

Environment Act Licence

Manitoba
Environment



Licence No. 1881

Issue Date AUGUST 16, 1994

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

THIS LICENCE IS ISSUED TO:

INCO LIMITED; "the Licencee"

for the continuing operation of the existing development called Birchtree Mine, as outlined in the Licencee's proposal dated September 20, 1993 and the Environmental Impact Assessment report dated July 9, 1993, and located about 6.5 kilometres south of the City of Thompson, subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence:

"arithmetic mean" means the average value of the concentrations in composite or grab samples collected over the time periods specified in this Licence;

"composite sample" means a quantity of undiluted 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 consecutive hours, or consisting of a quantity of undiluted effluent collected continually at an equal rate, or at a rate proportional to flow, over a sampling period of not less than 7 consecutive hours and not more than 24 consecutive hours;

"effluent" includes mine water effluent, or sanitary sewage, or water treatment plant backwash water, or polluted surface runoff, or any combination thereof;

"final discharge point" means a designated effluent quality control point as shown in Appendices 'A' and 'B' appended to this Licence, unless otherwise redesignated in writing by the Director;

"grab sample" means a quantity of undiluted effluent collected at any given time;

"mg/L" means milligrams per litre;

"mine" includes the mine access and underground workings, offices, mechanics shop, dry facilities, stockpiled waste rock and sands, and all other ancillary buildings and facilities associated with the mining activities at this mine site;

"mine site" means the property and mine associated with the operation of Birchtree Mine as described within the site plan shown in Appendix 'A' attached to this Licence;

"mine water effluent" means water pumped to the surface from underground mine workings, or from an open pit, or any combination thereof;

"monthly arithmetic mean" means the arithmetic mean as determined for each specified pollutant or characteristic from the analysis of all composite and grab samples collected and reported during that month in which the release of liquid effluent occurred, with the exception that if the Licencee collects only one composite or grab sample during a single month, then 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;

"mothballed" means placed into a state of non use, or temporarily closed, while at the same time maintained in a state of readiness for potential re-use or re-opening;

"MPN index" means the most probable number of coliform organisms in a given volume of sampled effluent which, in accordance with statistical theory, would yield the observed test result with the greatest frequency;

"sanitary sewage" means all toilet, sink, shower stall and floor drain wastes, but does not include sewage collected in fully contained privies where such sewage might be transported to and disposed of at a waste disposal ground permitted to accept such waste;

"undiluted" means free of extraneous sources of water which could feasibly be prevented from mixing with effluent streams prior to their discharge at their designated final discharge point(s), and/or not having water added for the purposes of meeting the limits of this Licence.

GENERAL SPECIFICATIONS

1. Notwithstanding any of the following limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
 - (a) sample, monitor, analyze and/or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, treatment, handling, disposal or emission systems, for such pollutants or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, for such duration and at such frequencies as may be specified; and/or
 - (b) determine the environmental impact associated with the release of any pollutants from the said mine; and/or
 - (c) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, bioassay data, flow rate measurements and such other information as may from time to time be requested.
2. The Licencee shall carry out all analyses on liquid samples in accordance with the methods prescribed in the most current edition of "Standard Methods for the Examination of Water and

Wastewater" published jointly by the American Public Health Association, the American Waterworks Association and the Water Pollution Control Federation, or in accordance with an equivalent analytical methodology approved by the Director.

3. The Licencee shall report all the information requested through the provisions of this Licence in a manner and form acceptable to the Director.
4. The Licencee shall ensure:
 - (a) compliance with all the requirements of Manitoba Regulation 97/88R respecting the storage and handling of gasoline and associated products; and
 - (b) compliance with all the provisions and requirements set out in the Dangerous Goods Handling and Transportation Act, and regulations issued thereunder, respecting the transport, storage and/or disposal of any dangerous goods brought onto or generated at the mine site.

