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NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI

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File: NWB1CUL0207/Amend/F5

June 6, 2005

*By Email and Regular Mail*

Bill Ferdinand  
Director, EHS North America Region  
Barrick Gold Corporation  
BCE Place, Canada Trust Tower, Suite 3700  
161 Bay Street, P.O. Box 212  
Toronto, Ontario  
M5J 2S1

[bferdinand@barrick.com](mailto:bferdinand@barrick.com)

**Subject: Request to Amend the Cullaton Lake Gold Mines Ltd. approved Final Abandonment and Restoration Plan, Licence NWB1CUL0207 and remove the requirement for temperature monitoring at the encapsulated Shear Lake Waste Rock Pile**

Dear Mr. Ferdinand:

The Nunavut Water Board ("NWB") would like to acknowledge the two applications received from Homestake Canada Inc., (Barrick Gold Inc.) to amend the approved Cullaton Lake Gold Mines Ltd. Final Abandonment and Reclamation Plan (A&R Plan) for Water Licence NWB1CUL0207. This amendment provides the approval for the requested changes to the A&R Plan upon submission of the revision. The second amendment application is with respect to the requirement to monitor temperatures within the encapsulated waste rock and the removal of this monitoring station from the Surveillance Network Program.

In the Licence renewal, issued September 30, 2002, Homestake Canada Inc. was to submit to the Board, an application for amendment to the approved A&R Plan by January 1, 2003 for the new waste rock disposal area on the shores of Shear Lake. On December 4, 2002, the NWB extended the original deadline to March 31, 2003. The application for the encapsulation of waste rock at the Shear Lake portal (and accompanying report by URS Norecol Dames & Moore Inc. Report entitled "Assessment of Closure Options and Impacts, Shear Lake Zone Waste Rock Dump, Cullaton Lake Mine, Nunavut; March 2003") was received by the NWB on April 7, 2003 via letter dated March 28, 2003. Prior to finalizing this amendment, a second amendment request was received on November 25, 2003 for the removal of the requirement to include temperature monitoring through the installation of thermistors at the encapsulated waste rock location.

Upon receipt, the application to amend was reviewed internally for technical completeness. Public notice was then given and the application distributed to interested persons for review and comment, with a deadline of July 21, 2004. The amendment request for the removal of temperature monitoring in the encapsulated waste rock was distributed for review and the comment deadline was Friday May 13, 2005.

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**Summary**

No immediate concerns were identified by interested persons during these two review periods however, recommendations from the submissions have been incorporated into the amendment and additional terms and conditions of the Licence. The encapsulation of the Shear Lake waste rock was completed August 2001 and monitoring to date has not identified any seepage from the area. The sampling Station for the waste rock has been relocated to the potential drainage area of the encapsulation work completed in 2001.

The report submitted in November 2003 details the thermistor installation attempts by Barrick Gold Inc. and provides suitable justification to the Board for removal of the temperature monitoring requirement of Table A at Station 940-26. All other ground temperature monitoring requirements in Table A remain.

In addition to the amendment, the NWB requires that Barrick Gold Corporation submit, ***within six (6) months*** of receiving this amendment approval, suitable drawing(s) showing the as-built location of the encapsulated waste rock pile and its relationship to the site with respect to drainage and sensitive areas, its dimensions and cross sections as per requirements of Part D, Item 3.

The Board has taken into consideration the information submitted and hereby accepts and approves Amendment 1 under **Motion 2005-11**, dated **June 6, 2005**.

Should you have any questions regarding this matter, please feel free to contact me at (867) 766-3212, or David Hohnstein, Technical Advisor Mining (780) 443-4406, at your earliest convenience.

Yours truly,

*Original signed by:*

Philippe di Pizzo  
Chief Administrative Officer

PdP/dh

Enclosure: Licence No. NWB1CUL0207 – Amendment 1

Cc: Distribution list

# LICENCE AMENDMENT No. 1

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**Licensee:**                    **Barrick Gold Corporation**

**License No:**                **NWB1CUL0207**

**License Issued:**        **September 28, 2002**

**Effective Date:**        **June 6, 2005**

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Pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* and the *Nunavut Waters and the Nunavut Surface Rights Tribunal Act*, the Nunavut Water Board hereby grants the following license amendment.

