

## Beshada, Eshetu

---

**From:** Zacharias, Allison [REDACTED]  
**Sent:** January 17, 2023 12:44 PM  
**To:** +WPG530 - Environmental Approvals Branch Director <[EABDirector@gov.mb.ca](mailto:EABDirector@gov.mb.ca)>  
**Cc:** Innes, Kris [REDACTED]; Budge, Rachelle [REDACTED]  
**Subject:** Selkirk EAL #1645R5 - Notice of Alteration

Dear James,

A Notice of Alteration is being submitted for your review and approval for the Selkirk Thermal Generating Station. The station discontinued power generation on April 1, 2021. As such, many of the clauses in the Environment Act licence are no longer applicable. A letter was submitted by Manitoba Hydro to Manitoba Environment, Climate & Parks in May 2022 outlining these changes and is being submitted again to accompany the Notice of Alteration form.


If you have any questions or concerns about the submission please feel free to contact myself or Rachelle Budge at [REDACTED] or 204-794-3347.

Thank you,  
Allison

Allison Zacharias (she/her)  
Manager  
Generation Environmental Services  
Asset Planning & Delivery  
Manitoba Hydro  
360 Portage Ave (18)  
Winnipeg, MB R3C 0G8  
P. 204-360-3140  
C. 204-479-2186

Notice of Alteration Form



File No. : 3253.00	Environment Act Licence No. : 1645 R5
Legal name of the Licencee: Manitoba Hydro Selkirk Generating Station	
Name of the development: Selkirk Thermal Generating Station	
Category and Type of development per Classes of Development Regulation: Energy Production and Waste Conversion                      Electrical generating facilities >100 MW	
Licencee Contact Person: Allison Zacharias Mailing address of the Licencee: 360 Portage Avenue City: Winnipeg                      Province: Manitoba                      Postal Code: R3C 0G8 Phone Number: (204) 360-3140      Fax:                      Email: azacharias@hydro.mb.ca	
Name of proponent contact person for purposes of the environmental assessment (e.g. consultant):	
Phone:	Mailing address:
Fax:	
Email address:	
Short Description of Alteration ( <i>max 90 characters</i> ): See attached Letter	
Alteration fee attached: Yes: <input type="checkbox"/> No: <input checked="" type="checkbox"/>	
If No, please explain: The changes proposed significantly reduce environmental risk and impact.	
Date: 2022-12-20	Signature:  Printed name: Allison Zacharias
<p>A complete Notice of Alteration (NoA) consists of the following components:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Cover letter</li> <li><input checked="" type="checkbox"/> Notice of Alteration Form</li> <li><input checked="" type="checkbox"/> 1 hard copy and 1 electronic copy of the NoA detailed report (see "<a href="#">Information Bulletin - Alteration to Developments with Environment Act Licences</a>")</li> <li><input type="checkbox"/> \$500 Application fee, if applicable (Cheque, payable to the Minister of Finance)</li> </ul>	<p><b>Submit the complete NoA to:</b>                  Director, Environmental Approvals Branch                  Manitoba Conservation and Climate                  1007 Century Street                  Winnipeg, Manitoba R3H 0W4  <a href="mailto:EABDirector@gov.mb.ca">EABDirector@gov.mb.ca</a></p> <p><b>For more information:</b>                  Phone: (204) 945-8321 Fax: (204) 945-5229  <a href="https://www.gov.mb.ca/sd/permits_licenses_approvals/eal/licence/index.html">https://www.gov.mb.ca/sd/permits_licenses_approvals/eal/licence/index.html</a></p>
<p><b>Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")</b></p>	

2022 05 04

Mr. Kris Innes  
Environment Officer  
Manitoba Environment, Climate, & Parks  
446 Main Street, Lower Level  
Selkirk MB R1A 1V7

Mr. Innes,

Selkirk Generating Station (GS) discontinued power generation operations April 1, 2021. Combustion of natural gas or other fuels for power generation no longer takes place at the facility. However, some limited operations continue at site; the station switchyard now serves as an electrical substation to the Selkirk area and Manitoba Hydro's Chemical Laboratory Services (CLS) continues to operate from their laboratory building inside the fenced yard. Apart from those at the laboratory, staff remaining at site are very few to ensure site security and are not on-site full time. Station heat and fire protection systems also function.

Boilers and other power generation assets are now drained and in a state of abeyance. Controlled substances required for power generation, such as sulfuric acid and carbonylhydrazide, are removed from site according to Manitoba Hydro's waste management streams and processes. Full-scale decommissioning will not proceed during this period of abeyance. Manitoba Hydro will submit a decommissioning plan for the GS once final decisions concerning its future are made, likely five or more years from now.

#### **DRAFT Clause-by-clause review of EAL 1645R5**

Cessation of unit operations at Selkirk GS means many of the requirements and protections outlined in Environment Act Licence (EAL) 1645R5 are no longer implicated. This also reflects significant reductions or elimination of risk and impact to the surrounding environment. Accordingly, Manitoba Hydro suggests the alterations to EAL 1645R5 shown in the table below. A copy of EAL 1645R5 is attached at the end of this letter as reference.

Please consider these alterations and reply with any comments or clarifications to Rachelle Budge.

Clause(s)	Suggested change
<b>Preamble and Definitions</b>	
Not applicable	<p>No change.</p> <p>However, references to power generation and previous Manitoba Hydro submissions related to generation of power no longer apply. Similarly, many of the definitions are no longer relevant. These could be removed to streamline the updated EAL.</p>
<b>General Terms and Conditions</b>	
1 – 4	No change.
<b>Specifications, Limits, Terms and Conditions – Respecting Restrictions on Operation</b>	
5	<p>Remove.</p> <p>Cooling water is no longer required at Selkirk GS. Therefore, no discharges result now that power generation has ended. Similarly, contaminated water and wastewater is no longer treated and discharged from the station.</p> <p>Excluding historic discharge through the former ash lagoon, ‘contaminated’ water was never discharged at Selkirk GS as part of operations. Cessation of power generation does not change that. However, some storm and melt water continues to be discharged through the station and ground drainage system.</p>
<b>Specification, Limits, Terms and Conditions – Respecting Air Emissions</b>	
6, 7, 8, 9	<p>Remove.</p> <p>Selkirk GS no longer combusts natural gas for power generation and therefore no longer produces air emissions from either Unit 1 or 2. Systems to monitor and mitigate air emissions are therefore no longer required.</p>