LIMITS, TERMS AND CONDITIONS

Respecting Liquid Effluents

5. The Licencee shall not release any effluent into the environment except through the designated final discharge points shown in Appendices 'A' and 'B' or possible future amendments thereto, appended to this Licence.
6. The Licencee shall ensure that all sanitary sewage generated at the mine site is directed into the sewage lagoon facility.
7. The Licencee shall, within four months of the date of issuance of this Licence, permanently direct the backwash water from the on-site water treatment plant into the sanitary sewage collection system for appropriate clarification in the sewage lagoon facility, unless an alternative proposal approved by the Director is proposed within two months of the date of issuance of this Licence.
8. The Licencee shall not direct any effluent into the sewage lagoon facility, shown in Appendix 'B', appended to this Licence, and located adjacent to the haulage road serving the mine site, other than sanitary sewage and water treatment plant backwash water generated at the Birchtree mine site.
9. The Licencee shall, within six months of the date of issuance of this Licence, establish effluent monitoring facilities, satisfactory to the Director, at each of final discharge points PT #1, PT #2 and PT #3 for the purpose of determining the quality and quantity of effluent released at these control points. An alternative location upstream of final discharge point PT #3 may be considered by the Director as acceptable for the purposes of determining the discharge rate if a flow rate measuring device already exists at such a location.
10. On and after the first day of November, 1995, the Licencee shall not discharge effluent from final discharge points PT #1, PT #2, or PT #3 if:

- (a) the concentration of any of the following pollutants in the undiluted effluent at the final discharge point is in excess of the corresponding maximum allowable concentration shown for those categories listed under Columns I, II and III of the following table:

<u>Pollutants</u>	<u>Column I</u>	<u>Column II</u>	<u>Column III</u>
	<u>Maximum monthly arithmetic mean concentration</u>	<u>Maximum concentration in a composite sample</u>	<u>Maximum concentration in a grab sample</u>
total arsenic	0.5 mg/L	0.75 mg/L	1.0 mg/L
total copper	0.3 mg/L	0.45 mg/L	0.6 mg/L
total lead	0.2 mg/L	0.30 mg/L	0.4 mg/L
total nickel	0.5 mg/L	0.75 mg/L	1.0 mg/L
total zinc	0.5 mg/L	0.75 mg/L	1.0 mg/L
total suspended solids	25.0 mg/L	37.5 mg/L	50.0 mg/L

- (b) the pH of the undiluted effluent at the final discharge point is below the minimum allowable values shown for those categories listed under Columns I, II and III of the following table:

<u>Column I</u>	<u>Column II</u>	<u>Column III</u>
<u>Minimum monthly arithmetic mean pH</u>	<u>Minimum pH in a composite sample</u>	<u>Minimum pH in a grab sample</u>
6.0	5.5	5.0

11. The Licencee shall operate the sewage lagoon facility in such a manner that:
- the organic loading to the primary cell, as indicated by the five day biochemical oxygen demand, does not exceed 45.4 kilograms (100 pounds) per operating day (based on a 5-day operating week); and
 - the hydraulic loading to the primary cell does not exceed 227.3 cubic metres (50,000 imperial gallons) per operating day (based on a 5-day operating week).
12. The Licencee shall not discharge effluent from the sewage lagoon facility during the calendar period extending from the first day of November in any year to the fifteenth day of May in the following year.
13. The Licencee shall not discharge any effluent from final discharge point PT #4 at the sewage lagoon facility if the undiluted effluent is of such quality that:
- organic content of the effluent, as indicated by the five-day biochemical oxygen demand, is in excess of 30 mg/L;
 - the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample;

- (c) the total coliform content of the effluent, as indicated by the MPN index, is in excess of 1500 per 100 millilitres of sample;

as determined from the analysis of any grab sample taken of the effluent.

