Environment Act Licence

Manitoba Environment and Workplace Safety and Health

Licence No. 1305

Issue Date AUGUST 29, 1989

In accordance with the Manitoba Environment Act (C.C.S.M. c. E125)

THIS LICENCE IS ISSUED TO:

HUDSON BAY MINING AND SMELTING CO., LIMITED: APPLICANT

The following limits, terms and conditions shall be complied with by Hudson Bay Mining and Smelting Co., Limited in connection with a mining operation commonly known as the Spruce Point Mine, located on unsurveyed portions of M.C.'s Reed 18 and 28, (P.4414E, P.4423E) now part of E.A.L. 26, Lot 46, Group 371, Township 64, Range 20 WPM on the south shore of Reed Lake within the Grass River Provincial Park in Manitoba:

1. The Applicant shall not discharge any effluent from the operation directly to the waters of Reed Lake.

2. The Applicant shall not discharge or deposit into the environment:

   (a) raw or untreated sewage;

   (b) sewage sludge; or

   (c) garbage or bulky metallic wastes;

   except to an authorized waste disposal ground in accordance with regulations issued under the Environment Act.

3. The Applicant shall not discharge sewage effluent from the sewage treatment plant serving the operation if its quality is such that:

   (a) the five-day biochemical oxygen demand is in excess of 30 milligrams per litre; and/or

   (b) the suspended solids content is in excess of 30 milligrams per litre;

   as determined from the analysis of any grab sample taken at the sampling barrel along the outfall line between the sewage treatment plant and the pump out tank, as indicated in Appendix 'A' attached to this Licence.

4. The Applicant shall not stockpile or retain:

   (a) ore or tailings;

   (b) waste rock in excess of 200,000 tons; or

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(c) subject to Clause 4(b), piles of waste rock in excess of 15 feet in height;

on the site of the said operation.

5. The Applicant shall not discharge minewater effluent from the final discharge point if:

(a) the concentration of any of the following pollutants in the minewater effluent are in excess of the corresponding maximum allowable concentrations shown for those categories listed under Columns I, II and III of the following table:

	Pollutant	Column I Maximum Monthly Arithmetic Mean Concentration	Column II Maximum Concentration In a Composite Sample	Column III Maximum Concentration In a Grab Sample
(i)	Total Arsenic	0.5 mg/l	0.75 mg/l	1.0 mg/l
(ii)	Total Copper	0.3 mg/l	0.45 mg/l	0.6 mg/l
(iii)	Total Lead	0.2 mg/l	0.30 mg/l	0.4 mg/l
(iv)	Total Nickel	0.5 mg/l	0.75 mg/l	1.0 mg/l
(v)	Total Zinc	0.5 mg/l	0.75 mg/l	1.0 mg/l
(vi)	Total Suspended Matter	25.0 mg/l	37.5 mg/l	50.0 mg/l

(b) the pH of the minewater effluent is below the minimum allowable values shown for those categories listed under Columns I, II and III of the following table:

Column I Minimum Monthly Arithmetic Mean pH	Column II Minimum pH In A Composite Sample	Column III Minimum pH In A Grab Sample
6.0	5.5	5.0

6. The Applicant shall, subject to Clause 7, sample and analyze the minewater effluent at the final discharge point:

(a) for the following pollutants at no less a frequency than is specified in the table below, where the applicability of Columns I, II, III and IV for each pollutant listed shall be determined on the basis of the arithmetic mean concentration of that pollutant in the samples of

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effluent collected and reported in those preceding six months during which effluent discharge occurred:

Pollutant	Column I At Least Weekly If Concentration Is Equal To Or Greater Than	Column II At Least Every Two Weeks If Concentration Is Equal To Or Greater Than	Column III At Least Monthly If Concentration Is Equal To Or Greater Than	Column IV At Least Every Six Months If Concentration Is Less Than
(i) Total Arsenic	0.5 mg/l	0.2 mg/l	0.10 mg/l	0.10 mg/l
(ii) Total Copper	0.3 mg/l	0.1 mg/l	0.05 mg/l	0.05 mg/l
(iii) Total Lead	0.2 mg/l	0.1 mg/l	0.05 mg/l	0.05 mg/l
(iv) Total Nickel	0.5 mg/l	0.2 mg/l	0.10 mg/l	0.10 mg/l
(v) Total Zinc	0.5 mg/l	0.2 mg/l	0.10 mg/l	0.10 mg/l
(vi) Total Suspended Matter	25.0 mg/l	20.0 mg/l	15.0 mg/l	15.0 mg/l

(b) for pH at no less a frequency than as is specified in the following criteria:

(i) once a week where the pH of the minewater effluent was less than 5.0 at any time in those preceding six months during which effluent discharge occurred;

(ii) once every two weeks, where the pH of the minewater effluent was between 5.0 and 5.5 at any time in those preceding six months during which effluent discharge occurred;

(iii) once a month if (i) and (ii) do not apply.