<p>10</p>	<p>Remove.</p> <p>Activity at Selkirk GS is greatly reduced since cessation of power generation. Staffing compliments are reduced to part-time and minimal levels to maintain electrical distribution and basic building services and security. The Selkirk Laboratory continues to operate but is comparable to typical commercial-level activities common in Manitoba communities.</p> <p>Noise disturbance related to future decommissioning activities are assumed to be authorized under a separate process at a future date.</p>
<p>Specification, Limits, Terms and Conditions – Respecting Water Withdrawals and Releases</p>	
<p>11, 12, 13, 15</p>	<p>Remove.</p> <p>Apart from very modest volume tests and maintenance withdrawals for fire protection system pressure, Selkirk GS no longer withdraws water from the Red River. Similarly, Selkirk GS no longer discharges cooling water to Cooks Creek now that power generation ceased. Discharges to the Red River and Cooks Creek are now very limited to only incidental storm and melt water drainage.</p>
<p>14</p>	<p>Remove.</p> <p>Although Clause 14 does not state, annual erection of a fish barrier fence was completed to protect fish in Cooks Creek from thermal stress during winter operation of the GS. Elevated temperature differentials between cooling water discharge and the ambient water temperature of the creek could produce thermal stress in fish. However, cooling water is no longer required, eliminating the need for this barrier.</p>
<p>16</p>	<p>No change.</p> <p>With the exception of storm and melt water and accumulated shallow groundwater, Selkirk GS no longer discharges liquid effluents. However, weekly monitoring and monthly reporting of drainage will continue.</p>
<p>Specifications, Limits, Terms and Conditions – Respecting Monitoring, Record Keeping and Reporting</p>	
<p>17, 18, 19, 22</p>	<p>Remove.</p> <p>Selkirk GS no longer consumes natural gas or produces air emissions.</p>

20	<p>Remove.</p> <p>Selkirk GS no longer consumes natural gas or produces air emissions. However, Manitoba Hydro will continue to produce and issue monthly reports until a revised EAL is issued.</p>
21	<p>Remove.</p> <p>Selkirk GS no longer consumes natural gas or produces air emissions. However, Manitoba Hydro produced and issued an annual report for 2021 as generation activities continued for a portion of the year.</p>
23	<p>Remove.</p> <p>Apart from very small pressure-maintenance and test withdrawals related to fire protection system operation, water withdrawal no longer takes place.</p>
24	<p>Remove.</p> <p>High-volume water withdrawal no longer takes place at Selkirk GS. Fish entrainment is therefore no longer a risk.</p>
25, 28	<p>Remove.</p> <p>No cooling water is discharged from Selkirk GS.</p>
26	<p>Remove.</p> <p>Units 1 and 2 no longer operate to generate power or other purposes at Selkirk GS.</p>
27	<p>Remove.</p> <p>Studies cited in this Clause were completed and submitted to then-Manitoba Water Stewardship Department.</p>
29	<p>Remove.</p> <p>Wastewater treatment and effluent discharge no longer take place. Wastewater is now managed using holding tanks and contracted septic haulers.</p>

<p>30</p>	<p>No change.</p> <p>Discharge of shallow groundwater, as well as storm and melt water, will take place from the former GS to prevent flooding. However, process water, cooling water, treated wastewater, and similar are no longer produced on site. These sources will therefore not enter discharge, substantially reducing risk and impact to receiving water bodies.</p>
<p>31(a)</p>	<p>No change.</p> <p>Manitoba Hydro will continue to monitor shallow groundwater on an annual basis.</p>
<p>31(b)</p>	<p>Amend.</p> <p>Manitoba Hydro will continue to monitor shallow groundwater at the former ash lagoon and coal pile areas of Selkirk GS. Manitoba Hydro will continue to collect samples during the month of June. To reflect the approved schedule amendment to annual groundwater monitoring and the June collection date, Manitoba Hydro suggests the revised wording below:</p> <p>Suggested wording:</p> <p><i>“Submit an annual report to the Director by the 1<sup>st</sup> day of October of each year, presenting the data collected pursuant to sub-clause 31(a) of this Licence.”</i></p>
<p>Specifications, Limits, Terms and Conditions – Emergency Response Plan</p>	
<p>32</p>	<p>Remove.</p> <p>While the Selkirk facility continues to operate as an electrical substation, activities authorized by the EAL no longer take place. Manitoba Hydro interprets the “...duration of the operation of the Development” has therefore ended.</p> <p>However, emergency plans for the facility in its current function as a substation are now in effect. These plans align with those of other substations in the region and province. Similarly, the laboratory operates under their own emergency plans.</p>
<p>Monitoring and Reporting Specifications – Respecting Decommissioning</p>	

33	No change.  Manitoba Hydro continues to operate the laboratory and switchyard at the facility. Construction activities related to full-scale station decommissioning would be highly disruptive to these activities. Manitoba Hydro will periodically assess the appropriateness of this former GS site for these activities. When firm plans are in place that no longer require the site, Manitoba Hydro will prepare a decommissioning plan for Manitoba Environment, Climate, & Parks Department's approval.
Review and Revocation	
A, B, C, D	No change.

Thank you for your continued consideration of the suggested alterations to EAL 1645R5 in this table.

As of May 12, 2022, I will no longer support the EAL for this facility. Rachelle Budge will provide this support and act as contact for such environmental matters. Please contact Rachelle to further discuss the above details and current operation of the facility. You can contact her at 204-794-3347 or [rbudge@hydro.mb.ca](mailto:rbudge@hydro.mb.ca).

Kind regards,



Marcus Smith  
Senior Environmental Specialist  
Generation Environmental Services  
Manitoba Hydro

Att. (1)

Copy Glen Kristjanson  
Bradley Wilson  
Rachelle Budge  
Allison Zacharias



# LICENCE

Licence No./Licence n° 1645 R5

Issue Date/Date de délivrance April 30, 2008

In accordance with The Environment Act (C.C.S.M. c. E125)/  
Conformément à la Loi sur l'environnement (C.P.L.M. c. E125)

Pursuant to Sections 11(1)/ and 14(2) / Conformément au Paragraphes 11(1) et 14(2)

**THIS LICENCE IS ISSUED TO:/CET LICENCE EST DONNÉ À:**

**MANITOBA HYDRO; "the Licencee"**

for the continuing operation of the existing Development located on parts of River Lots 73 to 80 (inclusive) of the Parish of St. Clements in the Rural Municipality of St. Clements in Manitoba, being the 132 MW Selkirk Thermal Generating Station as outlined in the Licencee's:

- Proposal dated September 24, 1990, together with the Environmental Impact Assessment report (Volumes I and II) dated February, 1992, and the addendum Volume III dated September, 1992;
- letter of May 5, 1999, and supporting report, requesting revisions to the MWAT values;
- letter of August 28, 2000 respecting fish impingement;
- notice of alteration dated January 5, 2001, complemented with an environmental assessment report dated July 11, 2001 respecting the fuel switching project;
- revision request of June 5, 2001 respecting the temperature decline rate limit specified in Clause 27 of Licence No. 1645RRR; and
- the Licencee's updated "Environmental Impact Statement", Volumes 1 & 2, dated October 17, 2005, as submitted pursuant to part D(a) of Review and Revocation section in Environment Act Licence No. 1645 RRRR, for maintaining the ongoing operation of the Development beyond the year 2005, subject to the following specifications, limits, terms and conditions:

## DEFINITIONS

In this Licence:

**"accredited laboratory"** means an analytical facility accredited by the Standard Council of Canada (SCC), or possessing CAEAL accreditation, or accredited by another accrediting agency recognized by Manitoba Conservation to be equivalent to the SCC, or be able to demonstrate, upon request, that it has the quality assurance/quality control (QA/QC) procedures in place equivalent to accreditation based on the international standard ISO/IEC 17025, or otherwise approved by the Director;

**"acid-soluble"** means extractable, where the liquid sample is acidified with 5 millilitres of 1:1 nitric acid per litre of sample at the time of collection, and shaken well before analysis;

“**affected area**” means a geographical area, excluding the property of the Development;

“**approved**” means approved by the Director in writing;

“**backfilled data**” means exhaust duct emissions data artificially derived from parametric sources, such as load data and fuel-sulphur content correlations, that have previously been determined for the relevant CEM system in the course of its most recent certification;

“**BOD<sub>5</sub>**” means five-day biochemical oxygen demand;

“**CEM**” means continuous emission monitoring;

“**CO<sub>2</sub>**” means carbon dioxide;

“**composite sample**” means a quantity of effluent consisting of a minimum of 24 equal volumes of effluent collected at approximately equal time intervals over a sampling period of approximately 24 hours, or a quantity of effluent collected continuously at an equal rate over a sampling period of approximately 24 hours;

“**day**” means calendar day;

“**Director**” means an employee of the department appointed as such by the minister;

“**effluent**” means a liquid released from the plant through its discharge pipes, or released from the plant site as surface runoff, and comprised of or having come in contact with any pollutant used at, generated at, or brought onto the plant site;

“**emergency load reduction**” means means an abrupt unscheduled reduction in load of either or both of the power generating units;

“**emergency shutdown**” means an abrupt unscheduled shutdown of either or both of the power generating units;

“**EPA**” means the Environmental Protection Agency of the United States;

“**exhaust duct**” means the conduit, associated with the natural gas burners of the respective boiler of each generating unit, used for directing all the gaseous emissions to the main stack;

“**five-day biochemical oxygen demand**” means that part of the oxygen demand usually associated with biochemical oxidation of organic matter within 5 days at a temperature of 20° C;

“**fecal coliform**” means aerobic and facultative, Gram-negative, nonspore-forming, rod-shaped bacteria capable of growth at 44.5° C, and associated with fecal matter of warm blooded animals;

“**40CFR75**” means the part of the United States Government Code of Federal Regulations that pertains to CEM;

“**F-factors**” means a ratio of the theoretical volume of gas generated for complete combustion of a given fuel, to the amount of heat produced by the fuel upon combustion;

“**generating unit**” means a boiler, a steam turbine, a steam condenser and an electric generator collectively associated as one operating entity;

“**heat input**” means heat derived from combustion of fuel in a steam generating unit, and does not include the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines, kilns, etc.;

“**hour**” means any time span consisting of 60 consecutive minutes, or a calendar hour for the purposes of the Continuous Emission Monitoring System;

“**maximum continuous rating**” means the maximum rate of heat input, in megajoules per hour, at which a fossil fuel-fired steam generating unit has been demonstrated to be capable of operating on a continuous basis;

“**MWAT**” means the maximum weekly average temperature, that is, the maximum average temperature to which selected species of fish in a waterway can be exposed for seven consecutive days without adversely affecting the fish during growth, reproduction and winter periods;

“**nanogram**” means one billionth of a gram;

“**noise nuisance**” means a continuous or repeated unwanted sound, in an affected area, which is troublesome, annoying or disagreeable to a person:

- (a) residing in an affected area;
- (b) working in an affected area; or
- (c) present at a location in an affected area which is normally open to the members of the public;

if the unwanted sound

- (d) is the subject of at least 5 written complaints, received by the Director in a form satisfactory to the Director and within a 90-day period, from 5 different persons falling within clauses (a), (b) or (c), who do not live in the same household; or
- (e) is the subject of at least one written complaint, received by the Director in a form satisfactory to the Director, from a person falling within clauses (a), (b) or (c), and the Director is of the opinion that if the unwanted sound had occurred in a more densely populated area there would have been at least 5 written complaints received within a 90-day period from 5 different persons who do not live in the same household;

“**NO<sub>x</sub>**” means oxides of nitrogen, and refers collectively to nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>) expressed as a nitrogen dioxide equivalent;

**“particulate matter”** means any finely divided liquid or solid matter other than water droplets;

**“plant”** includes the power house, offices and all the ancillary buildings, facilities and storage areas associated with the operation of the Selkirk Thermal Generating Station, as depicted in Appendix 'A' attached to this Licence;

**“plant site”** means the property described by the legal property boundary lines for that land owned by Manitoba Hydro on which the Selkirk Thermal Generating Station is located;

**“PM”** means particulate matter;

**“PM<sub>2.5</sub>”** means particulate matter with a mean aerodynamic diameter equal to or less than 2.5 microns;

**“rated heating value”** means the most currently applicable heating value of natural gas per unit of volume as published by the supplier of the fuel to the Development and as expressed in megajoules per cubic metre at a standard pressure and temperature of 101.325 kilopascals and 15° Celsius, respectively;

**“720 hour rolling average”** means the average of the consecutive hourly mean emission rates, determined for the preceding 720 hours of operation of the respective boiler burners;

**“7Q10”** means the average minimum seven-day flow rate which has a recurrence interval of once in ten years;

**“SO<sub>2</sub>”** means sulphur dioxide;

**“Standard Methods for the Examination of Water and Wastewater”** means the most recent 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 Environment Association;

**“total coliform”** means a group of aerobic and facultative anaerobic, Gram-negative, nonspore-forming, rod-shaped bacteria, that ferment lactose with gas and acid formation within 48 hours at 35° C, and inhabit predominantly the intestines of man or animals, but are occasionally found elsewhere, and include the sub-group of fecal coliform bacteria;

**“valid data”** means data not corrupted by any error, improper calibration or malfunction of the equipment used to generate the data, or by the improper application of applicable EPA's or Environment Canada's published protocols for emission data collection through the use of CEM systems, and excludes under-range and over-range data relative to the upper and lower range sensitivity settings of the respective CEM unit as well as CEM calibration and span hour data;

**“VOCs”** means volatile organic compounds; and

**“weekly average”** means the arithmetic mean of a minimum of 24 discrete measurements taken at equal time intervals throughout each day for a total of 7 consecutive days

## GENERAL TERMS AND CONDITIONS

This Section of the Licence contains requirements intended to provide guidance to the Licencee in implementing practices to ensure that the environment is maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for present and future Manitobans.