Respecting Waste Rock, Solid Wastes and Recyclable Wastes

14. The Licencee shall:

- a) continually reduce all the on-site waste rock and sand pile stockpiles as much as practical each year in the course of the ongoing underground backfilling program, with initial priority given to the "#95 waste rock stockpile" and the "sand pile", with the goal of eliminating all surface waste rock and tailings sands stockpiles and any other waste rock areas on the mine site which are found to be producing acid rock drainage, as evidenced by low pH and/or elevated heavy metal concentrates in seepages from such waste rock areas;
- b) develop a strategy for gradually replacing acid generating rock in the rockfill haulage road with neutral waste rock, or for otherwise mitigating the acid rock drainage from the haulage road, such that a stable non acid rock drainage condition will exist in the eventual post-abandonment period of this mine site; and
- c) submit a report to the Director within one year of the date of issuance of this Licence, for the approval of the Director, on the strategy proposed pursuant to sub-Clause 14(b).

15. The Licencee shall not deposit solid waste, as defined in Manitoba Regulation 150/91 respecting waste disposal grounds, into the environment except into a waste disposal ground operating under the authority of a permit issued pursuant to Manitoba Regulation 150/91 or any future amendment thereof.

16. The Licencee shall not deposit bulky metallic wastes, used tires, used oil other fluid lubricants, hydraulic fluids, and any other class of recyclable waste substances as may be specified by the Director, into the environment except to:

- (a) a facility or infrastructure which accepts such materials for recycling; or
- (b) a waste disposal ground operating under the authority of an operating permit issued pursuant to Manitoba Regulation 150/91 or any future amendment thereof, where these recyclable substances are kept distinctly segregated from each other and are not buried (unless otherwise specified by the Director) so as to readily facilitate their recycling.

17. Respecting the handling and storage of used oil and hydraulic fluids removed from on-site machinery, the Licencee shall ensure that these substances are collected, transported and stored in secure, properly labeled, non-leaking containers until recycled, and that the storage area consists of a base and dikes lined in a fashion satisfactory to the Director so as to prevent the loss of any spilled oil or hydraulic fluids to the subsoil at that storage area.

18. The Licencee shall make an effort to initiate and maintain a recycling program for those substances identified in, or through the provisions of, Clause 16 of this Licence.

MONITORING AND REPORTING SPECIFICATIONS

Respecting Liquid Effluents

19. The Licencee shall, during discharge events, sample and analyze undiluted effluent released from final discharge points PT #1, PT #2 and PT #3:

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

<u>Pollutant</u>	<u>Column I</u>	<u>Column II</u>	<u>Column III</u>	<u>Column IV</u>
	At least weekly if concentration is equal to or <u>greater than</u>	At least every two weeks if concentration is equal to or <u>greater than</u>	At least monthly if concentration is equal to or <u>greater than</u>	At least every six months if concentration is <u>less than</u>
total arsenic	0.5 mg/L	0.2 mg/L	0.10 mg/L	0.10 mg/L
total copper	0.3 mg/L	0.1 mg/L	0.05 mg/L	0.05 mg/L
total lead	0.2 mg/L	0.1 mg/L	0.05 mg/L	0.05 mg/L
total nickel	0.5 mg/L	0.2 mg/L	0.10 mg/L	0.10 mg/L
total zinc	0.5 mg/L	0.2 mg/L	0.10 mg/L	0.10 mg/L
total suspended solids	25.0 mg/L	20.0 mg/L	15.0 mg/L	15.0 mg/L

and,

- (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 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 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.

20. The Licencee shall, upon the commencement of discharge from the sewage lagoon facility, and thereafter once every second day of effluent release during the discharge period, sample and analyze undiluted effluent released from final discharge point PT #4 for:

- (a) organic content of the effluent, as indicated by the five-day biochemical oxygen demand;
- (b) the fecal coliform content of the effluent, as indicated by the MPN index; and
- (c) the total coliform content of the effluent, as indicated by the MPN index.

21. The Licencee shall measure or estimate the total volume of effluent released each month from final discharge points PT #1, PT #2, PT #3 and PT #4, using flow rate measurement equipment and/or estimation techniques satisfactory to the Director.
22. The Licencee shall submit to the Director the analyses and flow rate data determined in accordance with Clauses 19, 20 and 21, of this Licence, no later than 30 days following the end of the month in which the samples were taken.
23. The Licencee shall submit to the Director once each month, until the end of October 1995, a progress report concerning the activities being undertaken and the progress being made towards achieving compliance with Clause 10 of this Licence.

