringing this rock to the site (if it is even available at the surface) would involve quarrying and blasting the rock as well as building a road across the tundra for transportation to Shear Lake. This alternative would disturb a large area of the tundra and would in itself cause an environmental impact.

- ***Collect drainage from Waste Dump Runoff.*** A ditch constructed around the base of the rock dump would collect seepage and direct it to either Shear Lake Creek or Shear Lake itself. This would reduce the impact of the seepage on the tundra down gradient, and allow the seepage to be diluted, treated or both (i.e. mixed with limed lake water). Not preferred. This option would not prevent acid generation; rather it is a 'collect and treat' alternative which is not practical for a remote location. As with the lime addition above, this option would mean making several trips to the site each year for an undetermined number of years to inspect the ditch, repair if necessary and to add lime to the lake and creek. The remoteness of the site would make this difficult to accomplish.

- ***Blend with B-Zone Waste Rock.*** The waste rock could be transported to the B-Zone dump and mixed to provide neutralizing capacity. This option depends upon the volume of B-Zone waste rock available and on the neutralizing efficiency of the mixed wastes. Not preferred. There is a very small pile of B-Zone waste rock located near the B-Zone portal. The volume of rock would not be sufficient to neutralize the Shear-Zone rock and would not solve the problem.

- ***Place in Tailings Impoundment.*** The waste rock could be hauled to the tailings impoundment and submerged. Sufficient water volume would be required to submerge the waste rock. Not preferred. There is approximately 1 meter of water over the tailings material in the tailings pond. Placement of the rock in the tailings would destabilize the tailings and would reduce the depth of water cover, thereby allowing oxygen to infiltrate down to both the waste rock and the tailings, leading to oxidation of both. This option has the potential to cause the onset of acid generation from the tailings impoundment.

Preferred Alternative

Submerge Waste Dump in Shear Lake. The most effective means of limiting the acid generating potential of waste rock is to prevent the oxidation process from occurring by permanently storing the rock under water. Consequently this approach is the preferred alternative for remediation of the Shear Lake waste rock.

The waste rock dump will be pushed into Shear Lake and submerged in order to reduce acid generation. The capacity of the lake is such that all the rock could be submerged, allowing a significant volume of water to remain on top. The lake was dammed at its inlet and all fish (consisting of less than fifty minnows) were removed in 1984 during a dewatering project designed to allow drilling of the lake bottom. The lake has since refilled, however it is believed that no fish remain in the lake.

WASTE ROCK DISPOSAL

General Considerations

Due to the low solubility of oxygen in water, underwater disposal can essentially prevent sulphide oxidation, thereby reducing acid generation and metal leaching to levels that generally no longer prose an environmental concern (Price and Errington, 1998).

Three important considerations of underwater storage are the existing concentrations of soluble contaminants in the waste rock, the amount of weathering prior to disposal, and the permanence of the water cover.

1. The Shear Lake waste dump is composed mainly of orthoquartzite rock containing variable amounts of sulphide, primarily in the form of pyrrhotite and pyrite. There are almost no metals in this rock. As is evident from the SWEP tests and early humidity cell results, any metal leaching that is occurring is restricted to a few elements and is in low concentrations.

2. The waste rock has had a significant period of aerial weathering prior to flooding (>15 years), therefore there may be a build-up of soluble acidity in the dump. A sampling program will be conducted during and after disposal to identify any increase in acidity in the lake. A contingency plan has been developed should this occur (see page 11).

3. Based on a study of Shear Lake completed in 1984, the volume of the lake is 384,000 m^3. There are two deep areas, one at each end of the lake (2.7 m and 4.2 m) and a shallow bridge near the middle (0.6 m). The total volume of waste rock (up to 40,000 m^3) will fill 11% of the volume of Shear Lake. The rock, therefore, could be placed at a significant depth in the lake to prevent oxidation. As the lake is a stable component of the landscape, the rock will remain permanently flooded in this storage location

Waste Rock Disposal Procedure

The waste rock is currently located alongside Shear Lake, and a portion of the waste rock pile extends into the lake. The rock will be pushed into the lake by developing a causeway out into the deep sections of the lake with waste rock, then pushing rock out onto the causeway (or alternatively dumping it onto the causeway) and dozing it below the water level. At the end of the operation the causeway will be dozed under water as well. A detailed operations plan will be developed once a contractor has been selected for this project. The plan will be forwarded to the appropriate regulatory authorities at that time.

CONSIDERATION OF POTENTIAL EFFECTS AND PROPOSED PREVENTATIVE OR MITIGATIVE MEASURES

Kognak River Water Quality

The Kognak River, one of five major river systems in the Keewatin draining into Hudson Bay, winds its way south and the east of the mine. The river is approximately 5 kilometres east of Shear Lake, with undulating tundra and a number of small lakes in between. The river water is typically ice covered from mid October until early to mid June. The river water was routinely sampled and analyzed during mining operations and afterward until 1994. The mine had no effect on the river either during or after mining. Water samples taken upstream and downstream of the site in 2000 also show no effects from the Shear Lake site (Table 4). The Shear Lake waste rock dump will not directly impact the Kognak River.

Shear Lake Water Quality

Shear Lake is a small linear lake, located adjacent to the Shear–Zone area. It is a minor component of the local drainage system. The lake volume is approximately 384,000 m^3. There are two deep sections in the lake (2.7 m and 4.2 m) with a shallower bridge near the middle. The water in the lake is somewhat acidic with a pH of 5.0 in 1998 and 6.0 in 2000 (see Tables 4 and 5 for water quality data). The water exits the lake via a small creek, and flows eastward through a series of small lakes until it eventually reaches the Kognak River.

It is believed that this lake, like the surrounding small lakes, is devoid of fish. During the summer 1984, when the mine was operating, the Shear Lake dewatering project was approved by Department of Fisheries and Oceans (DFO), and involved the assistance of the NWT Department of Natural Resources and Department of Indian Affairs and Northern Development (DIAND) Water Resources Division. The intention of the project was to remove the water from Shear Lake in order to conduct an exploration drilling program. Prior to dewatering, all the fish in Shear Lake were live trapped and removed to Cullaton Lake. Only minnow species (less than 50 spine stickebacks and lake chub, and 1 slimy sculpin) were found in the lake. No commercial fish (arctic grayling and lake trout) were present. Two small streams emptying into the lake were dammed at that time and a diversion ditch was constructed around the lake. The lake has subsequently re-filled with water. However, after a review of aerial photographs of the site, it is likely that the gravel dams and the diversion ditch remain. Please see Appendix A for the Shear Lake Dewatering Report. At the time of the dewatering project DFO biologists concluded that commercial fish were not resident in the lake.

Protection of Water Quality and Aquatic Resources

Considering the low pH of the lake water, and the previous dewatering project, including damming and ditch diversion, it is unlikely that any fish are currently resident in the lake. Therefore, the major focus of water quality protection will be on the water exiting Shear Lake.

It was demonstrated by Homestake in 1994 at the Eskay Creek mine (see Contingency Plan section for details) that the addition of PAG waste rock to a lake can be done safely. Homestake intends to take the same careful approach to environmental protection during disposal of the waste rock into Shear Lake.

In order to monitor Shear Lake water quality, during and after this operation, a water monitoring program will be established. To begin with, during the dumping of the waste rock into the lake, field pH measurements will be taken daily and compared to previous years' measurements. As well, an environmental monitoring station will be located at the outlet of Shear Lake in order to monitor the water exiting the lake. Regular sampling throughout the summer is planned for total suspended solids, pH, sulphates, and total and dissolved metals. In addition, sampling at this location will be included in our regular sampling program for 2002. Water Quality in the Kognak River will also be monitored in 2001 and 2002. Samples will be taken both upstream and downstream of the site, at the same location as sampled in 2000.

Contingency Plans

The waste rock has had a significant period of aerial weathering prior to flooding (>15 years), therefore there may be a build-up of soluble acidity and some metals in the dump. When the rock is placed underwater these contaminants may flush from the rock causing a deterioration in water quality. Therefore, if the lake pH deteriorates during the placement of the waste rock, Homestake is prepared, as a contingency, to stabilize the waste to prevent the release of acid and associated dissolved metals. The basic approach to be taken was used by Homestake at the Eskay Creek mine in British Columbia in 1994. At that location, hydrated lime was mixed with the waste rock during the dump disposal program to neutralize acid and precipitate metals. Approximately 100,000 tonnes of weathered, acidic waste rock were removed from a storage dump and deposited into a non-fish bearing lake. The pH remained neutral and leaching of metals (with the exception of some iron) did not occur. At Shear Lake a similar strategy will be used for neutralization of acidity in the lake, should it be required.

Environmental Spill Response Plan

A spill response plan for the site was developed in 2000. A copy is included in Appendix B. The contractor selected for the mine reclamation work and the Shear Lake Waste Rock project will be required to follow the plan and to provide spill cleanup equipment and materials while working at the site.