1. In addition to any of the 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, handling, treatment, and 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;
  - (b) determine the environmental impact associated with the release of any pollutant(s) from the Development; or
  - (c) provide the Director, within such time as may be specified, with such reports, drawings, specifications, analytical data, descriptions of sampling and analytical procedures being used, bioassay data, flow rate measurements and such other information as may from time to time be requested.
2. The Licencee shall, unless otherwise specified in this Licence:
  - (a) carry out all preservations and 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 or in accordance with an equivalent analytical methodology approved by the Director; and
  - (b) ensure that all analytical determinations are undertaken by an accredited laboratory.
3. The Licencee shall ensure that all monitoring activities, data collection and interpretations requested through the provisions of this Licence are carried out by individuals properly trained or qualified to carry out these tasks.
4. The Licencee shall report all the information requested through the provisions of this Licence in a manner and form acceptable to the Director.

## SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

### Respecting Restrictions on Operation

5. The Licencee shall not, in the course of operating this Development:
  - (a) cause the occurrence of any violation with respect to any of the limits, terms and conditions as laid out in this licence; nor

- (b) notwithstanding any of the limits terms and conditions laid out in this Licence, cause a condition or conditions, with respect to the withdrawal of cooling water from the Red River, or the release of heated and/or contaminated water or wastewater into Cooks Creek and/or the Red River, such as to cause a degradation or alteration of the quality of the receiving water, or such as to cause, or form part of a process of degradation or alteration of the quality of that water to the degree that it is rendered deleterious to fish or fish habitat or to the use by man of fish that frequent the receiving water, within the meaning and intent of the federal *Fisheries Act* as enforced by Environment Canada.

### **Respecting Air Emissions**

- 6. Unless otherwise specified by the Director, the Licencee shall:
  - (a) adhere to the protocols and performance specifications outlined in Environment Canada's 1993 Report EPS 1/PG/7, or any future amendment thereto, respecting the installation, the certification of performance, the quality assurance and quality control program, the calculation of emission rates by F-factors, and the determination of mass emission or loading rates, associated with the CEM system on the exhaust duct of each generating unit;
  - (b) ensure that any CEM system used in monitoring the emissions from the exhaust duct of each generating unit is capable of meeting applicable initial certification and re-certification requirements of EPA 40CFR75, as specified in 75.20, and Appendices A, B and C of EPA 40CFR75 wherein the term "Administrator" shall be deemed to mean Director for the purposes of this Licence; and
  - (c) ensure that a quality assurance and quality control program, satisfactory to the Director, and applicable to each CEM system, is submitted to the Director at least 30 days in advance of commencing the operation of any CEM system.
  
- 7. The Licencee shall:
  - (a) ensure that a CEM system for NO<sub>x</sub> is:
    - (i) installed, at a location satisfactory to the Director, on the exhaust duct of the respective boiler associated with each generating unit before each respective boiler is placed into operation; and
    - (ii) certified for performance by a qualified third party within 30 days of having placed the respective boiler of each generating unit into operation;
  - (b) submit a copy of the signed and dated certificate of certification to the Director within seven days of any CEM system having been certified or re-certified for performance;
  - (c) continually maintain each CEM system in a fully functioning and calibrated condition satisfactory to the Director;
  - (d) ensure that each CEM system is fully functioning for at least 90% of the operational time of the respective burners associated with the boiler of each generating unit; and
  - (e) ensure that, whereupon a CEM system has been replaced or overhauled, the affected CEM system is re-certified for performance by a qualified third party within 30 days of its installation or overhaul.
  
- 8. The Licencee shall:
  - (a) as an initial step upon commissioning each generating unit into use, and under the supervision of a qualified third party determine the maximum continuous rating for each generating unit

- based on the rated heating value of the natural gas, and utilizing the most efficient rate of consumption of natural gas to achieve a peak power output level on a continuous basis;
- (b) on the basis of the established maximum continuous rating for each generating unit, an hourly mean emission rate of 50 nanograms of  $\text{NO}_x$  per joule of heat input, calculate the maximum  $\text{NO}_x$  emission rate limit (as tonne of  $\text{NO}_2$  per hour) for each generating unit;
  - (c) submit the results of these tests and determinations, together with all the calculations, to the Director for approval;
  - (d) use the approved  $\text{NO}_x$  (tonne per hour) emission rate limit for each generating unit as the enforceable limit for  $\text{NO}_x$  emission rates applicable to each subsequent 720 rolling average of hourly mean  $\text{NO}_x$  (tonne per hour) emission rate determinations; and
  - (e) at the discretion and request of the Director, repeat the maximum continuous rating tests to reaffirm, or revise if necessary, the standing  $\text{NO}_x$  emission rate limit for each generating unit.
9. In the circumstance where ambient air quality monitoring data determined from within the area of influence of the Development indicates that one or more of Manitoba's "Ambient Air Quality Guidelines" is being exceeded, or the  $\text{PM}_{2.5}$  is registering at levels in excess of 30 micrograms per cubic metre (averaged over a 24-hour period), and the Director is satisfied that the Development is the cause or a significant contributor to the prevailing ambient air quality condition, the Licencee shall undertake such mitigation measures as may be specified by the Director to improve the ambient air quality condition.
10. The Licencee shall not cause or permit a noise nuisance to be created as a result of the construction, operation or alteration of the Development, and shall take such steps as the Director may require to eliminate or mitigate a noise nuisance.

