



**Conservation**

Environmental Stewardship Division  
Environmental Assessment and Licensing Branch  
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Faxed

November 23, 2007

File: 3326.10

Mr. Bill Brown  
Manager  
Environmental Licencing & Protection  
Manitoba Hydro  
PO Box 815  
Winnipeg, MB R3C 2P4

Dear Mr. Brown:

**Re: Manitoba Hydro – Kelsey Generating Station Sewage Treatment Plant –  
Environment Act Licence No. 1580 R**

The Environmental Assessment and Licensing Branch (the Branch) has reviewed Manitoba Hydro's request to have only one flow meter for monitoring the flow rate through the Kelsey Generating Station sewage treatment plant (plant) as opposed to the two required by Environment Act Licence No. 1580 R (the Licence). This review is associated with the June 27, 2007 Manitoba Hydro letter to the Branch requesting the proposed revision to the Licence. It is understood that the plant is currently being altered in accordance with the previous proposal and the general requirements of the Licence.

Clauses 17. a) and c) of the Licence require that total flow rate(s) into the plant and flow rate(s) into and through the ultraviolet disinfection system be monitored and recorded. Your letter indicates that it would be preferred to have one flow meter, located at the inlet to the ultraviolet disinfection system that is located at the discharge from the plant, and that the flow rate metered at this location would be equivalent to the plant influent flow rate. The letter also stated that the influent flow rate to the plant, as would be represented by the meter at the discharge from the plant, would never be challenged.

Upon review of the letter, it was determined that the proposed request for alteration to the Licence is minor and can be accommodated through revisions to the Licence. As a result, Clause 15 was altered to include the specific location at which sampling of effluent is to occur, that is, at the monitoring station located after UV disinfection. Clause 17 of Environment Act Licence No. 1580 RR (attached) has been revised accordingly while Clause 18 has been altered such that the requirements for the monitoring station are specifically identified. Clauses 20 a) and b) have

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been adjusted to specify that composite samples are to be flow proportional composite samples, the definition of which has also been provided. Note also that the date by which "as constructed drawings" are required has been revised to February 29, 2008. Finally, Environment Act Licence No. 1580 R has been rescinded.

If you have any questions please contact Rob Boswick, Environmental Engineer at 945-6030.

Yours truly,



Tracey Braun, M.Sc.  
Director  
Environment Act

Attachment

- c. Larry Keratchuk, Manager, Kelsey, Laurie River, CRD – Manitoba Hydro  
Steve Kearney, Director – Northeast Region, Manitoba Conservation  
Larry Cleven, M.Sc., P. Eng. – Wardrop Engineering Inc.

**NOTE: Confirmation of Receipt of this Licence No. 1580 RR (by the Licencee only) is required by the Director of Environmental Assessment & Licensing. Please acknowledge receipt by signing in the space provided below and faxing a copy back to the Department by November 29, 2007.**

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On behalf of Manitoba Hydro

Date

**\*\*A COPY OF THE LICENCE MUST BE KEPT ON SITE AT THE DEVELOPMENT AT ALL TIMES\*\***

# LICENCE

Licence No. / Licence n° 1580 RR

Issue Date / Date de délivrance July 30, 1992

Revised: May 12, 2006

Revised: November 23, 2007

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 Section 11(1) AND 14(2) / Conformément au Paragraphe 11(1) AND 14(2)

THIS LICENCE IS ISSUED TO : / CETTE LICENCE EST DONNÉE À :

MANITOBA HYDRO; "the Licencee"

for the construction and operation of the Development being a wastewater collection system, a Sequencing Batch Reactor package sewage treatment plant, with discharge of treated effluent from the sewage treatment plant into the waters of the Nelson River, located in unsurveyed territory 81-17-19 E.P.M. in accordance with the Proposal for alterations to the existing sewage treatment plant filed under Section 14 of The Environment Act on July 13, 2005, the additional information supplied with the letter dated February 16, 2006, and the Notice of Alteration dated June 27, 2007, and 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 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;

"**affected area**" means a geographical area excluding the property of the development;

"**approved**" means approved by the Director in writing;

"**as constructed drawings**" means engineering drawings complete with all dimensions which indicate all features of the Development as it has actually been built;

**"bioassay"** means a method of determining toxic effects of industrial wastes and other wastewaters by using viable organisms;

**"composite sample"** means a quantity of wastewater consisting of a minimum of 10 equal volumes of effluent, or flow proportional volumes collected over a 24-hour period, and may be collected manually or by means of an automatic sampling device;

**"Director"** means an employee so designated pursuant to The Environment Act;

**"effluent"** means treated wastewater flowing or pumped out of the sewage treatment plant or overflow detention pond;

**"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;

**"final discharge point"** means the outlet of the UV disinfection system at which an effluent monitoring station is located;