PROJECT SCHEDULE

The Cullaton Lake mine reclamation project is scheduled for summer 2001. Homestake intends to have the same contractor complete both projects by early Fall. Figure 3 outlines the tentative schedule. Once the Contractor has been chosen and a final schedule developed, Homestake will forward the schedule to the appropriate regulator authorities.

REFERENCES

Diamond, M.L. and Meech, J.A. 1984. An Environmental Investigation of the Kognak River at Cullaton Lake Gold Mines.

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Morin. K. and Hutt, N. 1997. History of Eskay Creek Mine's Waste-Rock Dump from Placement to Disassembly.

Price, Dr. W.A. and Errington, J.C. 1998. Guidelines for Metal Leaching and Acid Rock Drainage at Minesites in British Columbia. Ministry of Energy and Mines.

FIGURES AND TABLES

Table 1 B- and Shear-Zone ABA 1990. CANMET Study

Sample No.	Total Sulphur (Wt. %)	Total Acid Production kg CaCO3/tonne	Total Alkalinity kg CaCO3/tonne	Net Neutralization Potential (NNP) kg CaCO3/tonne
1 Shear Zone	0.11	3.44	7.12	+3.68
2 Shear Zone	0.11	3.44	3.42	-0.02
3 B Zone	0.04	1.25	70.59	+69.34
4 B Zone	0.01	0.31	127.38	+127.07
5 B Zone	1.08	33.75	123.74	+89.99

Table 2 Shear-Zone ABA 2000. Rock and Soil Samples.

Sample	CO2 Inorg. (Wt. %)	CaCO3 Equiv. kg CaCO3/tonne	Total Sulphur (Wt. %)	Sulphate Sulphur (Wt. %)	Sulphide Sulphur (Wt. %)	paste pH
Soil A-00	0.07	1.6	0.09	0.09	0.00	3.1
Soil B-00	<0.05	<1.1	0.03	0.02	0.01	4.1
Pad White-1	<0.05	<1.1	0.36	<0.01	0.36	4.2
Pad White-2	0.1	2.3	<0.02	<0.01	<0.02	5.2
Pad White-3	<0.05	<1.1	0.56	<0.01	0.56	4.5
Pad Orange	<0.05	<1.1	0.68	0.01	0.67	4.0
Pad Yellow	<0.05	<1.1	<0.02	<0.01	<0.02	5.3
Pad Red	<0.05	<1.1	0.04	0.02	0.02	4.1
Toe 1	0.07	1.6	0.03	<0.01	0.03	5.5
Toe 2	<0.05	<1.1	1.17	<0.01	1.17	4.1
Toe 3	<0.05	<1.1	0.08	<0.01	0.08	4.5
Toe 5	0.1	2.3	0.07	<0.01	0.07	4.6
Toe 6	<0.05	<1.1	0.45	<0.01	0.45	4.5

Sample	Maximum Acidity kg CaCO3/tonne	Neutralization Potential kg CaCO3/tonne	Net Neutralization Potential (NNP) kg CaCO3/tonne
Soil A-00	0.0	-0.2	-0.2
Soil B-00	0.3	2.5	+2.2
Pad White-1	11.3	1.0	-10.3
Pad White-2	<0.6	0.0	0.0
Pad White-3	17.5	-0.5	-18.0
Pad Orange	20.9	0.0	-20.9
Pad Yellow	<0.6	0.7	+0.7
Pad Red	0.6	-0.2	-0.8
Toe 1	0.9	0.0	-0.9
Toe 2	36.6	-0.1	-37.6
Toe 3	2.5	0.0	-2.5
Toe 5	2.2	-0.2	-2.4
Toe 6	14.1	-0.2	-14.3

Table 2: Total Metals by Aqua Regia Digestion

ELEMENT	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	Ga
SAMPLES	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	ppm
Soil A-00	4.1	26	6	26	< .1	33	10	344	2.47	5	3	< 2	5	12	< .2	< .5	< .5	32	0.16	0.057	17	102	0.65	117	0.08	1	0.99	0.018	0.38	2	< 1	4	< 1	5
Soil B-00	3.9	18	5	31	< .1	30	9	509	1.64	4	1	< 2	3	22	< .2	< .5	< .5	28	0.31	0.058	14	90	0.6	113	0.057	1	0.86	0.016	0.27	2	< 1	3.1	< 1	4
Pad White 1	14.9	2	< 2	1	< .1	5	7	54	0.54	2	< 1	< 2	< 1	< 1	< .2	< .5	0.6	< 1	< .01	0.003	5	154	< .01	13	< .001	< 1	0.03	0.005	0.01	1	< 1	0.1	< 1	< 1
Pad White 2	10	2	< 2	1	< .1	3	1	55	0.22	1	< 1	< 2	1	1	< .2	< .5	< .5	< 1	< .01	0.002	3	132	0.01	6	< .001	< 1	0.03	0.003	0.01	1	< 1	0.1	< 1	< 1
Pad White 3	12.1	3	< 2	1	0.3	4	11	77	0.78	3	< 1	< 2	1	1	< .2	< .5	< .5	< 1	< .01	0.002	3	139	< .01	8	< .001	< 1	0.02	0.001	0.01	7	< 1	< .1	< 1	< 1
Pad Orange	8.5	8	6	4	1.4	5	8	37	1.34	4	1	3	1	1	< .2	< .5	1.7	2	0.01	0.006	2	115	< .01	41	< .001	< 1	0.04	0.004	0.01	75	< 1	0.1	< 1	< 1
Pad Yellow	14.3	2	< 2	1	< .1	3	1	100	0.25	1	< 1	< 2	< 1	< 1	< .2	< .5	< .5	< 1	< .01	0.002	4	142	< .01	45	< .001	< 1	0.02	0.002	0.01	1	< 1	0.1	< 1	< 1
Pad Red	8.5	6	2	4	0.7	4	3	89	0.88	2	1	2	1	1	< .2	< .5	1	2	0.01	0.004	4	106	0.01	38	0.001	< 1	0.06	0.002	0.01	80	< 1	0.2	< 1	< 1
Toe 1	9.9	2	< 2	1	< .1	3	3	46	0.31	2	< 1	< 2	1	2	< .2	< .5	< .5	< 1	< .01	0.002	5	139	< .01	42	< .001	1	0.03	0.002	0.02	2	< 1	0.1	< 1	< 1
Toe 2	7.1	5	2	2	0.8	2	7	38	1.10	2	1	4	< 1	1	< .2	< .5	0.7	< 1	< .01	0.001	3	88	< .01	4	< .001	< 1	0.02	0.001	0.01	1	< 1	< .1	< 1	< 1
Toe 3	8.7	2	5	1	< .1	3	2	27	0.32	1	< 1	< 2	< 1	1	< .2	0.7	< .5	< 1	< .01	0.002	4	112	< .01	36	< .001	< 1	0.03	0.004	0.01	1	< 1	0.1	< 1	< 1
Toe 5	10.6	3	< 2	1	< .1	4	6	41	0.35	2	< 1	< 2	< 1	3	< .2	< .5	< .5	< 1	< .01	0.002	4	127	< .01	108	< .001	< 1	0.02	0.002	0.01	1	< 1	0.1	< 1	< 1
Toe 6	16	5	2	2	0.2	4	3	64	0.84	3	1	< 2	1	1	< .2	0.5	< .5	1	< .01	0.002	3	209	< .01	27	< .001	< 1	0.02	0.003	0.01	9	< 1	0.1	< 1	< 1
RE Toe 6	15.6	5	2	2	0.2	4	3	52	0.81	3	< 1	< 2	1	1	< .2	0.5	0.5	1	< .01	0.002	3	197	< .01	26	< .001	< 1	0.02	0.002	0.01	9	< 1	0.1	< 1	< 1
RE Pad Red	8.1	6	2	4	0.7	4	3	84	0.91	3	1	6	< 1	1	< .2	< .5	1	2	0.01	0.004	4	111	0.01	39	0.001	< 1	0.07	0.003	0.01	83	< 1	0.2	< 1	< 1

Table 3 Modified SWEP Test Results. October 2000.