The License issued September 28, 2002 and its approved Abandonment And Restoration Plan shall be amended to include the following terms and conditions to allow Barrick Gold Corporation to dispose of Shear Lake Waste Rock by encapsulation at Cullaton Lake, Nunavut (latitude 61°16' N; longitude 98°30' W, NTS: 65G/8); remove the monitoring requirements for ground temperatures at Station 940-26 and Specific Conductance at all water quality monitoring stations; and replace the monitoring requirements at Station 940-25 with Station 940-27.

## **SCOPE, DEFINITIONS AND ENFORCEMENT**

**“Passive Treatment System”** means the treatment of seepage from the encapsulated waste rock pile with limestone or dolomite as described in the letter of August 19, 2003 from Barrick to the NIRB

## **APPROVED ABANDONMENT AND RESTORATION PLAN**

In accordance with Licence NWB1CUL0207, Part F, Item 4, the Licensee shall, within the next annual review, revise the approved A&R Plan for Cullaton Lake, under Section 4.4 of the Plan, to include a sub-section to address the Shear Lake Zone Waste Rock Dump and its potential for acidic drainage. This revision is to incorporate the latest information with respect to the closure of the Shear Lake Waste Rock disposal area (carried out in 2001) and several recommendations put forward by interested persons during the review of this activity, as well as the report presented by URS Norecol Dames & Moore Inc. that was submitted with the application. The revised Plan should include, but not limited to information pertaining to the following:

### **Section 4.4 Shear Lake Zone**

Revise the Plan to address the following information for Item 4.4.1 in the Plan

#### **4.4.1 Shear Lake Waste Rock Dump**

1. The reclamation of the waste rock dump, to be carried out as recommended in the URS Norecol Dames & Moore Inc. assessment report and is summarized as follows;
  - i. Excavation and consolidation of all the Shear Lake Zone waste rock into a single pile;
  - ii. Construction of pad approximately 1 metre thick using compacted fine grained till with a toe berm for collection of runoff and seepage;
  - iii. Placement of the waste onto the till pad; and

- iv. Capping of the waste with a 1m thick layer of compacted fine grained till, overlain by a 1m thick layer of coarser, compacted till. The cap is to be revegetated using a local seed mix.
2. Additional measures to be taken;
- i. An evaluation and reporting of the encapsulation of the Shear Lake Waste Rock to determine the effectiveness of the cover and subsequent treatment that may be required. Should seepage take place from the encapsulated waste rock dump, and mitigation measures are required due to water quality, passive treatment utilizing limestone may be initiated as discussed in the report by URS Norecol, Dames and Moore.
  - ii. Further mitigation measures that are to be investigated and implemented if water quantity is shown to increase, or deterioration in water quality occurs over the monitoring period.

### **PART C: CONDITIONS APPLYING TO WASTE DISPOSAL**

Insert Part C, Item 1(e)

- (e) Monitoring of the encapsulated Shear Lake Waste Rock “cap” for erosion shall be carried out until such a point that vegetation is sufficiently established so as to stabilize the cap and preclude significant erosion thereof. These observations are to be documented within the annual geotechnical inspection, Part C, Item 1(d).

### **PART F: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION**

Insert Part F, Item 6

The Licensee shall submit to the Board, a Contingency Plan to address:

- i. the potential of permafrost not to re-aggrade into the waste rock pile/cover as anticipated; and
- ii. clogging of the “passive treatment system” given the relatively flat terrain of the mine site and the remediation or mitigation of sediments contaminated with levels of metals in excess of CCME guidelines due to seepage from the encapsulated waste rock pile.

### **Table A**

Summarized changes to monitoring requirements (see revised Table A);

- Item i) Monitoring at Station 940-25 is no longer required as the station no longer exists;
- Item ii) Monitoring at Station 940-26 for ground temperatures is no longer required;
- Item iii) Annual water sampling of Shear Lake Creek, down gradient of the capped waste pile has been added as Station 940-27;
- Item iv) the requirement to record the Field Conductivity as a sampling requirement of the SNP was removed as granted by letter dated March 2, 2000.

**All terms and conditions of the Licence NWB1CUL0207 dated September 28<sup>th</sup>, 2002 still apply.**

This Licence Amendment issued and recorded at Gjoa Haven on June 6, 2005.