#### **Respecting Water Withdrawals and Releases**

11. The Licencee may operate more than one of the two power generating units in the generating mode at any time during the months of May and June in any year, subject to the review and reconsideration of the Director pending any new evidence as may be obtained from at least one more aquatic field study to be carried out as per the requirement of Clause 27 of this Licence.
12. The Licencee shall, at such times when the rate of water withdrawal from the Red River approaches 10% of the prevailing Red River flow rate measured at Lockport, throttle the water intake pump(s) to minimize the rate of water withdrawal from the Red River.
13. Upon each power generation shutdown or load reduction at the plant, the Licencee shall:
- (a) implement all practical measures concerning the gradual reduction of generation and the handling of cooling water flows prior to and during generation shutdowns, with cooling water pumps shut down upon the cessation of generation, so as to minimize the temperature decline rate of the water in Cooks Creek; and
  - (b) ensure that the temperature decline rate of the water in Cooks Creek at a monitoring station approximately 1 kilometre downstream of the cooling water outfall, does not exceed:
    - (i) 1.0 Celsius degree per hour during ice-cover conditions on Cooks Creek upstream of the cooling water outfall from the Development; or

- (ii) 2.5 Celsius degrees during open water conditions on Cooks Creek upstream of the cooling water outfall from the Development;  
except subsequent to an emergency shutdown or emergency load reduction, and with the proviso that Sub-clause 16(b)(ii) would revert to a more restrictive criteria, as specified by the Director in writing, should new evidence suggest this level of protection to be inadequate.
14. The Licencee shall install and maintain a fish barrier fence, satisfactory to the Director, at the mouth of Cooks Creek throughout the winter months in each year, unless otherwise approved by the Director.
15. At all times when power is being generated at the plant, the Licencee shall, unless emergency power demand conditions, acknowledged by the Director, warrant a higher power generation level, or unless the prevailing flow rate of the Red River at Selkirk is less than the 7Q10 flow rate shown in Appendix 'C', attached to this Licence, for that prevailing month:
- (a) reduce the level of power output at the plant if the prevailing weekly average temperature of the Red River intake cooling water is approaching the MWAT value shown in Appendix 'C', attached to this Licence, for the prevailing month, with the power output reduced to such a level at which the Licencee can demonstrate to the satisfaction of the Director that the heat loading from Cooks Creek into the Red River is not causing the downstream prevailing weekly average temperature of the Red River in the fully mixed zone to exceed the said MWAT value;  
or
  - (b) discontinue power generation at the plant if the prevailing weekly average temperature of the Red River intake cooling water is equal to or exceeds the MWAT value shown in Appendix 'C', attached to this Licence, for the prevailing month; and
  - (c) limit the temperature of the cooling water discharged at the outfall into Cooks Creek to the maximum outfall temperature specified in the table shown in Appendix 'D', attached to this Licence, relative to the corresponding calendar periods and ambient temperature ranges in Cooks Creek, whereby:
    - (i) Cook's Creek ambient temperature on any day shall be the average temperature of equally spaced temperature readings taken over the preceding three calendar days at a temperature monitoring station located 1 km upstream of the outfall; and
    - (ii) the cooling water temperature at any time at the outfall shall be the average of 3 temperature readings taken of the cooling water at the outfall over a period of one hour.
16. The Licencee shall ensure that the effluent released from the station drain pipe is of such quality that:
- (a) in any composite sample collected of that effluent at either the station drain sump or at the discharge point of the station drain pipe at the Red River:
    - (i) the pH is not less than 6.5 nor greater than 9.5 pH units;
    - (ii) the acid-soluble copper concentration is not greater than 0.5 milligrams per litre;
    - (iii) the total nickel concentration is not greater than 0.5 milligrams per litre; and
    - (iv) the total zinc concentration is not greater than 0.5 milligrams per litre; and
  - (b) in any grab sample collected of that effluent, at either the station drain sump or at the discharge point of the station drain pipe at the Red River, the oil and grease content is not greater than 15 milligrams per litre.



**Respecting Monitoring, Record Keeping and Reporting**

17. The Licencee shall, upon and after either or both of the converted generating units have been commissioned into use, monitor and record on each day of each year:
- (a) the maximum instantaneous generated power output (as megawatts);
  - (b) the total megawatt-hours generated by each generating unit;
  - (c) the total daily volumetric quantity of natural gas used by the boiler burners of each generating unit expressed as cubic metres normalized to a standard pressure and temperature of 101.325 kilopascals and 15° Celsius, respectively;
  - (d) the rated heating value of the supplied natural gas expressed as megajoules per cubic metre at a standard pressure and temperature of 101.325 kilopascals and 15° Celsius, respectively; and
  - (e) the purpose(s) for which the plant was operated to provide power.
18. The Licencee shall, upon and after either or both of the converted generating units have been commissioned into use:
- (a) monitor and record the air emissions being released through the exhaust duct of each generating unit at such locations as are satisfactory to the Director:
    - (i) continuously for the hourly mean emission rate of NO<sub>x</sub> (expressed as nanograms of NO<sub>2</sub> per Joule of heat input);
    - (ii) continuously for the 720 hour rolling average of the hourly mean emission rates of NO<sub>x</sub> (expressed as nanograms of NO<sub>2</sub> per Joule of heat input);
    - (iii) continuously for the 720 hour rolling average of the hourly mean emission rates of NO<sub>x</sub> (expressed as tonnes of NO<sub>2</sub> per hour);
    - (iv) continuously for the 720 hour rolling average of the hourly mean emission rates of NO<sub>x</sub> (expressed as kilograms of NO<sub>2</sub> per megawatt-hour of power output); and
    - (v) at such times and for such duration as may be requested in writing by the Director, and using methods and units satisfactory to the Director, for any or all of SO<sub>2</sub>, PM, PM<sub>2.5</sub>, total or specific VOCs, greenhouse gases and such other pollutant(s) as may be identified by the Director, through the burning of natural gas;
  - (b) ensure that if the total valid data recorded by a certified CEM system on any day of operation of either of the boiler burners for either of the generating units accounts for less than 100% of the operational time of the respective generating unit, that the missing data for the balance of the operating time is backfilled in accordance with Environment Canada's 1993 report EPS 1/PG/7 or such alternate manner as is acceptable to the Director;
  - (c) ensure that if the total recorded valid data in any month of any year by either certified CEM system accounts for less than 80% of the total operational time of the respective generating unit, the Director is notified of the situation, the source of the problem and the proposed course of action to remedy the situation;
  - (d) retain all of the electronic and backfilled monitoring data generated pursuant to Sub-clauses 18(a) and 18(b) of this Licence in electronic form for a minimum of seven years; and