Respecting Waste Rock and Recyclable Wastes

24. The Licencee shall each month:
 - (a) determine the mass balance progress made towards reducing the surface waste rock and sand pile by accounting for the monthly total estimated metric tons of:
 - (i) waste rock brought on-site from off-site areas, if any;
 - (ii) tailings sands brought on-site from off-site areas, if any;
 - (iii) development and production waste rock brought to surface for temporary storage, if any;
 - (iv) surface waste rock from each of waste rock stockpiles #95, #105 and #115 passed underground as rockfill;
 - (v) tailings sands passed underground from the sand pile; and
 - (vi) any waste rock from the rockfill haulage road or other areas (if applicable);
 - (b) determine the net balance of estimated metric tons of materials remaining on surface at each month-end at:
 - (i) the sand pile;
 - (ii) waste rock stockpile #95;
 - (iii) waste rock stockpile #105;
 - (iv) waste rock stockpile #115; and
 - (v) any other identified area;

and,

 - (c) submit the information determined pursuant to sub-Clauses 24(a) and 24(b) to the Director within 30 days following the end of the month during which information was determined.

25. The Licencee shall by December 31st of each year, submit a report to the Director on the achievements made over the preceding 12 months regarding the recycling program initiated pursuant to Clause 18 of this Licence.

DECOMMISSIONING

26. The Licencee shall:
 - (a) within one year of the date of issuance of this Licence, submit to the Director an updated preliminary Closure Plan for the mine and mine site, to replace the plan submitted on

November 24, 1989, with regard to the control of pollutant releases from the mine site, and the cleanup and rehabilitation of the affected areas (including any wetland areas polluted by the minewater effluent) as may be associated with any temporary closure, or permanent closure and abandonment of the mine, together with plans for any progressive rehabilitation measures for the affected mine site and wetlands, for the consideration, possible amendment and approval of the Director;

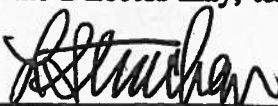
- (b) provide the Director with written notice three months in advance of any imminent permanent closure of this mine, or of any imminent temporary closure of this mine whereby the mine would be placed in a mothballed state for re-opening in the foreseeable future, and shall within one month of this notice submit to the Director a detailed final Closure Plan, to replace the preliminary Closure Plan, for the consideration, possible amendment and approval of the Director; and
- (c) upon the permanent or temporary closure of this mine, take all necessary steps to carry out the approved final Closure Plan within the time interval specified or accepted by the Director.