7. The Applicant shall sample and analyze the minewater effluent from the operation at the final discharge point in such a manner and for such additional pollutants and characteristics and at such frequency and for such duration of time as may otherwise be specified in writing by the Director.

8. The Applicant shall determine the volume of minewater effluent discharged monthly from the final discharge point by means of a suitable measurement technique or by estimation when the measuring equipment malfunctions.

9. The Applicant shall submit to the Director the analysis and measurement data determined in accordance with Clauses 6, 7, and 8, in a form acceptable to the Director, not later than 30 days following the end of the month in which the samples and measurements were taken.

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10. The Applicant shall direct the excess sludge, which is periodically withdrawn from the clarifier unit of the minewater chemical treatment plant, into the existing sludge pits located immediately west of the said plant.

11. The Applicant shall implement a monitoring program on:

    (a) the drainage waters draining towards Reed Lake from the mine wastewater boggy ponding area located south of Provincial Trunk Highway No.391; and

    (b) the waters of Reed Lake;

    in accordance with the program as outlined in Appendix 'B' and the associated Figures 1 and 2 attached to this Licence.

12. The Applicant shall:

    (a) develop a contingency plan for submission to the Director by December 31, 1989, and subject to the approval of the Director, to address the circumstance whereby monitoring data on the water quality of the return drainage waters and/or Reed Lake might indicate a threat to the water quality of Reed Lake; and

    (b) implement the said approved contingency plan, at the written request of the Director, if and when the water quality monitoring data indicates a threat to the water quality of Reed Lake by virtue of:

        i) the average of any parameter, monitored at the two return drainage water sampling sites over two consecutive months of flow through the culvert, evidencing a level in excess of two standard deviations above the background mean stipulated in Appendix 'C'; or

        ii) any parameter, monitored within the prescribed sampling area in Reed Lake, evidencing a level in excess of one standard deviation above the background mean stipulated in Appendix 'C'.

13. The Applicant shall, at the request of the Director, from time to time, investigate specific areas of concern regarding any segment or component of the wastewater treatment or handling systems of the operation and provide the Director with such engineering studies, drawings, specifications, analyses of wastewater streams and such other information as is so requested.

14. The Applicant shall:

    (a) upon the imminent cessation of operations, expand in detail upon the preliminary rehabilitation plan approved by the Clean Environment Commission on August 28, 1985, and shall submit to the Director a

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final rehabilitation plan for the site of the operation, for the approval, revision or otherwise by the Director.

(b) upon termination of the operation, take all necessary steps to carry out the approved rehabilitation plan within the time interval specified by the Director.

15. Licence No. 1014 is herewith rescinded.

16. In this Licence:

(a) "final discharge point" for the minewater effluent means the end-of-pipe of the overflow pipe leading from the clarifier of the minewater treatment plant to the minewater pump out tank, as indicated in Appendix 'A' attached to this Licence, unless otherwise designated in writing by the Director.

(b) "monthly arithmetic mean " means for each pollutant or characteristic, the average of all values determined from the analysis of all composite and grab samples collected and reported during that month with the exception that, if the Applicant collects only one composite or grab sample during a single month, the single set of analytical results shall be construed to be representative of the effluent quality for that month and hence shall be treated as the monthly arithmetic mean;

(c) "composite sample" means a quantity of effluent consisting of a minimum of three equal volumes of effluent collected at approximately equal time intervals over a sampling period of not less than 7 hours and not more than 24 hours, or consisting of effluent collected continuously at an equal rate over a sampling period of not less than 7 hours and not more than 24 hours.