Sample	pH	EC (umhos/cm^2)	Acidity (mg CaCO3/L)	Alkalinity (mg CaCO3/L)	Sulphate (mg/L)
Soil A-00	3.49	242	*30/94	nil	53
Soil B-00	4.52	150	60	<1	2
Pad "White" 1	4.64	18	6	1	4
Pad "White" 2	7.62	4	<1	<1	1
Pad "White" 3	4.80	11	4	<1	3
Pad "Orange"	4.91	27	6	<1	10
Pad "Yellow"	5.70	5	1	<1	1
Pad "Red"	4.73	49	12	<1	19
Toe 1	6.33	3	<1	1	1
Toe 2	4.81	11	4	<1	3
Toe 3	5.12	33	3	<1	3
Toe 5	5.48	8	3	<1	2
Toe 6	4.78	16	4	<1	4
Blank	6.00	0.8	<1	1	<1

*Acidity to pH 4.5 and total acidity to pH 8.3

Table 3: ICP-MS Metal Analysis of Modified SWEP Extracts from Cullaton Lake Samples

Sample	Ag	Al	As	Au	B	Ba	Be	Bi	Br	Ca	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	Ir	K	La	Li	Lu	Mg	Mn	Mo	Na
	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Soil A-00	< .05	1994	2	< .05	< 20	51.6	0.74	< .05	17	3009	0.36	6.72	< 1	25.6	6.1	0.03	20.3	0.18	0.09	0.07	17784	0.12	0.26	< .05	0.22	< .1	0.03	13	< .01	< .05	1674	1.66	< 50	0.02	2718	1754	< .1	503
Soil B-00	< .05	3120	10	< .05	< 20	52.4	0.28	< .05	31	7377	0.32	5.54	< 1	6.94	6	0.04	7.4	0.17	0.1	0.05	1574	0.35	0.22	< .05	0.37	0.1	0.03	46	< .01	0.08	17948	1.71	< 50	0.02	6749	2231	0.3	658
Pad "White" 1	< .05	4	2	< .05	< 20	21.6	< .05	< .05	< 5	81	0.73	0.01	< 1	3.52	< .5	< .01	0.4	< .01	< .01	< .01	1016	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	173	< .01	< 50	< .01	< 50	385	< .1	< 50
Pad "White" 2	< .05	6	< 1	< .05	< 20	67	< .05	< .05	< 5	142	0.32	< .01	< 1	0.36	< .5	< .01	0.1	< .01	< .01	< .01	19	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	125	< .01	< 50	< .01	< 50	50.4	< .1	< 50
Pad "White" 3	< .05	4	< 1	< .05	< 20	8.82	< .05	< .05	< 5	111	0.13	0.04	< 1	2.04	< .5	< .01	0.8	< .01	< .01	< .01	346	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	150	< .01	< 50	< .01	< 50	332	< .1	< 50
Pad "Orange"	< .05	65	1	< .05	< 20	60.1	0.09	< .05	< 5	353	0.09	0.26	< 1	5.11	< .5	< .01	1.7	0.01	< .01	< .01	1743	< .05	0.01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	260	0.08	< 50	< .01	140	856	< .1	< 50
Pad "Yellow"	< .05	6	1	< .05	< 20	67.2	< .05	< .05	< 5	392	< .05	0.02	< 1	0.75	< .5	< .01	0.3	< .01	< .01	< .01	86	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	127	< .01	< 50	< .01	< 50	179	< .1	< 50
Pad "Red"	< .05	70	< 1	< .05	< 20	52.3	0.15	< .05	< 5	1011	0.18	1.53	< 1	8.88	< .5	0.07	1.9	0.03	0.01	< .01	3036	< .05	0.04	< .05	< .02	< .1	< .01	< 1	< .01	< .05	310	0.5	< 50	< .01	329	1723	0.1	< 50
Toe 1	< .05	18	2	< .05	< 20	1.08	< .05	< .05	< 5	81	< .05	0.01	< 1	0.07	< .5	< .01	0.1	< .01	< .01	< .01	17	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	153	< .01	< 50	< .01	< 50	10.7	< .1	< 50
Toe 2	< .05	7	< 1	< .05	< 20	5.53	< .05	< .05	< 5	71	< .05	0.05	< 1	0.94	< .5	< .01	0.2	< .01	< .01	< .01	646	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	121	< .01	< 50	< .01	< 50	474	< .1	< 50
Toe 3	< .05	2	< 1	< .05	< 20	46.1	< .05	< .05	< 5	67	0.06	0.03	< 1	1.28	< .5	< .01	0.6	< .01	< .01	< .01	328	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	170	< .01	< 50	< .01	< 50	440	< .1	< 50
Toe 5	< .05	2	4	< .05	< 20	84.5	< .05	< .05	< 5	102	0.07	< .01	< 1	1.5	< .5	0.01	0.4	< .01	< .01	< .01	177	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	140	< .01	< 50	< .01	< 50	366	< .1	< 50
Toe 6	< .05	4	< 1	< .05	< 20	109	< .05	< .05	< 5	171	0.06	0.03	< 1	1.73	< .5	< .01	0.2	< .01	< .01	< .01	527	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	129	< .01	< 50	< .01	50	483	< .1	< 50
Blank	< .05	1	< 1	< .05	< 20	0.07	< .05	< .05	< 5	< 50	< .05	0.01	< 1	< .02	< .5	< .01	< .1	< .01	< .01	< .01	< 10	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	< 50	< .01	< 50	< .01	< 50	< .05	< .1	< 50
Toe 1 Repeat	< .05	17	2	< .05	< 20	1	< .05	< .05	< 5	76	< .05	0.01	< 1	0.06	< .5	< .01	0.1	< .01	< .01	< .01	17	< .05	< .01	< .05	< .02	< .1	< .01	< 1	< .01	< .05	150	< .01	< 50	< .01	< 50	10.8	< .1	< 50

Sample	Nb	Nd	Ni	Os	P	Pb	Pd	Pr	Pt	Rb	Re	Rh	Ru	Sb	Sc	Se	Si	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Soil A-00	0.07	1.98	22.5	< .05	191	< 2	< .2	0.42	< .01	3.93	< .01	< .01	< .05	0.1	1.64	0.7	7447	0.38	< .05	16.6	< .05	0.03	< .05	4.2	< 10	0.07	0.01	2	1	< .1	0.67	0.1	26.9	5.8
Soil B-00	0.35	1.5	10.4	< .05	5166	< 2	< .2	0.33	< .01	12	< .01	< .01	< .05	0.19	1.84	0.6	4765	0.3	< .05	38.7	< .05	0.03	0.06	35.5	29	0.1	0.01	1.99	2	1.2	0.86	0.11	37.8	10.4
Pad "White" 1	< .01	< .01	1.8	< .05	< 20	< 2	< .2	< .01	< .01	0.15	< .01	< .01	< .05	< .05	0.11	< .5	390	< .05	< .05	1.07	< .05	< .01	< .05	< .05	< 10	0.01	< .01	0.2	< 1	< .1	< .01	< .01	18.1	< .5
Pad "White" 2	< .01	< .01	0.3	< .05	72	< 2	< .2	< .01	< .01	0.08	< .01	< .01	< .05	0.09	0.09	< .5	366	< .05	< .05	0.74	< .05	< .01	< .05	< .05	< 10	< .01	< .01	< .05	< 1	< .1	< .01	< .01	7.8	< .5
Pad "White" 3	< .01	< .01	1.4	< .05	71	< 2	< .2	< .01	< .01	0.12	< .01	< .01	< .05	< .05	0.11	< .5	358	< .05	< .05	1.07	< .05	< .01	< .05	< .05	< 10	0.01	< .01	0.07	< 1	< .1	< .01	< .01	12	< .5
Pad "Orange"	< .01	0.05	5.4	< .05	< 20	< 2	< .2	0.01	< .01	0.21	< .01	< .01	< .05	< .05	0.17	< .5	579	< .05	< .05	2.64	< .05	< .01	< .05	< .05	< 10	0.01	< .01	0.12	< 1	< .1	0.04	< .01	21.7	< .5
Pad "Yellow"	< .01	< .01	0.8	< .05	66	< 2	< .2	< .01	< .01	0.09	< .01	< .01	< .05	< .05	0.1	< .5	375	< .05	< .05	1.6	< .05	< .01	< .05	< .05	< 10	< .01	< .01	< .05	< 1	< .1	< .01	< .01	9.5	< .5
Pad "Red"	< .01	0.27	10.1	< .05	78	< 2	< .2	0.07	< .01	0.41	< .01	< .01	< .05	< .05	0.2	< .5	689	< .05	< .05	4.05	< .05	< .01	< .05	< .05	< 10	0.01	< .01	0.17	< 1	< .1	0.16	0.01	58.2	< .5
Toe 1	< .01	< .01	< .2	< .05	148	< 2	< .2	< .01	< .01	0.15	< .01	< .01	< .05	< .05	0.07	< .5	483	< .05	< .05	0.4	< .05	< .01	< .05	< .05	< 10	< .01	< .01	< .05	< 1	< .1	< .01	< .01	< .5	< .5
Toe 2	< .01	< .01	0.8	< .05	143	< 2	< .2	< .01	< .01	0.06	< .01	< .01	< .05	< .05	0.12	< .5	921	< .05	< .05	0.91	< .05	< .01	< .05	< .05	< 10	< .01	< .01	0.06	< 1	< .1	< .01	< .01	8.8	< .5
Toe 3	< .01	< .01	2	< .05	< 20	< 2	< .2	< .01	< .01	0.12	< .01	< .01	< .05	< .05	0.09	< .5	477	< .05	< .05	0.9	< .05	< .01	< .05	< .05	< 10	0.01	< .01	< .05	< 1	< .1	< .01	< .01	6.3	< .5
Toe 5	< .01	< .01	3.9	< .05	< 20	< 2	< .2	< .01	< .01	0.13	< .01	< .01	< .05	< .05	0.12	< .5	323	< .05	< .05	1.35	< .05	< .01	< .05	< .05	< 10	0.01	< .01	< .05	< 1	< .1	< .01	< .01	7	< .5
Toe 6	< .01	< .01	1.9	< .05	129	< 2	< .2	< .01	< .01	0.15	< .01	< .01	< .05	< .05	0.1	< .5	371	< .05	< .05	2.36	< .05	< .01	< .05	< .05	< 10	0.01	< .01	< .05	< 1	< .1	< .01	< .01	28.3	< .5
Blank	< .01	< .01	< .2	< .05	133	< 2	< .2	< .01	< .01	< .01	< .01	< .01	< .05	< .05	0.06	< .5	392	< .05	< .05	< .01	< .05	< .01	< .05	< .05	< 10	< .01	< .01	< .05	< 1	< .1	< .01	< .01	< .5	< .5
Toe 1 Repeat	< .01	< .01	< .2	< .05	65	< 2	< .2	< .01	< .01	0.16	< .01	< .01	< .05	< .05	0.08	< .5	524	< .05	< .05	0.39	< .05	< .01	< .05	< .05	< 10	< .01	< .01	< .05	< 1	< .1	< .01	< .01	< .5	< .5