**"five-day biochemical oxygen demand"** (BOD<sub>5</sub>) means that part of oxygen usually associated with biochemical oxidation of organic material within 5 days at 20°C;

**"flow proportional composite sample"** means a combination of not less than ten individual samples of equal volumes of wastewater taken at equal increments of wastewater flow over a specified period of time;

**"grab sample"** means a quantity of wastewater taken at a given place and time;

**"influent"** means water, wastewater, or other liquid flowing into the sewage treatment plant;

**"MPN index"** means the most probable number of coliform organisms in a given volume of wastewater as determined by statistical estimation;

**"odour nuisance"** means a continuous or repeated odour, smell or aroma, in an affected area which is offensive, obnoxious, troublesome, annoying, unpleasant 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 members of the public;

if the odour, smell or aroma

- 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, and 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 odour, smell or aroma 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;

**"sewage"** means human body, toilet, liquid, waterborne culinary, sink or laundry waste;

**"sewage effluent"** means sewage after it has undergone at least one form of physical, or biological treatment;

**"sewage treatment plant"** means the component of this development which consists of the central facility, of the wastewater treatment facilities, which contains all treatment processes exclusive of the wastewater collection system;

**"sludge"** means accumulated solid material containing large amounts of entrained water which has separated from wastewater during processing;

**"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 Federation;

**"total coliform"** means a group of aerobic and facultative anaerobic, gram-negative, non-spore 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;

**"UV disinfection"** means a disinfection process for treating wastewater using ultraviolet radiation;

**"UV dose"** means the unit of intensity of ultra violet light that is required to kill bacteria and viruses present in the sewage effluent;

**"waste disposal ground"** means an area of land designated by a person, municipality, provincial government agency, or crown corporation for the disposal of waste and approved for use in accordance with Manitoba Regulation 150/91 or a Licence pursuant to The Environment Act;

**"wastewater"** means the spent or used water of a community or industry which contains dissolved and suspended matter; and

**"wastewater collection system"** means the sewer and pumping system used for the collection and conveyance of domestic, commercial and industrial wastewater.

### **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 following specifications, limits, terms and conditions specified in this Licence, the Licencee shall, upon the request of the Director:
  - a) sample, monitor, analyze or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, handling, treatment and disposal systems, for such pollutants, ambient quality, aquatic toxicity, seepage characteristics and discharge rates and for such duration and frequencies as may be specified;
  - b) determine the environmental impact associated with the release of any pollutant from the Development; 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, unless otherwise specified in this Licence:
  - a) carry out all preservations and analyses of liquid samples in accordance with the methods prescribed in the Standard Methods for the Examination of Water and Wastewater, or in accordance with equivalent preservation and analytical methodologies approved by the Director;
  - b) have analytical determinations undertaken by an accredited laboratory; and
  - c) report the results to the Director, in writing, within 60 days of the samples being taken.
3. The Licencee shall submit all information required to be provided to the Director under this Licence, in writing, in such form (including number of copies), and of such content as may be required by the Director.
4. The Licencee shall operate the wastewater collection system and the sewage treatment plant in such a manner that:
  - a) all the wastewater generated within the Kelsey Generating Station Powerhouse and Townsite area is directed towards the Kelsey Generating

- Station Powerhouse and Townsite sewage treatment plant or other approved wastewater treatment system;
- b) only wastewater as defined in this Licence is discharged into the sewage treatment plant; and
  - c) scum, grit screenings and waste solids other than sludge are disposed at a waste disposal ground.
5. The Licencees shall not cause or permit an odour 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 an odour nuisance.
  6. The Licencee shall install, operate, and maintain an effluent discharge pipeline from the sewage treatment plant into the Nelson River, and shall take the necessary steps to prevent freezing of the effluent in the pipeline.
  7. The Licencee shall install adequate instrumentation to provide constant monitoring of the UV process to ensure compliance with the disinfection requirements. Such instrumentation shall include but not be limited to the following:
    - a) a UV sensor to monitor lamp intensity;
    - b) appropriate alarm and shutdown systems;
    - c) a lamp monitoring system to identify the location of individual lamp failures;
    - d) an hour meter which cannot be reset to display actual hours of UV lamp operation; and
    - e) protective circuits for overcurrent and ground current leakage detection.
  8. The Licencee shall install and maintain a security fence around all components of the sewage treatment plant and sludge dewatering pond that are not enclosed within secured buildings.

#### **SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS**

9. The Licencee shall limit the wastewater load on the sewage treatment plant as follows:
  - a) hydraulic loading not to exceed 48.75 m<sup>3</sup> for any 24-hour period; and
  - b) organic loading not to exceed 18.72 kilograms of five-day biochemical oxygen demand (BOD<sub>5</sub>) for any 24-hour period.
10. The Licencee shall operate and maintain the sewage treatment plant and sludge dewatering pond in such a manner that there is no contamination of groundwater.
11. The Licencee shall not dispose wastes other than sludge from the sewage treatment plant at the sludge dewatering pond.