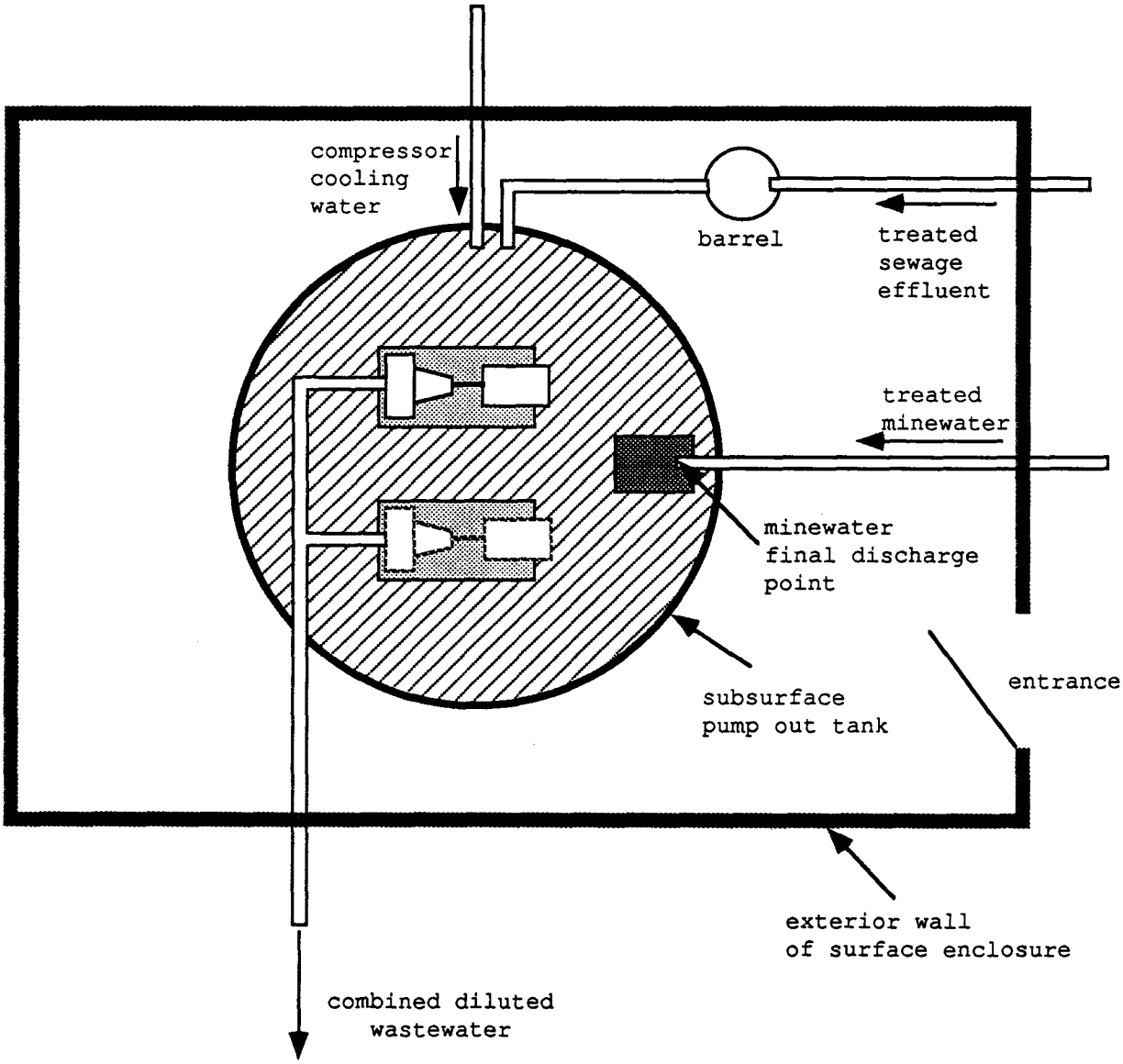
C. B. Orcutt
Director
Environmental Control Services

File: 1776.20

APPENDIX 'A'

TO LICENCE NO. 1305

H.B.M.&S. - SPRUCE POINT MINE
COMBINED MINE WASTEWATER PUMP OUT TANK STRUCTURE
(PLAN VIEW)



(not to scale)

APPENDIX 'B'

TO LICENCE NO. 1305

WATER QUALITY MONITORING PROGRAM ON THE RETURN DRAINAGE WATERS AND REED LAKE NEAR SPRUCE POINT MINE

Monitoring the Water Quality of Return Drainage Waters

Mid column water samples shall be collected on a regularly scheduled basis at a frequency of not less than once per month. Samples shall be collected from each of the two sites indicated in Figure 1. Collection of samples is not required when the sampling sites are either dry or frozen to the bottom. However, these conditions must be recorded as such on the respective scheduled sampling date and sampling shall resume with the first recurrence of water at either of the sampling sites.

Samples shall be analyzed for Total Arsenic, total copper, total iron, total lead, total nickel, total zinc, chlorides, sulphate and pH. Additionally, the presence or absence of return flows through the culvert beneath PTH #391 shall be recorded.