Table 4 Water Samples Shear Lake. 2000

	A-00	B-00	Shear Lake	Shear Lake Creek	Kognak background	Kognak downstream of Tailings	Kognak downstream of Shear Lake
pH	2.93	7.82	6.00	4.22	7.35	6.98	7.09
Hardness	409	169	19	18.5	8.3	6.7	9
Conductivity	1700	346	61	87	31	20	23
Acidity	484	5	4	9	<1	1	2
Alkalinity - T	4	122	4	4	7	7	7
Alkalinity - Bicarb	4	122	4	4	7	7	7
Chloride	6	1.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate	830	45	15	14	1	<1	1
Total metals (mg/L)							
Al	48.2	6.9	0.3	0.2	<0.2	<0.2	<0.2
Sb	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
As	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ba	0.02	0.71	0.01	0.01	<0.01	<0.01	0.01
Ca	94.00	111.00	5.50	4.99	2.07	1.68	2.24
Cr	0.05	0.04	<0.01	<0.01	<0.01	<0.01	<0.01
Co	0.50	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Cu	0.27	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Fe	55.00	453.00	0.83	0.67	0.03	<0.03	<0.03
Pb	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Li	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mg	41.8	20.8	1.5	1.4	0.8	0.7	0.8
Mn	14.50	4.27	0.075	0.052	0.009	0.005	<0.005
Hg	0.00009	0.00076	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Ni	0.42	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
P	<0.3	3.1	<0.3	<0.3	<0.3	<0.3	<0.3
K	2	3	<2	<2	<2	<2	<2
Si	23.90	7.60	1.18	1.14	0.18	0.15	0.47
Na	3	8	<2	<2	<2	<2	<2
Sr	0.310	0.726	0.025	0.024	0.017	0.015	0.019
Ti	0.05	0.32	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.03	0.08	<0.03	<0.03	<0.03	<0.03	<0.03
Zn	0.304	0.075	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Metals							
Al	49.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sb	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
As	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ba	0.03	0.01	0.01	0.01	<0.01	<0.01	0.01
Ca	94.00	45.90	5.23	5.13	1.98	1.59	2.25
Cr	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Co	*0.05*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*	*<0.01*
Cu	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Fe	51.80	<0.03	0.29	0.26	<0.03	<0.03	<0.03
Pb	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Li	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mg	42.4	13.2	1.4	1.4	0.8	0.7	0.8
Mn	14.600	0.125	0.070	0.051	<0.005	<0.005	<0.005
Ni	0.041	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
P	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
K	<2	<2	<2	<2	<2	<2	<2
Si	28.10	3.55	1.10	1.12	0.15	0.13	0.45
Na	3	8	<2	<2	<2	<2	<2
Sr	0.312	0.240	0.025	0.025	0.016	0.015	0.019
Ti	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
V	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Zn	0.300	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Table 5

Shear Lake Water Quality

DATE	LAB PH pH unit	SUSPENDED SOLIDS mg/l	TOTAL ALKALINITY mg/l	TOTAL NICKEL mg/l	TOTAL ARSENIC mg/l
23/09/1998	5.2	10	<5	0.012	<0.0004
23/09/1998	4.9	4	<5	0.006	<0.0004

DATE	TOTAL COPPER mg/l	TOTAL LEAD mg/l	TOTAL ZINC mg/l	TOTAL MERCURY mg/l
23/09/1998	0.005	<0.005	0.091	<0.0002
23/09/1998	0.007	<0.005	0.008	<0.0002

Table 6 Waste Rock Humidity Cell Data

Leachate Chemistry Of Humidity Cell 1
Sample **Orange**

Date	Volume (ml)		pH	Conductivity	Sulfate	Acidity(mgCaCO3/L)		Alkalinity
	Input	Output		(umhos/cm)	(mg/L)	pH 4.5	pH 8.3	(mgCaCO3/L)
04-Dec-00	750	515	3.23	410	#N/A	#N/A	#N/A	#N/A
11-Dec-00	500	395	3.80	320	105	7	108	0
18-Dec-00	500	380	3.66	290	#N/A	#N/A	#N/A	#N/A
25-Dec-00	500	395	3.75	130	31	6	22	0
01-Jan-01	500	415	3.97	98	#N/A	#N/A	#N/A	#N/A
08-Jan-01	500	335	3.95	89		4	12	0
15-Jan-01	500				#N/A	#N/A	#N/A	#N/A
22-Jan-01	500							
29-Jan-01	500				#N/A	#N/A	#N/A	#N/A
05-Feb-01	500							
12-Feb-01	500				#N/A	#N/A	#N/A	#N/A
19-Feb-01	500							
26-Feb-01	500				#N/A	#N/A	#N/A	#N/A
05-Mar-01	500							
12-Mar-01	500				#N/A	#N/A	#N/A	#N/A
19-Mar-01	500							
26-Mar-01	500				#N/A	#N/A	#N/A	#N/A
02-Apr-01	500							
09-Apr-01	500				#N/A	#N/A	#N/A	#N/A
16-Apr-01	500							
23-Apr-01	500				#N/A	#N/A	#N/A	#N/A
					#N/A	#N/A	#N/A	#N/A

Date	Ag	Al	As	Au	B	Ba	Be	Bi	Br	Ca	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy
	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb
11-Dec-00	< .05	2235	2	0.08	< 20	25.32	1.12	< .05	13	14139	1.07	27.67	< 1	99.09	4.9	0.02	59.6	1.38
25-Dec-00	< .05	328	1	< .05	< 20	37.12	0.29	< .05	< 5	2151	0.46	2.19	1	28.85	0.7	< .01	29.9	0.11

Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	Ir	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	Os	P	Pb	Pd	Pr
ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
0.62	0.46	24446	0.8	1.99	0.2	< .02	1.4	0.23	< 1	< .01	< .05	956	13.93	< 50	0.06	2497	18721.18	0.2	738	< .01	11.36	117.4	< .05	< 20	5	< .2	2.83
0.05	0.03	1957	0.19	0.15	< .05	< .02	1.2	0.02	23	< .01	< .05	840	1.19	< 50	< .01	562	7251.48	0.1	79	< .01	1.03	41.1	< .05	< 20	2	< .2	0.25

