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Your file / Votre référence

Our file / Notre référence
N7L2-0925 (expired)

November 16, 2001.

David Hohnstein
Environmental Coordinator
Echo Bay Mines Ltd., Lupin Operation
9818 International airport
Edmonton, AB T5J 2T2

July 8, 2001 Water Licence Inspection - Report

Firstly, I wish to thank yourself for the much appreciated time and assistance provided during the tour of the minesite. Attached for your records is the Industrial Water Use Inspection Report pertaining to the July 8, 2001 inspection; overall, the mine's operations appear to be managed in a conscientious manner. Nevertheless, the following considerations were noted and will need to be addressed:

- **Water supply:** No concerns were noted with the well-kept water intake and supply facilities. Further, the attached analytical results relating to a sample taken at the freshwater intake from Contwoyto Lake, Surveillance Network Program (SNP) 925-01, indicate that all tested parameters meet the *Guidelines for Canadian Drinking Water Quality*.

- **Tailings disposal:** A seepage zone along M Dam, separating Cell 5 from Pond 2, was recently discovered (figure 1). Consequently, measures were taken to initiate the draw down of the cell in order to enable the sealing of the upstream toe of the dam with a geotextile liner and/or a tailings beach. The extent of the seepage is believed to have been relatively limited, and no significant alteration of Pond 2 water quality is expected. In addition, considerable retention time will be provided since the Licensee already had planned to forego the annual discharge from the Tailings Containment Area (TCA).

In related matters, accumulated water was noted in both upper (figure 2) and lower (figure 3) emergency tailings line dump ponds. Thus, the Licensee had scheduled both dump ponds to be pumped dry within the following week. In this regards, the Inspector nonetheless points out that given the likelihood of tailings material to be present in the emergency tailings line dump ponds, the pooled water ought to be directed to the tailings circuit unless prior sampling demonstrates otherwise.

- **Sewage disposal:** Due to abundant spring runoff, the level of the Lower Sewage Lake was markedly high at the time of the inspection (figure 4). In light of this, damage to the decant gate was noted, and signs of erosion along the final retention berm hinted at a breach in the underlying discharge culvert (figure 5). As concerns regarding the decant structure of the Sewage Lakes Disposal System were raised during the previous inspection, the Licensee ensured that repair/replacement work would be undertaken once the level of the Lower Sewage Lake was sufficiently drawn down to enable adequate access to the decant structure. This being said, the attached analytical results relating to a sample collected from SNP station 925-14 (figure 6) indicate that while all licenced thresholds are satisfied, concentrations of ammonia (3.48 mg/L vs 2.2 mg/L), arsenic (13.2 µg/L vs 5 µg/L), copper (12 µg/L vs 4 µg/L), iron (802 µg/L vs 300 µg/L), and zinc (52 µg/L vs 30 µg/L) exceed the *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life*. However, the Microtox sample, which constitutes a reliable toxicity indicator (IC_{50}), did not attribute toxicity to the sewage effluent discharge.

Please feel free to contact me at (867) 975-4298 or lavalleep@inac.gc.ca if any questions/comments arise.

Sincerely,

Philippe Lavallée
Water Resources Officer
INAC, Nunavut District

c.c. - Nunavut Water Board, Gjoa Haven
- DFO Habitat Management, Iqaluit (Jordan DeGroot)
- EC Environmental Protection, Yellowknife (Anne Wilson)

Indian and Northern Affairs Canada | Affaires Indiennes et du Nord Canada

INDUSTRIAL WATER USE INSPECTION REPORT

Date: 2001/07/08 **Company Rep.** (Name/Title): David Hohnstein / Environmental Coordinator
Licensee: **Echo Bay mines Ltd.**, Lupin Operations **Licence No.:** **N7L2-0925** (expired)

WATER SUPPLY

Source(s): Contwoyto Lake **Quantity used:** recorded @ mill **Meter Reading:** mill @ 1 073 938 m^3

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Intake Facilities: A	**Storage Structure:** A	**Treatment Systems:** A	**Recycling:** A
Flow Meas. Device: A	**Conveyance Lines:** A	**Pumping Stations:** A	**Modifications:** NA

Comments: No concerns noted with well-kept water intake and supply facilities. Potable water meter @ 5 726 710 US gallons. Ultra-violet (UV) treatment system in use.