Monitoring the Water Quality of Reed Lake

Water samples from random depths shall be collected from each of fifteen randomly located sites within the sampling block illustrated in Figure 2. The collection of these samples shall occur at a fgrequency of not less than once every three years, beginning with the year 1990. Samples shall be analyzed for total arsenic, total copper, total iron, total lead, total nickel, total zinc, chlorides and sulphate.

FIGURE 1

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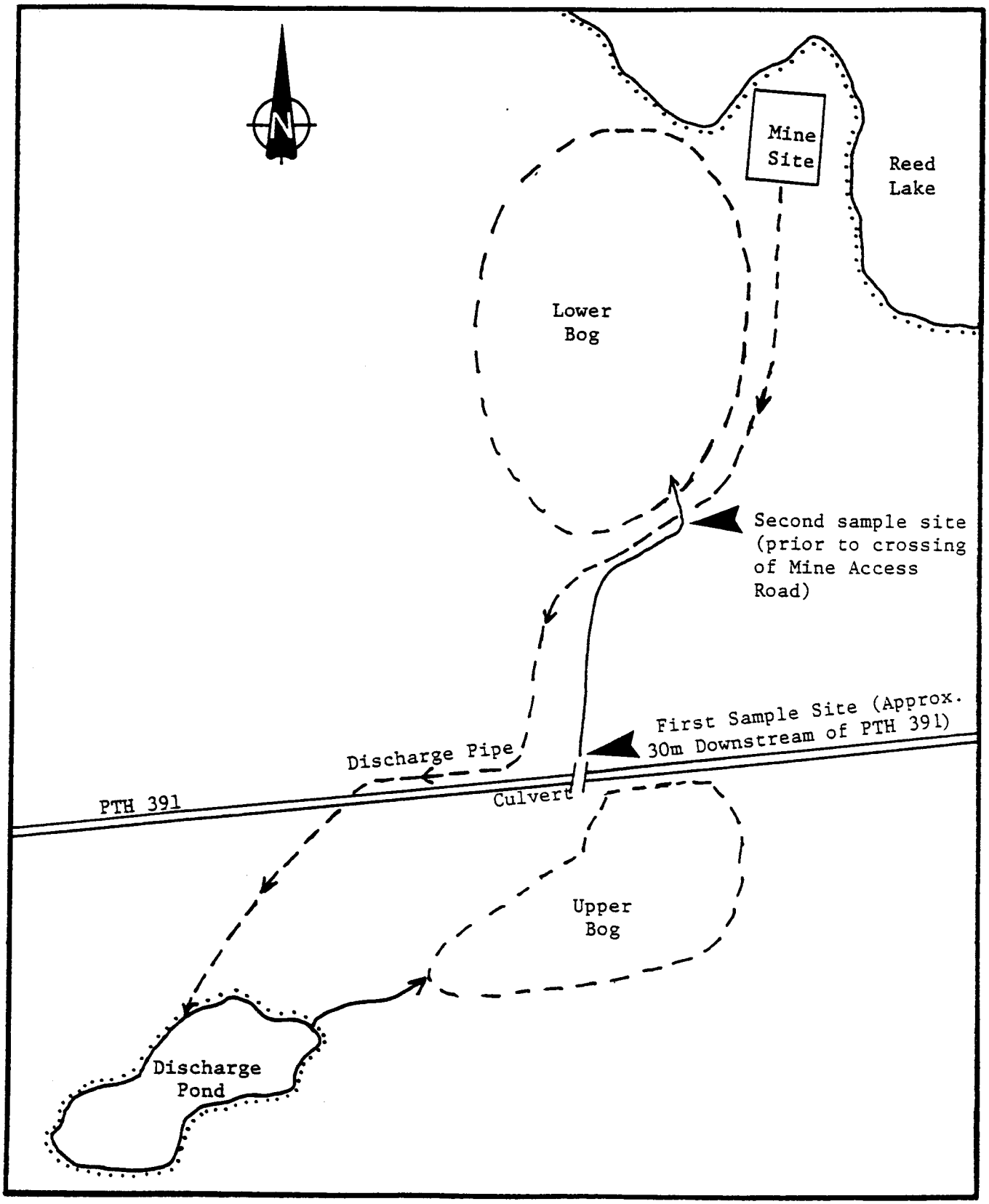

Figure 1: Return flow sampling locations.