REVIEW OR REVOCATION

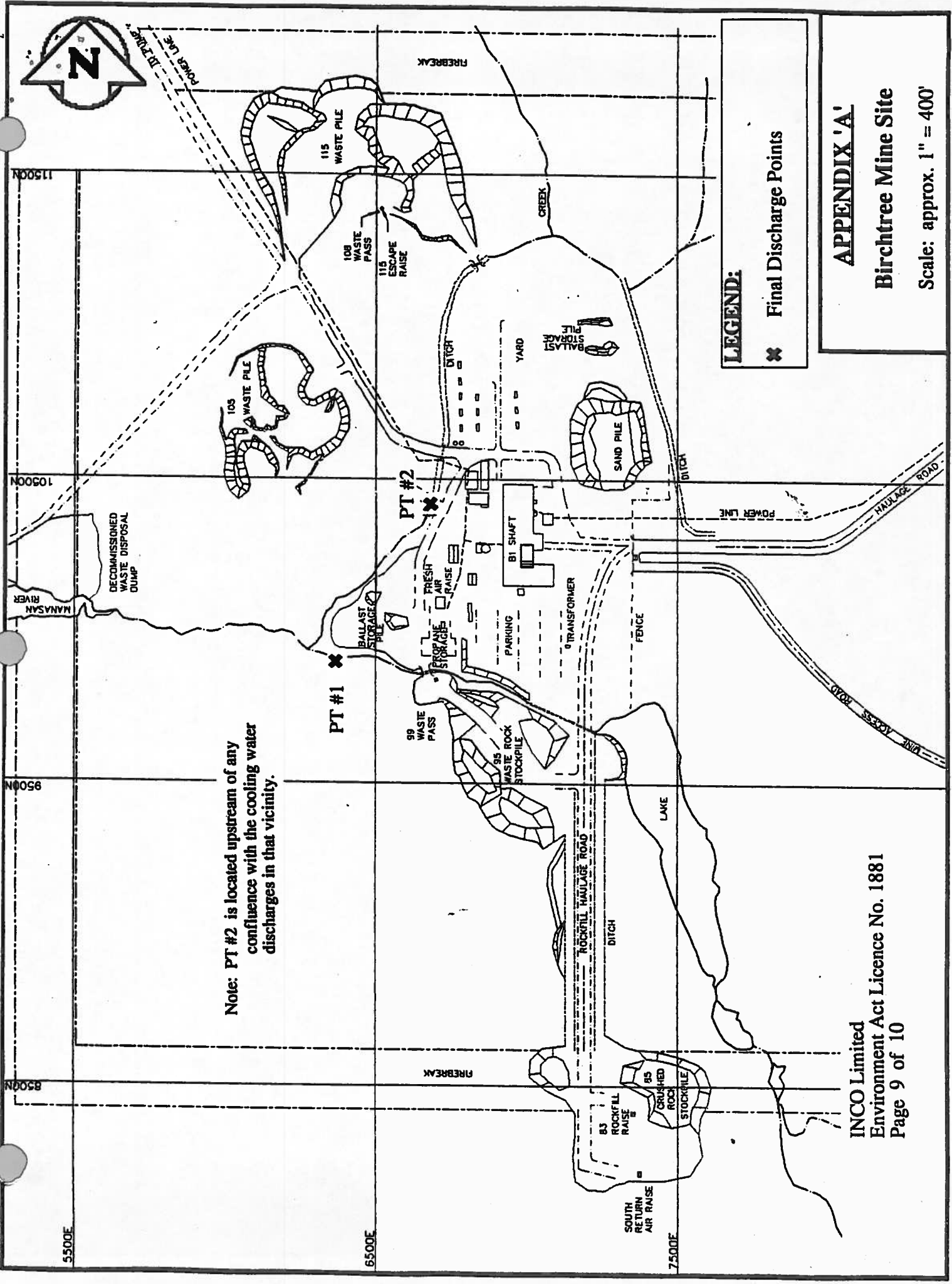
27. This Licence replaces;
- (a) Environment Act Licence No. 21 respecting the operation of the Birchtree Mine sewage lagoon;
 - (b) Environment Act Licence No. 637 respecting the operation of the Birchtree Mine water treatment plant; and
 - (c) the conditional Alteration Approval issued on October 20, 1988 respecting the reactivation of Birchtree Mine;

all three of which are hereby rescinded.

28. This Licence may be reviewed if, in the opinion of the Director, any changes made to the manner of operation as stated in the Licencee's proposal and Environmental Impact Assessment submitted in 1993 are likely to alter the environmental effects of the development, or if any information acquired through the provisions of this Licence, or otherwise, give rise to new evidence to warrant any change(s) to this Licence.
29. If in the opinion of the Director the Licencee has failed or is failing to comply with any of the specifications, limits, terms or conditions set out herein, the Director may, temporarily or permanently, revoke this Licence.