WASTE DISPOSAL

Tailings: **Tailings Pond:** x **Natural Lake:** **Underground:**
Sewage: **Sewage Treatment System:** **Tailings Pond:** **Natural Water Body:** x
Continuous Discharge: **Intermittent Discharge:** x
Solid Waste: **Open Dump:** **Landfill:** **Burn & Bury:** x **Underground:**

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Discharge Quality: sampled	**Decant Structure:** U	**Dyke Inspections:** A
Conveyance Lines: A	**Pond Treatment:** A	**Runoff Diversion:** A
Discharge Meas. Device: A	**Dams, Dykes:** U	**Erosion:** U
Freeboard: A	**Seepages:** U	**Spills:** none reported
Effluent Discharge Rate: A	**Samples Collected:** raw water (925-01), sewage discharge (925-14)	

Comments: Discharge from the Tailings Containment Area (TCA) not planned for this year; no noticeable flow from the Pond 2 discharge at Dam 1A, SNP station 925-10. Seepage from Cell 5 into Pond 2 detected through M Dam; makeshift diversion ditch has been trenched along the upstream toe of the dam in order to limit the extent of seepage. Accumulated water observed in both emergency tailings line dump ponds. Damaged decant gate and culvert at the Sewage Lakes Disposal System; discharge onset and volume estimated. Flow noted from both the siphon line and the discharge culvert, where signs of erosion were observed. No concerns noted at the well-managed solid waste disposal facility. Kitchen wastes are incinerated. Hazardous materials are stored in sealift containers, waste oil in two bulk tankage by the mill.

GENERAL CONDITIONS

Indicate: **A** - Acceptable **U** - Unacceptable **NA** - Not Applicable **NI** - Not Inspected

Ore & Waste Rock Stockpiles: NI	**Records & Reporting:** A	**SNP:** A
Geotechnical Inspection: A	**Posting/Signage:** A	**Contingency Plan:** A
Restoration Activities: A	**New Construction:** NA	**Fuel Storage:** NI
Mine Water Discharge: A	**Chemical Storage:** A	**Annual Report:** A

Comments: Unused tailings conveyance line in the process of being reclaimed.

Violations of Act or Licence: The deficient decant structure at Surveillance Network Station (SNP) 925-14 does not allow for the accurate measurement of the onset of discharge from the Sewage Lakes Disposal System; Licensee ensured that repair/replacement work would be undertaken.

General Comments: The mine's water use and waste disposal facilities are generally managed in a conscientious manner. No major concerns noted.

Philippe Lavallée
Inspector's Name

Inspector's Signature

figure 4. Final retention dam of the Sewage Lakes Disposal System; 2001/07/08.

figure 5. Signs of berm erosion along the discharge culvert at SNP 925-14; 2001/07/08.

figure 6. Discharge from the Sewage Lakes Disposal System, SNP 925-14; 2001/07/08.

figure 1. Seepage zone along M Dam, separating Cell 5 from Pond 2; 2001/07/08.

figure 2. Upper emergency tailings line dump pond; 2001/07/08.

figure 3. Lower emergency tailings line dump pond; 2001/07/08.

REPORT OF TOXICITY USING MICROTOX

COMPANY/LOCATION: **Lupin - 925-14 Lagoon Discharge**

Sample Collected By: Philippe Lavallee

Date/Time Sampled: July 08, 2001

Date/Time Received: N/A

Date/Time Test Start: July 24, 2001

Sample Type: Elutriate
Sampling Method: Grab

Method: ***Environment Canada Laboratories SOP#830.0 Revision 1, for Microtox Testing in Compliance with November 1992: Biological Test Method: Toxicity Test Using Luminescent Bacteria Photobacterium phosphoreum), November 1992, EPS 1/RM/24.***

RESULTS: **NON TOXIC at 45% Concentration**

TEST ORGANISMS:
Species: Vibrio fisheri (Photobacterium phosphoreum)
Test Apparatus: Model 500 Analyzer

TEST SUBSTANCE/CONDITIONS

pH of Sample: 7.6 (No pH adjustment)

Sample Appearance: Clear, no colour adjustment

Lot # of OAS: OSA007
(Osmotic Adjusting Solution)

Lot # of Reconstitution Solution: RSN099Y

Lot # of Diluent: DIL034L

TEST METHODS AND CONDITIONS

Test Start Date/Time: *July 24, 2001 / 01:51 PM*

Test Method: Basic 45% Test, 15 minute incubation.