- (e) submit to the Director such electronic monitoring data or hard copy information on the data compiled and recorded pursuant to Sub-clause 18(d) of this Licence, if and when requested by the Director.
19. The Licencee shall, for each generating unit's exhaust duct, upon and after either or both of the converted generating units have been commissioned into use, determine and record:
- (a) for each day on which either or both generating unit boiler burners were operated:
- (i) the peak 720 hour rolling average of hourly mean emission rates of  $\text{NO}_x$ , expressed as  $\text{NO}_2$  tonne per hour, based on each hourly mean emission rate established over the span of the operating time of the respective burners, as well as each additional such emission rate which is in excess of the approved emission rate limit;
  - (ii) the total daily emissions of  $\text{NO}_x$ , expressed as  $\text{NO}_2$  tonne per day, based on the hourly mean emission rates as determined over the operating period of the respective burners on the respective day;
  - (iii) the peak hourly mean rate of discharge of  $\text{NO}_x$ , (expressed as nanograms of  $\text{NO}_2$  per Joule of heat input) of each 720 hour rolling average as determined over the operating period of the respective burners on the respective day; and
  - (iv) the peak 720 hour rolling average of hourly mean emission rates of  $\text{NO}_x$ , expressed as kilograms of  $\text{NO}_2$  per megawatt-hour of power output;

whereby these data are based only on the valid data collected pursuant to Sub-Clause 19(a) of this Licence, and of backfilled data when applicable, consisting of the respective hourly mean emission rate determinations made by each CEM system during the operation of the respective boiler burners on the respective day;

- (b) the daily volumetric flow rate of exhaust gas (expressed in cubic metres on a dry volume basis);
- (c) the percent of time during which:
- (i) the respective CEM system was fully functioning; and
  - (ii) valid data was recorded for each continuously monitored parameter;
- relative to the duration of operation of the boiler burners of each respective generating unit on the respective operating day;
- (d) the total daily and total monthly mass emissions of  $\text{NO}_x$ , greenhouse gases [ $\text{CO}_2$ ,  $\text{N}_2\text{O}$  and methane],  $\text{SO}_2$ , total VOCs, and PM (each expressed in units most appropriate to their respective magnitudes) released to the atmosphere through each generating unit's exhaust duct, whereby the emission rate factors for those parameters not being continuously monitored pursuant to this Licence may be sourced from the US EPA Document AP-42, or determined as per Environment Canada's Environmental Protection Series 1993 report EPS 1/PG/7, unless otherwise more specifically determined through actual on-site exhaust duct sampling data; and
- (e) the total daily and total monthly mass emissions of such other elements and compounds released to the atmosphere through each generating unit's exhaust duct, as may be requested by the Director.

20. The Licencee shall submit to the Director monthly reports, in electronic and hard copy form, on the data compiled pursuant to Clauses 17 and 19 of this Licence, together with the prevailing heating value of the natural gas, within 30 days of the end of the month during which the monthly data was collected.
21. The Licencee shall submit to the Director by March 1st of each year, an annual summary of the monthly data reported in the preceding year pursuant to Clause 20 of this Licence.
22. The Licencee shall, if requested by the Director:
  - (a) submit a program satisfactory to the Director for undertaking an ambient air quality monitoring program in such a manner, at such stations, for such pollutants and for such duration of time as may be specified by the Director;
  - (b) carry out the ambient air quality monitoring program to the satisfaction of the Director; and
  - (c) submit the determined data (in electronic and hard copy form) along with an interpretation of the data to the Director within 60 days of the completion of each such ambient air quality monitoring program.
23. The Licencee shall in each month of each year, by a method of measurement or estimation satisfactory to the Director:
  - (a) determine and record the total monthly quantity of water (as cubic metres) withdrawn from the Red River;
  - (b) during those periods when the plant is operating in the power generating mode:
    - (i) determine and record the daily total water (as cubic metres) and the peak water withdrawal rate (as cubic metres per second) withdrawn from the Red River;
    - (ii) determine and record the daily average temperature of the water withdrawn from the Red River; and
    - (iii) identify the dates on which both generating units were operated simultaneously in the power generating mode; and
  - (c) submit the information recorded pursuant to Sub-clauses 23(a) and 23(b) of this Licence to the Director within 30 days of the end of the month during which the information was collected.
24. The Licencee shall, unless otherwise specified by the Director:
  - (a) daily during startup and shutdown procedures of the power generating units, and weekly at all times when either or both units are in operation, collect, identify and measure the size of fish impinged on the travelling fish screens at the cooling water intake pumps; and
  - (b) in any month during which impinged fish are found on the traveling fish screens at the cooling water intake pumps, report to the Director the number, type and size of impinged fish found on the screens, the probable cause of the incident(s) and the action taken to mitigate the circumstance.
25. The Licencee shall:
  - (a) continuously monitor the temperature and the temperature decline rate over time (in Celsius degrees per hour) of:
    - (i) the cooling water released at the outfall of the cooling water discharge pipe; and
    - (ii) the water in Cooks Creek at a monitoring station located approximately 1 kilometre downstream of the cooling water discharge point;

- (b) continuously monitor the temperature and the temperature decline rate over time (in Celsius degrees per hour) of the water in Cooks Creek at a monitoring station located upstream of the cooling water discharge point at a point between the railway bridge and the Henderson Highway bridge (to capture naturally occurring temperature decline rates that may affect the temperature decline rate readings being obtained at the existing 1 km station while the generating plant is engaged in a shut-down mode);
  - (c) keep the continuously recorded data charts and/or electronic records compiled pursuant to Sub-clauses 25(a) and 25(b) for at least one year for possible inspection or submission to the Director; and
  - (d) submit a report to the Director, within 30 days of the end of each month during which power generation shutdown occurred, identifying the shutdown date(s) of the power generation unit(s) and the maximum recorded cooling water temperature decline rates at the 3 stations identified in Sub-clauses 25(a) and 25(b) of this Licence associated with each shutdown, with emergency versus routine shutdowns clearly delineated.
26. The Licencee shall report each emergency shutdown or emergency load reduction involving either or both of the power generating units to the Director, by facsimile or e-mail, within 8 hours of its occurrence.
27. The Licencee shall:
- (a) under the first available circumstance of having to operate two generating units for several weeks during the months of May and June under low flow (drought) conditions, undertake at least one more aquatic study, in close consultation with the Water Stewardship Department, focused on:
    - i) measuring the larval fish densities in both the Red River and at the cooling water outfall to provide an estimate of the proportion of the total number of larval fish being withdrawn; or
    - ii) preferably, and if feasible, monitor the cooling water outfall at Cooks Creek to assess fish loss (production foregone); and
  - (b) report the findings of that study to the Director as soon as it is completed, together with an explanation (if no data could be provided as per sub-Clause 27(a)(ii) of this Licence.
28. The Licencee shall,
- (a) determine and record the total quantities of effluent (as cubic metres) discharged each month from the cooling water discharge pipe;  
whereby such determinations are based on methods of measurement or estimation satisfactory to the Director; and
  - (b) report this information to the Director within 30 days of the end of the month during which the information was determined.
29. The Licencee shall:
- (a) during each month determine and record the total monthly sewage flow rate (as cubic metres), released from the on-site sewage treatment plant into the station drain, where such determinations shall be based on a method of measurement or estimation satisfactory to the Director;
  - (b) once each week, collect grab samples of the effluent from the outfall of the sewage treatment plant, and analyze the samples for:
    - (i) suspended solids (milligrams per litre);