Approved by,  
*Original signed by:*

Philippe di Pizzo  
Executive Director

**A. SNP SAMPLING LOCATIONS, SAMPLING REQUIREMENTS, AND ANALYSIS REQUIREMENT.**

Station Numbers	Description	Sampling Requirements	Analysis Requirements		
940-1	Kognak River freshwater pumphouse	Not required	Not required		
940-2	Tailings Pond No. 1 adjacent to the point of discharge to Tailings Pond No. 2.	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-3	Tailings Pond No.2 adjacent to the point of discharge to the marshland.	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-3A	Effluent discharge pipe at outlet to marshland	Not required	Not required		
940-4	Mill tailings pump box at the mill	Not required	Not required		
940-5	Tailings Pond No. 2 near the northwest corner, adjacent to the western most point of the tailings dam.	Not required	Not required		
940-6	Tailings Pond No. 2 offshore, near middle of pond.	Not required	Not required		
940-7	Tailings Containment Area diversion ditch adjacent to the northwest corner of Tailings Pond No. 2.	Not required	Not required		
940-8	Channel in marshland approximately 600 metres downstream of Tailings Pond No. 2. Also identified as SITE 8 in the Environmental Investigation of the Kognak River at Cullaton Lake Gold Mine by Diamond and Meach, 1984 (EIKR).	Not required	Not required		
940-9	Outflow channels from marshland below Tailings Pond No. 2 to Kognak River. Also identified as SITE 9 in EIKR.	Not required	Not required		
940-10	Control marsh site approximately 100 metres west of rad leading to the fresh water intake, 50 metres north of the Kognak River, and 30 metres east of a small creek. Also identified as SITE 10 in EIKR	Not required	Not required		
940-11	Kognak River approximately 200 metres upstream of Station No. 940-1. Also identified as SITE 2 in EIKR	Not required	Not required		
940-12	Kognak River approximately 1300 metres downstream of Station No. 940-1. Also identified as SITE 3 in EIKR	Not required	Not required		
940-13	Kognak River approximately 2850 metres downstream of Station No. 940-1. Also identified as SITE 4 in EIKR	Not required	Not required		
940-14	Kognak River approximately 4400 metres downstream of Station No. 940-1. Also identified as SITE 5 in EIKR	Not required	Not required		
940-15	B Zone Mine at the outlet of the minewater discharge pipe.	Not required	Not required		
940-16A	Shear Lake minewater disposal system at point of discharge	Not required	Not required		

940-17	Environment Canada stream gauging station number 06HD001 - Kognak River below Mountain Lake.	Not required	Not required		
940-18	Discharge from spillway or siphon at Tailings Pond No.1.	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-19	Piezometer stations within Tailings Pond No.1.	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-20	Area of seepage from east side of Tailings Pond No.1.	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-21	Thermistors installed in Tailings Pond No.1.	Once a year after June 1 and before August 31	Temperature		
940-22	Area of seepage from north east corner of Tailings Pond No.1.	Once a year during peak flow if flow present	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids Total
940-23	Quarry pit	Once a year during peak flow	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids Total
940-24	Quarry Pit Area- Area of seepage from the Quarry Pit to Tailings Pond No. 1	Once a year during peak flow.	Total Arsenic Total Zinc Total Lead	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
		If visible sheen, test for the presence of hydrocarbons	Total Petroleum Hydrocarbons		Total Extractable Hydrocarbons
940-25	Waste Rock Disposal Area- Area of seepage from Waste Rock Disposal Area to Shear Lake.	Not required	Total Arsenic Total Zinc Total Lead Total Sulphate	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids
940-26	Thermistors installed in Waste Rock Disposal Area	Not required	Temperature		
940-27	Waste Rock Disposal Area- Area of seepage from Encapsulated Waste Rock Disposal Area to Shear Lake Creek.	Once a year during peak flow.	Total Arsenic Total Zinc Total Lead Total Sulphate	Total Copper Total Mercury pH	Total Nickel Total Cyanide Total Suspended Solids

***\*The pH and temperature of the sample shall be recorded at the time of water quality sampling, as well as the laboratory value.***

Revised – Abandonment and Restoration amendment for Encapsulation of Shear Lake Waste Rock dated May 27, 2005