12. The Licencee shall not discharge liquid from the sludge dewatering pond except to the influent pipe of the sewage treatment plant.
13. The Licencee shall utilize UV lamps that have a rated output of at least 254 nanometres (nm) capable of delivering a germicidal dose in excess of 30,000 microwatt seconds/sq cm.
14. The Licencee shall operate and maintain the UV units to give a germicidal dose of 80% or more of the design germicidal dose, at the end of the lamp life.
15. The Licencee shall not discharge sewage effluent from the sewage treatment plant, as sampled at the monitoring station located after UV disinfection, where:
  - a) the organic content of the effluent, as indicated by the five-day biochemical oxygen demand (BOD<sub>5</sub>), is in excess of 30 milligrams per litre;
  - b) the fecal coliform content of the sewage effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample at the final discharge point as determined by the monthly geometric mean of 1 grab sample collected at equal time intervals on each of a minimum of 3 consecutive days per week;
  - c) the total coliform content of the sewage effluent, as indicated by the MPN index, is in excess of 1500 per 100 millilitres of sample at the final discharge point as determined by the monthly geometric mean of 1 grab sample collected at equal time intervals on each of a minimum of 3 consecutive days per week; or
  - d) the suspended matter content of the sewage effluent, as indicated by the non-filterable residue, is in excess of 30 milligrams per litre.

#### **MONITORING AND REPORTING SPECIFICATIONS**

16. The Licencee shall submit to the Director for approval, prior to commencing operation of the Development under this Licence;
  - a) a report respecting recently completed modifications to the Development's wastewater collection system and associated components that affect the hydraulic load on the sewage treatment plant; and
  - b) a report respecting the status of the sludge dewatering pond and its current and future ability to operate in compliance with this Licence.
17. The Licencee shall monitor, and make the records of such monitoring available to the Director as may be requested, the sewage treatment process for the following parameters:
  - a) flow rate(s) into and through the UV disinfection system;
  - b) water levels in the equalization basins; and



- c) other process parameters approved or required by the Director.
18. The Licencee shall:
- a) construct and make available for use by an Environment Officer, a secured and heated monitoring station, allowing direct accesses to the effluent discharge pipeline following UV disinfection;
  - b) have the monitoring station accessible to an Environment Officer at all times;
  - c) install and maintain a flow measuring device at the monitoring station or at a location acceptable to the Director which is capable of measuring the volumes of effluent with an accuracy of  $\pm 2$  percent;
  - d) have the flow measuring device re-calibrated biannually or on the request of an Environment Officer;
  - e) equip the monitoring station with a flow-proportional sampling device equipped to function with the flow measuring device and have the sampling device available on request for use by an Environment Officer; and
  - f) equip the monitoring station with an electrical power source of 15 amperes at 110 volts.
19. The Licencee shall arrange for the taking of samples of influent sewage at the equalization basin and treated sewage effluent at the final discharge point.
20. The Licencee shall:
- a) take one flow proportional composite sample of effluent from the sewage treatment plant during the discharge period once each month;
  - b) have the flow proportional composite effluent sample analyzed at an accredited laboratory for five day biochemical oxygen demand and total suspended solids, using methods from the Standard Methods for the Examination of Water and Wastewater, or using other methods approved by the Director;
  - c) have the grab samples analyzed at an accredited laboratory for fecal coliform content and total coliform content using methods from the Standard Methods for the Examination of Water and Wastewater, or using other methods approved by the Director; and
  - d) report the results to the Director within 60 days of the samples being taken.
21. The Licencee shall, in case of physical or mechanical breakdown of the Development:
- a) notify the Director immediately;
  - b) identify the repairs required to the Development; and
  - c) complete the repairs in accordance with the written instructions of the Director.

22. The Licencee shall actively participate in any future watershed-based management study, plan and/or nutrient reduction program, approved by the Director, for the Nelson River and associated waterways and watersheds.
23. The Licencee shall:
- a) prepare "as constructed drawings" for the sewage treatment plant and sludge dewatering pond and shall label the drawings "As Constructed"; and
  - b) provide to the Director, on or before February 29, 2008, two sets of "As Constructed Drawings" of the sewage treatment plant and sludge dewatering pond.

### REVIEW AND REVOCATION

- A. Licence No. 1580 R is rescinded.
- B. Licence No. 1580 is rescinded upon approved commissioning of the altered sewage treatment plant.
- C. If, in the opinion of the Director, the Licencee has exceeded or is exceeding or has or is failing to meet the specifications, limits, terms, or conditions set out in this Licence, the Director may, temporarily or permanently, revoke this Licence.
- D. 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.



**Tracey Braun, M. Sc.**  
**Director**  
**Environment Act**

**Client File No.: 3326.10**