- (ii) BOD<sub>5</sub> (milligrams per litre);
  - (iii) fecal coliform count (Most Probable Number per 100 millilitres); and
  - (iv) total coliform (Most Probable Number per 100 millilitres); and
- (c) report the weekly data determined pursuant to Sub-clauses 29(a) and 29(b) of this Licence to the Director within 30 days of the end of the month in which the determinations were made.

30. The Licencee shall:

- (a) once each week, collect a composite sample, either at the outfall on the Red River or at the station drain sump, of the effluent being released from the station drain pipe, and analyze the sample for:
- (i) pH (pH units);
  - (ii) total dissolved solids (milligrams per litre);
  - (iii) suspended solids (milligrams per litre);
  - (iv) hardness (as CaCO<sub>3</sub>) (milligrams per litre);
  - (v) chlorides (milligrams per litre);
  - (vi) total phosphorous (milligrams per litre);
  - (vii) soluble boron (milligrams per litre);
  - (viii) total iron (milligrams per litre);
  - (ix) acid-soluble copper (milligrams per litre);
  - (x) total nickel (milligrams per litre);
  - (xi) total zinc (milligrams per litre);
  - (xii) acid-soluble lead (milligrams per litre); and
  - (xiii) acid-soluble cadmium (micrograms per litre);

unless otherwise specified by the Director;

- (b) once each week, collect a grab sample, either at the outfall on the Red River or at the station drain sump, of the effluent being released from the station drain pipe, and analyze the sample for oil and grease (milligrams per litre);
- (c) report the weekly data determined pursuant to Sub-clauses 30(a) and 30(b) of this Licence, along with the monthly averages, to the Director within 30 days of the end of the month in which the samples were collected; and
- (d) once each week, collect a water sample from the Red River, upstream of the outfall of the station drain, and analyze it for the parameters listed in sub-clauses 30(a) and 30(b) as well as hardness, to enable the calculation of loadings to the Red River from the station drain.

31. The Licencee shall, unless otherwise specified by the Director:

- (a) monitor the 14 groundwater observation wells identified in Appendix 'A' attached to this Licence at such frequencies and for such water quality parameters and characteristics as are specified in Appendix 'B' attached to this Licence; and
- (b) submit an annual report to the Director by the 1st day of March of each year, on the data collected pursuant to Sub-clause 31(a) of this Licence;

whereby the ongoing monitoring and annual reporting activities required through this Clause will be reviewed by the Director after the year 2010 for modification or termination.

**Emergency Response Plan**

32. The Licencee shall maintain the approved Emergency Response Plan in a current status and consistent with the departmental "Industrial Emergency Response Planning Guide (MIAC, September, 1996)" for the duration of the operation of the Development.


**Respecting Decommissioning**

33. The Licencee shall, at least one year in advance of the projected date for commencing the decommissioning and permanent closure of the Development;

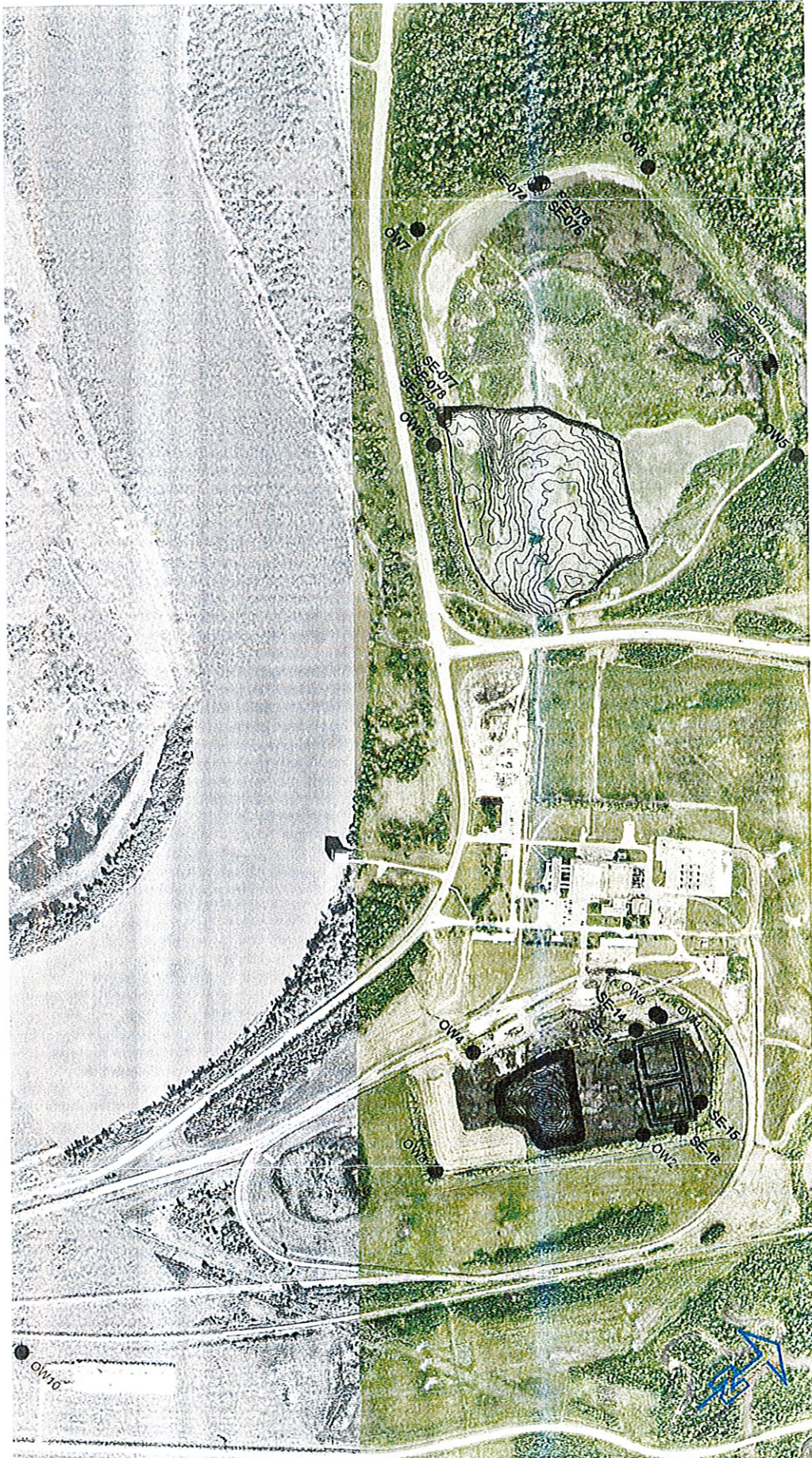
- (a) submit a detailed Closure Plan to the Director, for approval, respecting the measures proposed to address environmental and environmental health issues which might arise in the course of, and subsequent to, the decommissioning of the Development, and the disbursement or disposal of liquid and solid wastes as may be associated with the Development at that time; and
- (b) implement the approved Closure Plan to the satisfaction of the Director.