Larry Strachan, P. Eng.
Director
Environment Act



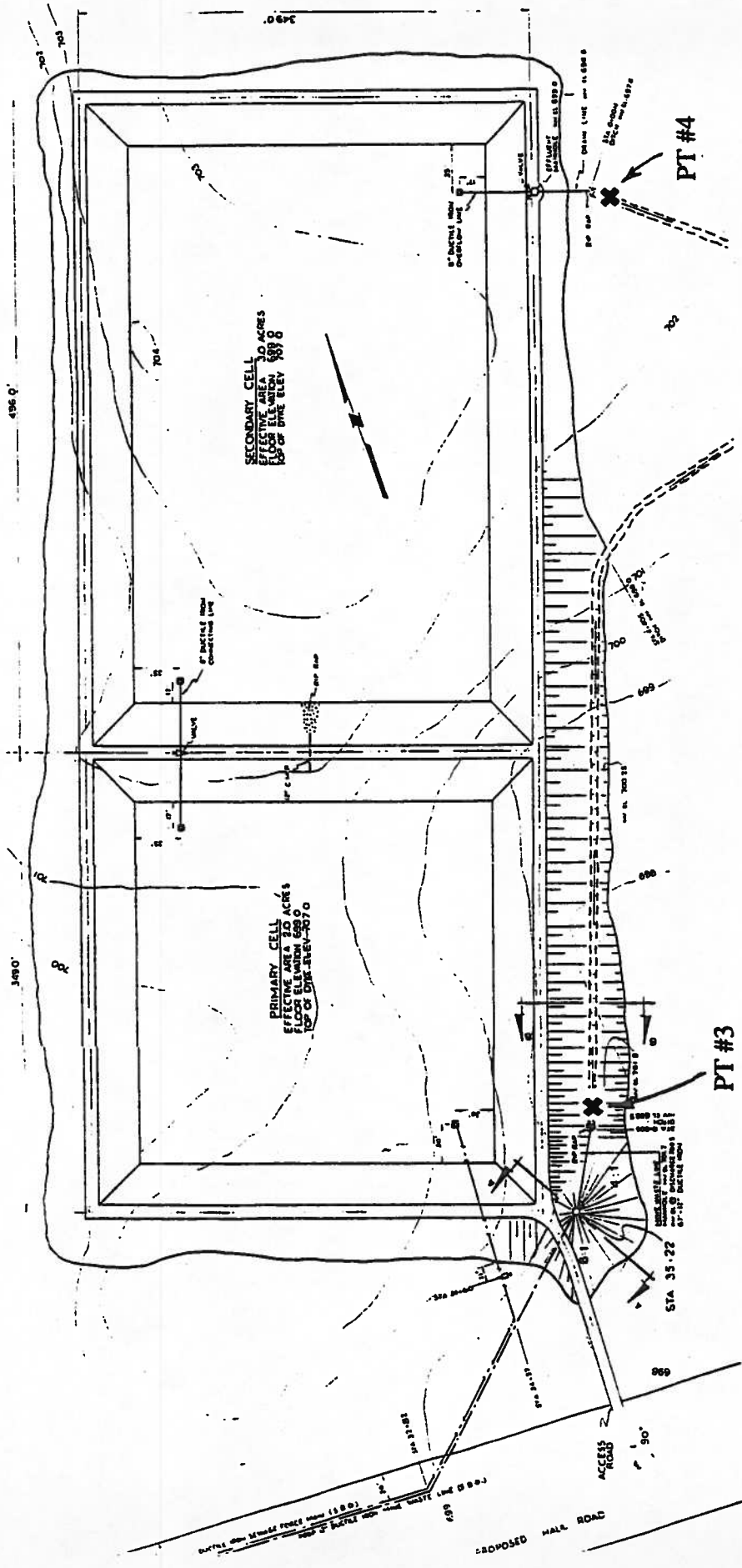
Note: PT #2 is located upstream of any confluence with the cooling water discharges in that vicinity.

LEGEND:

x Final Discharge Points

APPENDIX 'A'
Birchtree Mine Site

Scale: approx. 1" = 400'



LEGEND:
 X Final Discharge Points

APPENDIX 'B'
 Birchtree Mine
 Sewage Lagoon Site
 Not To Scale