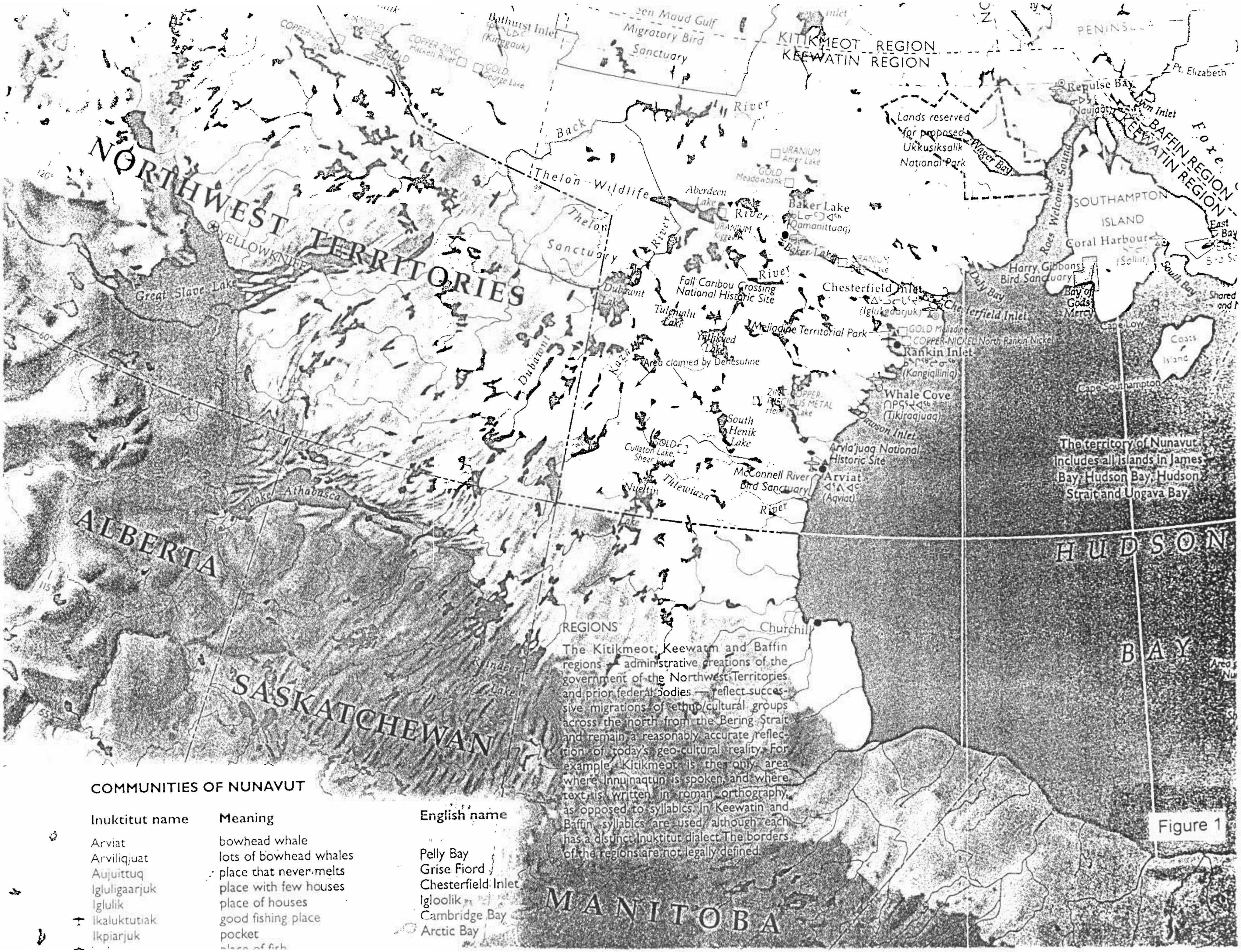
Pt	Rb	Re	Rh	Ru	Sb	Sc	Se	Si	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
< .01	1.18	< .01	< .01	< .05	0.44	1	2.4	2569	2.1	0.08	59.27	< .05	0.3	0.49	< .05	< 10	0.1	0.07	3.08	< 1	< .1	4.98	0.44	222.9	< .5
< .01	0.55	< .01	< .01	< .05	< .05	0.12	0.8	880	0.19	0.14	15.37	< .05	0.02	0.14	0.1	< 10	0.05	< .01	0.63	< 1	< .1	0.54	0.04	65.4	< .5

Leachate Chemistry Of Humidity Cell 2
Sample Toe 3

Date	Volume (ml)		pH	Conductivity	Sulfate	Acidity(mgCaCO3/L)		Alkalinity	Ag	Al	As	Au	B	Ba	Be	Bi	Br	Ca	Cd	Ce	Cl	Co	Cr	Cs	Cu	Dy
	Input	Output		(umhos/cm)	(mg/L)	pH 4.5	pH 8.3	(mgCaCO3/L)	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppb	ppb	ppb	ppb	ppb
04-Dec-00	750	580	3.76	112	#N/A	#N/A	#N/A	#N/A																		
11-Dec-00	500	450	4.10	96	27	2	23	0	< .05	767	1	< .05	< 20	38.52	0.18	< .05	< 5	3032	1.26	4.35	< 1	31.85	1	0.02	22.3	0.29
18-Dec-00	500	465	4.18	48	#N/A	#N/A	#N/A	#N/A																		
25-Dec-00	500	385	4.44	34	8	<2	6	0	< .05	55	1	< .05	< 20	30.3	0.06	< .05	< 5	870	0.17	0.16	< 1	7.24	< .5	< .01	8.2	0.01
01-Jan-01	500	530	4.45	33	#N/A	#N/A	#N/A	#N/A																		
08-Jan-01	500	390	4.34	37		<2	4	0																		
15-Jan-01	500				#N/A	#N/A	#N/A	#N/A																		
22-Jan-01	500																									
29-Jan-01	500				#N/A	#N/A	#N/A	#N/A																		
05-Feb-01	500																									
12-Feb-01	500				#N/A	#N/A	#N/A	#N/A																		
19-Feb-01	500																									
26-Feb-01	500				#N/A	#N/A	#N/A	#N/A																		
05-Mar-01	500																									
12-Mar-01	500				#N/A	#N/A	#N/A	#N/A																		
19-Mar-01	500																									
26-Mar-01	500				#N/A	#N/A	#N/A	#N/A																		
02-Apr-01	500																									
09-Apr-01	500				#N/A	#N/A	#N/A	#N/A																		
16-Apr-01	500																									
23-Apr-01	500				#N/A	#N/A	#N/A	#N/A																		
					#N/A	#N/A	#N/A	#N/A																		

Er	Eu	Fe	Ga	Gd	Ge	Hf	Hg	Ho	I	In	Ir	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	Os	P	Pb	Pd	Pr
ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
0.12	0.11	3496	0.4	0.45	0.07	< .02	0.7	0.04	< 1	< .01	< .05	677	1.96	< 50	0.01	1023	5426.58	0.1	563	< .01	2.15	54.9	< .05	27	2	< .2	0 46
< .01	< .01	150	0.08	0.02	< .05	< .02	0.7	< .01	15	< .01	< .05	413	0.08	< 50	< .01	177	2143.17	0.1	< 50	< .01	0.11	18 9	< .05	< 20	< 2	< .2	0.02

Pt	Rb	Re	Rh	Ru	Sb	Sc	Se	Si	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb	ppb
< .01	0.83	< .01	< .01	< .05	0.15	0.7	1	1629	0.45	< .05	13.91	< .05	0.07	0.07	< .05	< 10	0.07	0.01	2.81	< 1	< .1	1.05	0.07	87.9	< .5
< .01	0.54	< .01	< .01	< .05	< .05	< .05	< .5	380	< .05	< .05	4.48	< .05	< .01	< .05	< .05	< 10	0.04	< .01	0.39	< 1	< .1	0.06	< .01	19.7	< .5



COMMUNITIES OF NUNAVUT

Inuktitut name	Meaning	English name
Arviat	bowhead whale	
Arviliqjuat	lots of bowhead whales	Pelly Bay
Aujuittuq	place that never melts	Grise Fiord
Igluligaarjuk	place with few houses	Chesterfield Inlet
Iglulik	place of houses	Igloolik
Ikaluktutiak	good fishing place	Cambridge Bay
Ikpiarjuk	pocket	Arctic Bay