FIGURE 2

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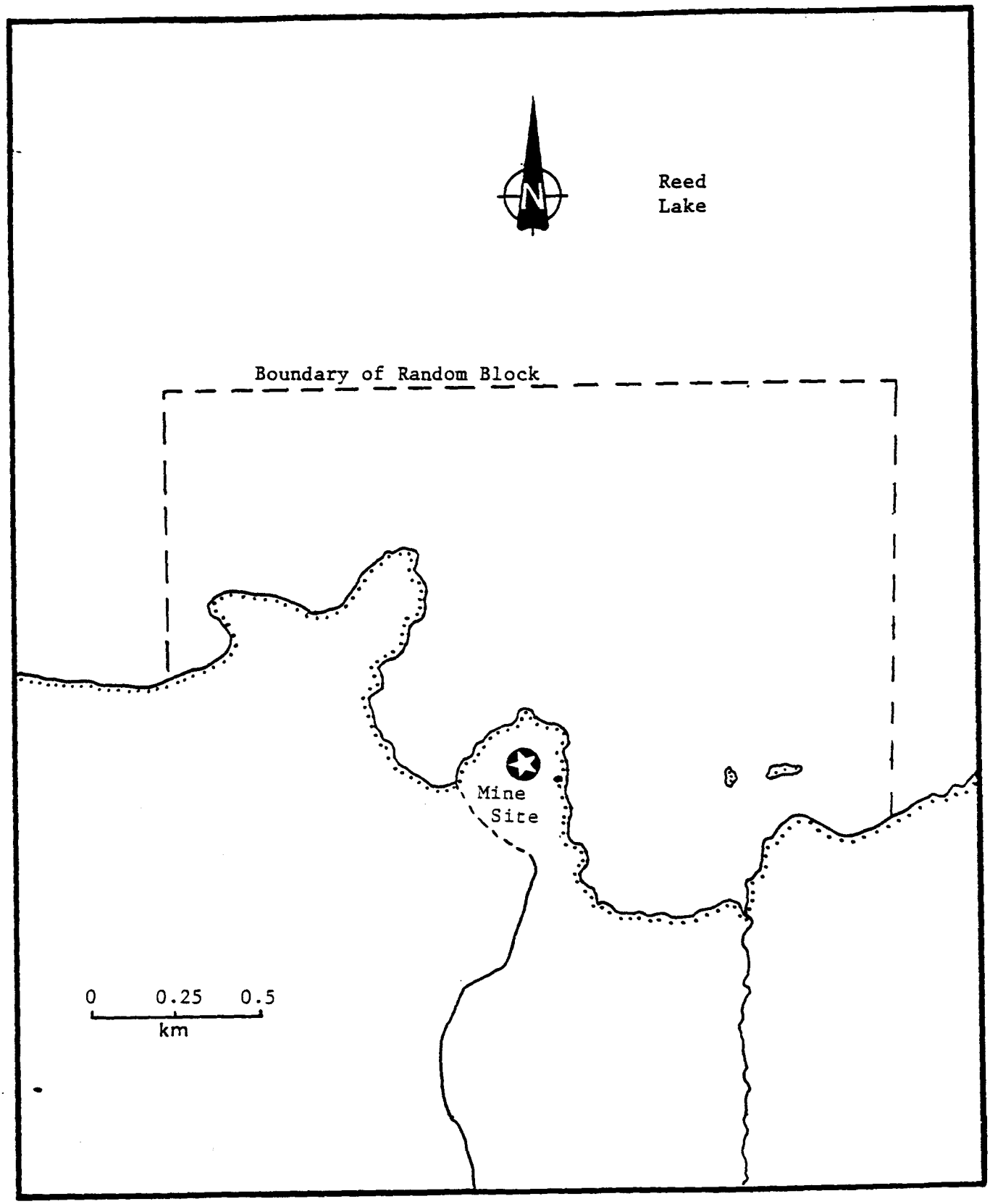

Figure 2: Reed Lake random block sampling area.

APPENDIX 'C'

TO LICENCE NO. 1305

BACKGROUND WATER QUALITY LEVELS FOR THE RETURN DRAINAGE WATERS AND REED LAKE NEAR SPRUCE POINT MINE

Parameter	Units	Return Drainage Waters *		Reed Lake **	
		Mean	Standard Dev.	Mean	Standard Dev.
Total Arsenic	mg/l	<0.0012	0.0005	<0.01	0
Total Copper	mg/l	0.013	0.009	<0.01	0
Total Lead	mg/l	<0.005	0	<0.005	0
Total Nickel	mg/l	0.0052	0.0007	<0.005	0
Total Zinc	mg/l	0.034	0.0033	<0.01	0
total Iron	mg/l	0.699	0.468	0.04	0.009
Chlorides	mg/l	16.35	12.27	<2.0	0
Sulphates	mg/l	4.92	1.78	4.0	0.2

* - defined by Departmental sampling (20 data points) on 19/04/83 - 11/05/83

** - defined in Departmental Report #87-6