QUALITY CONTROL

Reference Toxicant: Zinc Sulfate Standard

Analyst: RB

Date of Test: July 24, 2001

Reagent Lot #: ACV023-3

IC_{50} - 15 minutes mg/L: 2.7 mg/L

IC_{50} Confidence Range: 1.8 to 3.9 mg/L

TEST ANALYST: Ron Bujold

INITIAL: RB

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1500, Yellowknife, NT. X1A 2R3
Tel: (867)-669-2788
Fax: (867)-669-2718

- CERTIFICATE OF ANALYSIS -

Prepared For: DIAND District Office : Nunavut DIAND Operations *Attn:* Philippe Lavalllee

Sample ID: raw water 925-01 **Taiga Sample ID:** 211442

Client Project: **Sample Type:** sewage **Received Date:** 09-Jul-01

Location: Lupin **Sampling Date:** 08-Jul-01

Report Status: **Amended** ***Approved by:***

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Colour	<5		5	09-Jul-01
Solids, Total Suspended	9	mg/L	3	26-Jul-01
Turbidity	0.3	NTU	0.1	09-Jul-01
Nutrients				
Ammonia as N	<0.005	mg/L	0.005	16-Jul-01
Biological Oxygen Demand	<2	mg/L	2	10-Jul-01
Nitrate+Nitrite as N	0.019	mg/L	0.008	10-Sep-01
Major Ions				
Chloride	0.9	mg/L	0.2	21-Jul-01
Sodium	0.82	mg/L	0.02	11-Jul-01
Sulphate	9	mg/L	3	13-Jul-01
Microbiology				
Coliforms, Fecal	<1	CFU/100mL	1	09-Jul-01
Metals, Total				
Arsenic	<1.0	µg/L	1.0	13-Jul-01

Report Date: October 19, 2001

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Prepared For: DIAND District Office : Nunavut DIAND Operations *Attn:* Philippe Lavalllee

Sample ID: raw water 925-01 **Taiga Sample ID:** 211442

Cadmium	<0.3	µg/L	0.3	19-Jul-01
Chromium	<3	µg/L	3	19-Jul-01
Cobalt	<1	µg/L	1	19-Jul-01
Copper	2	µg/L	2	19-Jul-01
Iron	129	µg/L	30	17-Jul-01
Lead	1	µg/L	1	19-Jul-01
Manganese	5	µg/L	1	19-Jul-01
Mercury	<0.01	µg/L	0.01	10-Jul-01
Nickel	2	µg/L	1	19-Jul-01
Zinc	<10	µg/L	10	19-Jul-01

Field Data (01/07/08) 925-01
Temperature: 8.0 °C
Conductivity: 20 µS/cm
pH: 8.5 **Time:** 11:12

Report Date: October 19, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: DIAND District Office : Nunavut DIAND Operations *Attn:* Philippe Lavalllee

Sample ID: sewage discharge 925-14 **Taiga Sample ID:** 211443

Client Project: **Sample Type:** sewage **Received Date:** 09-Jul-01

Location: Lupin **Sampling Date:** 08-Jul-01

Report Status: **Amended** ***Approved by:***

Test Parameter	Result	Units	Detection Limit	Analysis Date
Physicals				
Solids, Total Suspended	11	mg/L	3	25-Jul-01
Nutrients				
Ammonia as N	3.48	mg/L	0.005	17-Jul-01
Biological Oxygen Demand	4	mg/L	2	10-Jul-01
Nitrate+Nitrite as N	7.06	mg/L	0.008	24-Jul-01
Microbiology				
Coliforms, Fecal	4	CFU/100mL	1	09-Jul-01
Metals, Total				
Arsenic	13.2	µg/L	1.0	13-Jul-01
Cadmium	< 0.3	µg/L	0.3	19-Jul-01
Chromium	< 3	µg/L	3	19-Jul-01
Cobalt	17	µg/L	1	19-Jul-01
Copper	12	µg/L	2	19-Jul-01
Iron	802	µg/L	30	17-Jul-01
Lead	1	µg/L	1	19-Jul-01

Report Date: October 19, 2001

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- CERTIFICATE OF ANALYSIS -

Prepared For: DIAND District Office : Nunavut DIAND Operations *Attn:* Philippe Lavalllee

Sample ID: sewage discharge 925-14 **Taiga Sample ID:** 211443

Manganese	438	µg/L	1	19-Jul-01
Nickel	25	µg/L	1	19-Jul-01
Zinc	52	µg/L	10	19-Jul-01

Field Data (01/07/08) **925-14**
Temperature: 14.5 °C
Conductivity: 873 µS/cm
pH: 7.4 **Time:** 11:36

Report Date: October 19, 2001