Figure 1

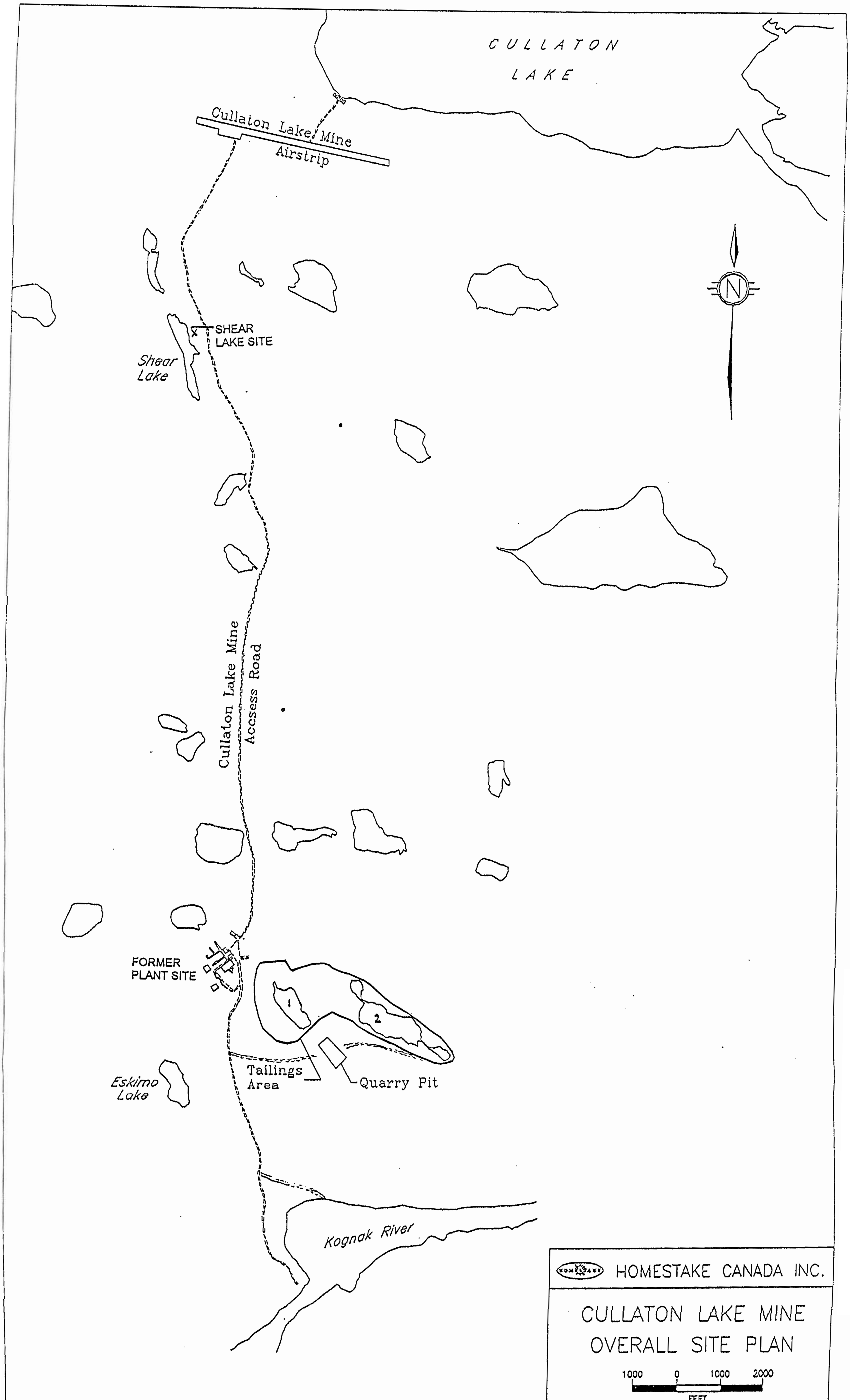
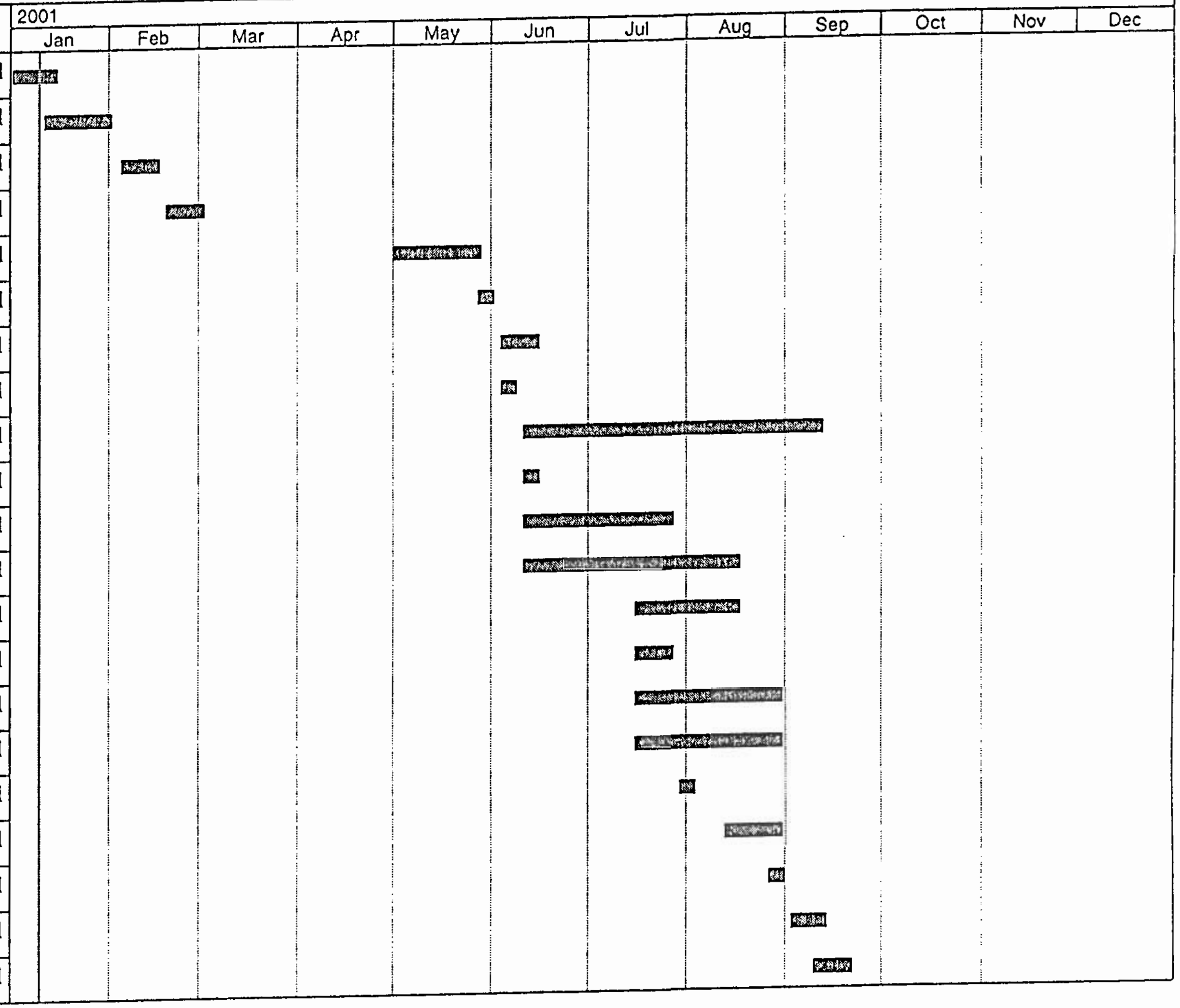

CULLATON LAKE
Cullaton Lake Mine Airstrip
SHEAR LAKE SITE
Shear Lake
Cullaton Lake Mine Accsess Road
FORMER PLANT SITE
1
2
Tailings Area
Quarry Pit
Eskimo Lake
Kognak River
HOMESTAKE CANADA INC.
CULLATON LAKE MINE
OVERALL SITE PLAN
1000 0 1000 2000
FEET

Figure 2

Figure 3.

CULLATON LAKE RECLAMATION
SCHEDULE - DRAFT

ID	Task Name	Duration	Start
1	Tender Document	10 days	Jan 02 '01
2	Tender	15 days	Jan 12 '01
3	Award	10 days	Feb 05 '01
4	Planning & Logistics Review	10 days	Feb 19 '01
5	Mobilize to Thompson	20 days	May 01 '01
6	Airstrip Remediation	5 days	May 28 '01
7	Mobilize to Cullaton	10 days	Jun 04 '01
8	Camp Erection	5 days	Jun 04 '01
9	Relocate Waste Rock	70 days	Jun 11 '01
10	Quarry Dewatering	5 days	Jun 11 '01
11	Equipment Breakdown	35 days	Jun 11 '01
12	Move Equipment to Burial	50 days	Jun 11 '01
13	Building Tear Out	25 days	Jul 16 '01
14	Millsite Rebar Concrete	10 days	Jul 16 '01
15	Scrap Cleanup	35 days	Jul 16 '01
16	Place Overburden	35 days	Jul 16 '01
17	Interm Inspection	5 days	Jul 30 '01
18	Final Grading	15 days	Aug 13 '01
19	Final Inspection	5 days	Aug 27 '01
20	Demobilization	10 days	Sep 03 '01
21	Final Reports	10 days	Sep 10 '01



Project: Cullaton Lake Reclamation
Date: Jan 10 '01

Task · Split · Progress · Milestone · Summary · Rolled Up Task · Rolled Up Split · Rolled Up Milestone · Rolled Up Progress · External Tasks · Project Summary

APPENDICES

APPENDIX A

SHEAR LAKE DEWATERING REPORT

SHEAR LAKE DEWATERING

On March 2, Glenn O'Gorman, vice president of engineering, Cullaton Lake/Campbell Resources, informed Glen Warner, Chairman of the N.W.T. Waterboard, that an underground exploration program was in progress at Shear Lake, which is located about a quarter mile south of Cullaton Lake. Because test mining on mineralized zones located beneath the lake was planned, permission was requested to drain Shear Lake and divert natural drainage around the lake in order to avoid a potential water in-rush into the underground workings.

The small lake was described as being a minor component of the drainage system. Its removal, combined with the natural drainage diversion, was not expected to have any adverse effect on the environment.

Ice-augering in February confirmed that the lake does not entirely freeze. In 1983, it was stated, Arctic grayling were caught in the lake. The letter continued with a statement that suspected the overwintering of fish in the lake.

It was on March 2, then that the Waterboard was introduced to our intent to drain Shear Lake as soon as practical in the summer of 1984. Included with this letter were drawings of the local area around the lake detailing the proposed diversion of drainage in relation to on-going mining and exploration activities. It indicated the release of Shear Lake water downstream of the normal, natural drainage from Shear Lake.