**REVIEW AND REVOCATION**

- A. This Licence replaces Environment Act Licence No. 1645 RRRR which is hereby rescinded.
- B. 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.
- C. If, in the opinion of the Director, new evidence warrants a change in the specifications, limits, terms or conditions of this Licence, the Director may require the filing of a new proposal pursuant to Section 11 of The Environment Act.
- D. This Licence may be reviewed by the Director if:
  - (a) any studies or monitoring programs undertaken in compliance with this Licence, or at the request of the Director, or otherwise, give rise to new evidence to warrant a change to this Licence; or
  - (b) the observed frequency, duration and/or seasonal timing of the operation of the generating units give cause to be concerned that chronic levels of stress may be being imparted upon fish at the cooling water intake and/or at the outfall of the once-through cooling water system and/or beyond in Cooks Creek.

  
\_\_\_\_\_  
Tracey Braun, M.Sc.  
Director  
Environment Act

Selkirk Generating Station - Site Plan



**APPENDIX 'B'**

Groundwater Monitoring Program

PARAMETER	FREQUENCY	
	Annually	Quarterly
Water Table Elevation		X
pH		X
Calcium	X	
Magnesium	X	
T. Hardness	X	
CO <sub>3</sub> Alkalinity		
HCO <sub>3</sub> Alkalinity		
T. Alkalinity	X	
Conductivity	X	
Chlorides	X	
Sulphates	X	
Total Dissolved Solids	X	
Nitrate	X	
Diss. Sodium	X	
Diss. Potassium	X	
Diss. Arsenic		X
Diss. Barium		X
Sol. Boron		X
Diss. Cadmium		X
Diss. Chromium		X
Diss. Copper		X
Diss. Iron		X
Diss. Lead		X
Diss. Manganese		X
Diss. Nickel		X
Diss. Selenium		X
Diss. Zinc		X



APPENDIX 'C'

Month	MWAT (Maximum Weekly Average Temperature)	RED RIVER 7Q10 (m <sup>3</sup> /sec) †
January	4°C *	20.5
February	4°C *	21.8
March	4°C *	29.9
April	4°C until ambient reaches 2°C, after which 2°C above ambient until the river temperature remains above 6°C and reproductive period begins. 2°C above ambient to a maximum of 18°C for a 5-week reproductive period commencing on the date when the river temperature remains above 6°C. After the 5-week period, 2°C above ambient to a maximum of 25.5°C until the ambient temperature reaches 23.5°C, or until June 15th, whichever comes first, and 25.5°C thereafter. ‡	60.9
May		72.2
June 1-15		57.0
June 16-30	25.5°C ‡	57.0
July	25.5°C ‡	37.3
August	25.5°C ‡	20.2
September	25.5°C ‡	21.3
October	20°C *	19.9
November	11°C *	24.8
December	4°C *	18.7

\* Taken from Table K-1 of Appendix K in Volume II of the Environmental Impact Assessment dated February, 1992, compiled by Senes Consultants Limited for Manitoba Hydro for the Thermal Life Assurance Program at the Selkirk Generating Station, and modified for the Red River at Selkirk.

‡ Based on reproductive requirements of spring-spawning cool water fish as presented by North/South Consultants in their report entitled "Thermal Requirements of Fish in the Red River" dated January, 1999. The 6°C river temperature applies to all times of each day.

† Derived by Manitoba Natural Resources, Water Resources Branch, and based on adjusted Saskatchewan-Nelson Basin Board (SNBB) flows for present Assiniboine River Regulation and historic flows at station 05OJ010 near Lockport from 1913 to 1991.

These "MWAT" and "7Q10" values may be subject to revision by the Director from time to time on the basis of new evidence.

APPENDIX 'D'

COOLING WATER DISCHARGE TEMPERATURE LIMITS

<u>Period</u>	<u>Cooks Creek Ambient Temp.</u>	<u>Maximum Outfall Temp.</u>
<u>December 1<sup>1</sup> – June 15</u>	<u>0° to 4°C</u>	<u>Ambient + 8.5 °C</u>
	<u>4° to 13°C</u>	<u>Ambient + 5°C<sup>2</sup></u>
	<u>13° to 16°C</u>	<u>18°C<sup>2</sup></u>
	<u>16°C or higher</u>	<u>Ambient + 2°C<sup>2</sup></u>
<u>June 16 – November 30</u>	<u>18°C or higher</u>	<u>31°C</u>
	<u>18°C to 15°C</u>	<u>30°C</u>
	<u>15°C to 10°C</u>	<u>25°C</u>
	<u>10°C to 5°C</u>	<u>18°C</u>
	<u>5°C to 0°C</u>	<u>Ambient + 12°C</u>

<sup>1</sup> Fish barrier installed in Cooks Creek approximately November 1 to April 1. Barrier installed after ambient water temperature in Cooks Creek declines below 6 °C for 3 consecutive days and prior to general freeze-up. If station is in operation, barrier would be installed after the station is shut down for 48 hours. Barrier removed either (i) prior to ice-off; or (ii) if the station is operating, after ambient water temperature in Cooks Creek (at the 1 km U/S site) has risen above 4°C for 3 consecutive days, and conditions are safe for barrier removal.

<sup>2</sup> During periods when ambient temperature in the creek is increasing. If ambient temperature declines after spring warm-up has begun and the station is in operation, then the outfall maximum temperature remains at the highest level established as long as the station continues to operate.