On March 27, Merdy Armstrong, mine manager, requested a complete analysis by the Saskatchewan Research Council for constituent components in the Shear Lake water. A sample taken under five and one-half feet of ice showed that the lake water was low in nutrients and trace metals.

Following a telephone conservation, J.N. Stein, head of the Resource Impact Division, Arctic Resource Assessment and the Fresh Water Institute in Winnipeg, wrote to Merdy Armstrong on May 31 concerning the reported small population of Arctic grayling supported by Shear Lake. In this communication, Mr. Stein expressed that he was pleased to hear that the mine was prepared to live capture the fish and transport them to other waters as a measure to protect the fish resource while dewatering the lake. Cullaton Lake was suggested for the release of the fish. The division head further stated that he would like to have one of his officers on hand to assist the mine personnel with the fish removal operation. Don Dowler, the district manager of Fisheries and Oceans, N.W.T. was referred to as a contact for arranging this assistance.

Cullaton Lake Gold Mines then received a copy of a letter dated June 5 from Don Dowler to the president of the Keewatin Wildlife Federation in Rankin Inelt. This letter served to inform the Federation of Shear Lake dewatering plans, including the fish removal program to protect the suspected small grayling population. Mr. Dowler claimed, that the department of Fisheries and Oceans would approve Cullaton's plans and issue a permit allowing the project to be undertaken. It had been mentioned at this time that officer Bill Ferguson in Rankin Inlet would supervise and report on the operation.

On June 21, Brian Wong, writing for Don Dowler, sent Herdy Armstrong a permit to remove fish from Shear Lake and release the alive into Cullaton Lake. This permission was subject to two conditions; (1) that a Fishery Officer from Rankin Inlet or Yellowknife be notified at least seventy-two hours prior to proceeding with fish capture and removal; and (2) that the method of capture, transport, and release of the fish be approved by a Fisheries Officer.

Having then received permission to both dewater Shear Lake and to remove the fish, Cullaton Lake Gold Mines began pumping water on June 23. The water flow was directed toward the Kognak River system.

On July 10, Brian Wong in Yellowknife was contacted by telephone by Renée Robinson, introducing herself as the person responsible for the fish removal program at Shear Lake. At that time, it was impossible to set a definite date for the project because the actual depth and basin topography of the lake were unknown. However, cursory depth sounding and careful pump monitoring indicated that the lake should reach the desired four-foot level, recommended for seining, in about two weeks. The conditions of removal were also discussed. The fish-to-water ratio in the clean forty-five gallon drums to be used for transport was of particular concern.

On July 13, Don Dowler was reached by telephone and discussion revolved around the routes by which a Fishery Officer could be brought to the mine site when the project date was established.

By July 18, the date of removal was set to commence on July 24. Don Dowler was contacted for the purpose of having Fishery Officer Jerry Hordal from Yellowknife present to supervise and assist the program. Previously mentioned Officier Bill Ferguson in Rankin Inlet was unavailable.

A seine net located in Thompson through the Fisheries Department of Manitoba Department of Natural Resources, was [illegible] to the mine site by Fisheries biologist Rudolf [illegible] on July 19.

By the time of the fish removal program, the dewatering of Shear Lake had created two separate ponds. The pump was maintained in the more northerly pond near the portal. The isolated southern pond was reconnected by the use of tractors to trench the ridge separating the water. On the day of removal, the maximum depth of the northern pond was reduced to about two feet while that of the southern pond was around six feet.

The fisheries officer arrived at the mine site in the evening of July 23. Miss Robinson and Mr. Hordal began the removal program in the morning of July 24 in the southern pond first. Pierre Okoktok, surface group leader, also contributed time and effort on this first day. Preparations of access ramps to the water were essential because of the thick mud uncovered by the dewatering procedures.

The approximately thirty-yard by four-foot seine net with one-quarter inch mesh was used in the afternoon with limited success. High winds inhibited maneuverability by row boat. Less than fifteen fish, consisting of nine-spine sticklebacks and lake chubs, were brought in. None the less, all of the collected fish were put into a clean forty-five gallon drum previously filled with water from Callaton Lake. Since minnows do not require high oxygen levels, the officer agreed to let the few fish stand until the following morning before transporting.

On July 25, from 5:30 to 10:30 in the morning, four sweeps of the southern pond were taken. The first sweep went from one end to the other across the narrow pond by holding the net between a row boat on one side and a canoe on the other. The three other sweeps each encompassed one-third of the area. The small catches consisted only of mud, sticklebacks, and lake chubs. The few minnows were put with the previous afternoon's catch.

In the afternoon, the northern pond was investigated for fish removal. The first seining brought in a large amount of mud and a few sticklebacks. The second sweep brought in a few lake chubs, sticklebacks, and one new minnow, a sculpin.

Because of the very low capture success, reflecting a low fish density in either pond, and the absence of any potential commercial fish (such as Arctic grayling or Lake trout common to the area), the fish removal was declared finished by the officer.

The low fish density was also confirmed by the presence of very few seagulls foraging on the minnows in the increasingly shallow water. Had a high density existed in Shear Lake, a larger number of seagulls would have been supported by the minnows that were becoming more tightly packed in the decreasing volume of water.

Explanations for grayling absence at the time of the fish removal program included the fact that grayling spawn in shallow lakes that drain into the Kognak River. After spawning, they return to the river system. Perhaps the grayling either do not normally spawn in Shear Lake or did not spawn there this year because of possible disturbance from the pump and, instead, were just passing through the lake en route to another spawning area. The high water levels this spring could have facilitated easier access to those lakes located further from the river. Still, no fry of young grayling were found in any of the seine netting attempts.

The less than fifty minows which had been collected were then all transported by helicopter to Cullaton Lake and released alive to complete the fish removal program. The two resulting ponds of Shear Lake will continue to be pumped until the desired water levels are attained.

A telex, dated August 20, 1984 arrived from Jerry Hordal with his report regarding the draining and seining of Shear Lake. Directly quoting from his report: "Cullaton Lake Gold Mine employees which helped in the seining of Shear Lake were helpful and cooperative. The equipment on hand to be used for the capture and transport of fish was more the adequate, had a species of fish of economical value been caught."

SASKATCHEWAN RESEARCH COUNCIL

Cullaton Lake Gold Mines Limited
193 Hayes Road
Thompson, Manitoba R8N 1M5
Attn: M. Armstrong

APR 26 '84

Date Samples Received: 04-Apr-84 Client P.O.:

****

SAMPLE CLIENT DESCRIPTION
3331 SHEAR LAKE UNDER 5 1/2 FEET ICE MARCH 27/84 *WATER*

ANALYTE	UNITS	3331
MAJOR CONSTITUENTS		
CO3 as CaCO3	mg/L	NIL
CO3, acid titr.	mg/L	NIL
Ca as Ca	mg/L	Not req (see below)
Cl, AgNO3 titr.	mg/L	23
HCO3, acid titr	mg/L	32
K, flame	mg/L	Not req "
Mg as Mg	mg/L	Not req "
Na, flame	mg/L	Not req "
SO4, gravi.	mg/L	5
Tot. Hardness	mg/L	72
NUTRIENTS		
N, NO2+NO3	mg/L	3.7
P, total as P	mg/L	0.02
TRACE CONSTITUENTS		
B, ICP-AES	mg/L	0.01
P, ICP-AES	mg/L	<0.05
Se, hydride gen	mg/L	<0.001
TRACE METALS		
Ag, ICP-AES	mg/L	<0.001
Al, ICP-AES	mg/L	0.02
As, hydride gen	ug/L	0.6
Ba, ICP-AES	mg/L	0.096
Be, ICP-AES	mg/L	<0.001
Ca, ICP-AES	mg/L	22
Cd, ICP-AES	mg/L	<0.001
Co, ICP-AES	mg/L	<0.001
Cr, ICP-AES	mg/L	0.003
Cu, ICP-AES	mg/L	0.007
Fe, ICP-AES	mg/L	0.06
K, ICP-AES	mg/L	2.2
Mg, ICP-AES	mg/L	4.1
Mn, ICP-AES	mg/L	0.074
Mo, ICP-AES	mg/L	<0.005
Na, ICP-AES	mg/L	3.3
Ni, ICP-AES	mg/L	0.011
Pb, ICP-AES	mg/L	0.03
Ti, ICP-AES	mg/L	<0.001
V, ICP-AES	mg/L	<0.01
W, ICP-AES	mg/L	<0.005

SASKATCHEWAN RESEARCH COUNCIL

Cullaton Lake Gold Mines Limited

****

Zn, ICP-AES	mg/L	0.017

PHYSICAL PROPERTIES

Solids, T.Diss.	mg/L	172
Sp. Conduct.	umho/cm	182

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NORTHWEST TERRITORIES WATERBOARD
ᓄᓇᕗᑦ ᐃᒪᕐᒧᑦ ᑲᑎᒪᔨᑦ

Water Register No. N6L3-0940

May 7, 1984

M. Armstrong
Mine Manager
Cullaton Lake Gold Mines Ltd.
193 Hayes Road
Thompson, Manitoba
R8N 1M5

Dear Sir:

Re: Application to Dewater Shear Lake

This will acknowledge receipt of your application for the above captioned operation which was forwarded to this office by Water Resources Division.

Please disregard the letter dated 4 May 1984 sent to you by Mr. S. Metikosh. Due to the postponement of your Public Hearing, the Water Board has considered your application immediately to avoid disrupting your mining activities.

Your proposal to use waters will not require a Public Hearing. You are free to use waters pursuant to Northern Inland Waters Regulations Section 11.

We trust this arrangement is satisfactory to you.

Yours truly,

Glenn B. Warner
Chairman
Northwest Territories
Water Board

P.O. Box 1500, Yellowknife, N.W.T., X1A 2R3, 9th Floor, Precambrian Building
Phone: (403) 920-8191 Telex 034-45623

Government of Canada / Gouvernement du Canada
Fisheries and Oceans / Pêches et Océans

Box 2310,
Yellowknife, N.W.T.
X1A 2P7

Your file Votre référence

Our file Notre référence

June 21, 1984

Merdy Armstrong,
Manager,
Cullaton Lake Gold,
193 Hayes Road,
Thompson, Manitoba
R8N 1M5

Dear Mr. Armstrong:

Enclosed please find a permit to remove fish from Shear Lake and release them alive into Cullaton Lake.

If you have any problems with the conditions, please contact this office or our Rankin Inlet office.

In your conversations with Mr. Stein of our Winnipeg office you expressed a willingness to assist us in making transportation available to Officer Bill Ferguson in Rankin Inlet. It is essential that an Officer be on hand during the fish capture and removal.

The methods of capture, transport and release are not complicated but relate to use of a seine, clean tank or containers with a suitable ratio of fish to water. Please contact Bill Ferguson, Rankin Inlet, for details (819) 645-2871,

Yours truly,

Brian Wong
for Don H. Dowler,
Manager,
Field Services.

PERMIT TO TAKE FISH
CULLATON LAKE GOLD MINE

Subject to the following conditions, permission is hereby granted to live capture, all fishes in Shear Lake, located 1/4 mile south of Cullaton Lake, and to transport the said fish to Culaton Lake where they are to be released alive.

CONDITIONS

1. The Fishery Officer in Rankin Inlet, N.W.T. or the Fisheries Office in Yellowknife, N.W.T. is to be notified at least seventy-two (72) hours prior to proceeding with fish capture and removal.

2. The method of capture, transport and release of the fish must be approved by a Fishery Officer.

Don H. Dowler,
Manager of
Field Services.

June 21, 1984

APPENDIX B

ENVIRONMENTAL SPILL RESPONSE PLAN

HOMESTAKE CANADA INC

CULLATON LAKE PROPERTY

ENVIRONMENTAL SPILL RESPONSE PLAN

THE MINING ASSOCIATION OF CANADA

ENVIRONMENTAL POLICY

Member companies of the Mining Association of Canada are committed to the concept of sustainable development which requires balancing good stewardship in the protection of human health and the natural environment with the need for economic growth. Diligent application of technically proven and economically feasible environmental protection measures will be exercised throughout exploration, mining, processing and decommissioning activities to meet the requirements of legislation and to ensure the adoption of best management practices. To implement this policy, whether in Canada or abroad, the members companies of the Mining Association of Canada will:

- assess, plan, construct and operate their facilities in compliance with all applicable legislation providing for the protection of the environment, employees and the public;
- in the absence of legislation, apply cost-effective best management practices to advance environmental protection and to minimize environmental risks;
- maintain an active, continuing, self-monitoring program to ensure compliance with government and company requirements;
- foster research directed at expanding scientific knowledge of the impact of industry's activities on the environment/economy linkages, and of improved treatment technologies;
- work pro-actively with government and the public in the development of equitable, cost effective and realistic laws for the protection of the environment; and
- enhance communications and understanding with governments, employees and the public.

HOMESTAKE ENVIRONMENTAL, HEALTH, AND SAFETY POLICY

It is Homestake's policy to conduct its mining activities so that employees are provided with a safe and healthy workplace, the environment is protected, natural resources are conserved, and human and environmental resources are protected for future generations. To accomplish this, Homestake;

- Establishes annual goals for the improvement of each operation, and assigns responsibility and accountability for performance;
- Establishes standards and procedures to assure compliance with all laws, to protect the environment and to protect employee and public health and safety;
- Works to mitigate the effects of its activities on people, the environment and natural resources;
- Maintains and tests its ability to respond effectively to emergencies;
- Establishes positive cooperative relationships with the governmental agencies that regulate its business;
- Contributes to the economic and social well-being of its employees and the communities in which it operates;
- Audits its environmental, health and safety performance regularly, reports the results and makes appropriate improvements; and
- Reports on its performance and issues to stakeholders annually.

COMPANY INFORMATION

Cullaton Lake Gold Mines Ltd. is wholly owned by Homestake Canada Inc. (Homestake). The Homestake head office is located at:

Homestake Canada Inc.
PO Box 11115, 1100 – 1055 West Georgia Street
Vancouver, BC V6E 3P3

Contact Person: Sharon Meyer, Environmental Analyst
(604) 895-4409 (phone)
(604) 684-9831 (fax)

SITE LOCATION

The Cullaton Lake property is located in the southern part of the District of Keewatin in the Nunavut Territory. The property is 250 km west of Arviat, NU, 400 km northwest of Churchill, Manitoba and 645 km north of Thompson, Manitoba. This underground gold mine was in operation for four years, from 1981 to 1985. In September 1985 the mine was placed on a care and maintenance program. Decommissioning and reclamation began in 1991 and is currently in the final stages.

FACILITY

This site is in the final stages of decommissioning and reclamation. The mine buildings have been removed, the roads have been decommissioned and the tailings impoundment area has been reclaimed. Non-salvageable equipment remains on site and will be disposed of during 2001. No chemicals or reagents remain on site. As at September 2000, fifty-seven drums of stove oil and two drums of aviation gasoline remain cached alongside the airstrip.

During 2001 a reclamation contractor will be on site. The Contractor will have equipment on hand to contain and remove any spilled oil or gasoline. As part of the reclamation activities, the Contractor will be cleaning up and remediating all areas of spilled fuels as per the approved Abandonment and Restoration (1996) Plan.

The Contractor chosen will be required to adhere to this Environmental Spill Response Plan and Spill Reporting Procedures.

SPILL REPORTING PROCEDURES

The Cullaton Lake property is in the final stages of Abandonment and Restoration. There are no personnel on site. Homestake personnel visit the property from time to time to take water samples and conduct site visits. Contractors are on site from time to time to complete various aspects of decommissioning and reclamation. While these persons are on site, should a spill of deleterious material occur or evidence of a spill be found, the following procedures will be followed.

ACTION STEPS

a. Stop the flow if possible.
b. Eliminate open flame ignition sources. i.e. extinguish cigarettes, shut off motors (from a remote location if surrounded by vapours).
c. Contain flow of fuel by dyking, barricading or blocking flow by any means available. Use earth-moving equipment if available. A dam made of earth or other available fill can be quickly constructed to contain and prevent a spill from spreading. If the ground is permeable, it may be necessary to excavate a shallow depression and line it with plastic to prevent the oil from seeping away.

ACTION FOR FIRE

a. UseCO_2, dry chemical, foam or water spray (fog), although water may spread the fire.
b. Use jet streams to wash away burning gasoline.
c. Use fog streams to protect rescue team and trapped people.
d. Use water to cool surface of tanks.
e. Divert the oil or gasoline to an open area and let it burn off under control. If the fire is put out before all the fuel is consumed, beware of re-ignition. Rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

a. Unburned oil or gasoline can be soaked up by sand and peat moss, or by commercial sorbents such as Graboil.
b. If necessary, contaminated soil should be excavated and disposed of as per the approved Abandonment and Restoration (1996) Plan.
c. Fuel entering the ground can be recovered by digging sumps or trenches.

DISPOSAL

a. Evaporation.
b. Incineration under controlled conditions.
c. Disposal as per approved Abandonment and Restoration (1996) Plan.

REPORTING

If any individual discovers a spill, he/she must report is as soon as possible to the 24 hour Spill Report Line by calling

(867) 920-8130.

A person reporting a spill shall give as much of the following information as possible:

- date and time of spill
- location of spill
- direction spill is moving
- name and phone number of a contact person close to the location of the spill
- type of contaminant spilled and quantity spilled
- cause of spill
- whether spill is continuing or has stopped
- description of existing contaminant
- action taken to contain, recover, clean-up, and dispose of contaminant
- name, address and phone number of person reporting the spill
- name of owner, or person in charge or control of contaminant at time of spill

(3) No person shall delay reporting a spill because of lack of knowledge of the factors listed in subsection (2).

(3) The person reporting the spill shall also contact Homestake Canada Inc. to report the spill and the clean-up and disposal actions.

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phone (604) 895-4409 fax (604) 684-983