

Licence No.: 2206 E
Licence Issued: July 15, 1996
Revised: July 31, 1997

IN ACCORDANCE WITH THE MANITOBA ENVIRONMENT ACT (C.C.S.M. c. E125)
THIS LICENCE IS ISSUED PURSUANT TO SECTION 27(2) TO:

RURAL MUNICIPALITY OF PARK; "The Licencee"

for the construction and operation of the Development being a wastewater treatment lagoon located in the southeast quarter of Section 14, Township 19, Range 19, WPM in the Rural Municipality of Park and with discharge of treated effluent by way of a constructed ditch connecting the wastewater treatment lagoon to the existing municipal ditch along the municipal road on the East side of the Southeast quarter of Section 14, Township 19, Range 19, WPM, along the said municipal ditch to the ditch along Provincial Road 270, along the ditch along Provincial Road 270 connecting to the natural drainage channel that flows southward to Proven Lake, in accordance with the Proposal filed under The Environment Act on December 19, 1995, and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

"appurtenances" means machinery, appliances, or auxiliary structures attached to a main structure to enable it to function, but not considered an integral part of it;

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

"ASTM" means the American Society for Testing and Materials;

"bentonite" means specially formulated standard mill grade sodium bentonite conforming to American Petroleum Institute Specification 13-A;

"body of water" means any body of flowing or standing water whether natural or artificially created, that perennially or intermittently contains surface water, but does not include a dugout on the property of an agricultural operation;

"cut-off" means a vertical-side trench filled with compacted clay or a wall constructed from compacted clay;

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

"dugout" means an artificially created reservoir of surface water or ground water where the water is diverted and retained for agricultural or domestic use;

"effluent" means treated wastewater flowing or pumped out of the wastewater treatment lagoon or sewage treatment plant;

"fecal coliform" means aerobic and facultative, Gram-negative, nonspore-forming, rod-shaped bacteria capable of growth at 44.5 degrees Celsius, and associated with fecal matter of warm-blooded animals;

"five-day biochemical oxygen demand" means that part of the oxygen demand usually associated with biochemical oxidation of organic matter within five days at a temperature of 20 degrees Celsius;

"flooding" means the flowing of liquid onto lands, other than lands underlying a body of water;

"high water mark" means the line on the interior surface of the primary and secondary cells which is normally reached when the cell is at the maximum allowable liquid level;

"hydraulic conductivity" means the quantity of water that will flow through a unit cross-sectional area of a porous material per unit of time under a hydraulic gradient of 1.0;

"in-situ" means on the site;

"influent" means water, wastewater, or other liquid flowing into a wastewater treatment facility;

"low water mark" means the line on the interior surface of the primary and secondary cells which is normally reached when the cell is discharged;

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

"primary cell" means the first in a series of cells of the wastewater treatment lagoon system and which is the cell that receives the untreated wastewater;

"riprap" means small, broken stones or boulders placed compactly or irregularly on dykes or similar embankments for protection of earth surfaces against wave action or current;

"secondary cell" means a cell of the wastewater treatment lagoon system which is the cell that receives partially treated wastewater from the primary cell;

"septage" means the sludge produced in individual on-site wastewater disposal systems such as septic tanks;

"sewage" means household and commercial wastewater that contains human waste;

"sewerage system" means a system of pipes, with appurtenances, for collecting and conveying wastewater from source to the treatment facility;

"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 degrees Celsius, and inhabit predominantly the intestines of man or animals, but are occasionally found elsewhere and include the sub-group of fecal coliform bacteria;

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

"wastewater treatment lagoon" means the component of this development which consists of an impoundment into which wastewater is discharged for storage and treatment by natural oxidation.

GENERAL TERMS AND CONDITIONS

1. The Licencee shall direct all sewage generated within the Local Government District of Park area toward the wastewater treatment lagoon or other approved sewage treatment facilities.
2. The Licencee shall operate and maintain the wastewater treatment lagoon in such a manner that:
 - a. the release of offensive odours is minimized;
 - b. the organic loading on the primary cell, as indicated by the five-day biochemical oxygen demand, is not in excess of 56 kilograms per hectare per day; and
 - c. the depth of liquid in the primary cell or secondary cells does not exceed 1.5 metres.
3. The Licencee shall, in case of physical or mechanical breakdown of the wastewater treatment system:
 - a. notify the Director immediately;
 - b. identify the repairs required to the wastewater treatment system;
 - c. undertake all repairs to minimize unauthorized discharges of wastewater;

- d. complete the repairs in accordance with any written instructions of the Director; and
 - e. notify the Department of Highways regional technical services engineer, in the event that the malfunction of the wastewater treatment system results in the discharge of contaminated effluent into the highway drainage system.
4. The Licencee shall ensure that septage is not discharged into the wastewater treatment lagoon between the 15th day of October of any year and the 1st day of June of the following year and that between the 1st day of June and the 15th day of October of any year, septage is not discharged into the wastewater treatment lagoon at a rate in excess of 8,000 litres during any 24 hour period.
 5. The Licencee shall, until a sewerage system becomes operational:
 - a. fill both the primary and secondary cells with water, to an elevation of 0.75 metres above the floor elevation of each respective cell, after all required soil sampling and testing requirements have been met and prior to the wastewater treatment lagoon being commissioned;
 - b. maintain the liquid depth in the primary cell at an elevation of not less than 0.75 metres above the floor elevation of the primary cell, at all times; and
 - c. unless otherwise approved by the Director in advance, maintain the liquid depth in the secondary cell at an elevation of not less than 0.75 metres above the floor elevation of secondary cell, at all times.
 6. Notwithstanding any of the specifications, 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 related to the Development, 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 Development; and/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 related to the Development as may from time to time be requested.
 7. 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" 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; and
 - b. ensure that all analytical determinations are undertaken by an accredited laboratory.
 8. The Licencee shall report any information requested through the provisions of this Licence in a manner and form acceptable to the Director.

SPECIFICATIONS, LIMITS, TERMS AND CONDITIONS

9. The Licencee shall, prior to the construction of the dykes for the wastewater treatment lagoon:
 - a. remove all organic topsoil from the area where the dykes will be constructed; or
 - b. remove all organic material for a depth of 0.3 metres and a width of 3.0 metres from the area where the cut-off will be constructed.
10. The Licencee shall construct and maintain the wastewater treatment lagoon with a continuous liner, including cutoffs, under all interior surfaces of the cells in accordance with the following specifications:
 - a. the liner shall be made of clay;
 - b. the liner shall be at least one metre in thickness;

- c. the liner shall have a hydraulic conductivity of 1×10^{-10} centimetres per second or less; and
 - d. the liner shall be constructed to an elevation of 2.5 metres above the floor elevation of both the primary and the secondary cells.
11. The Licencee shall arrange with the designated Environment Officer a mutually acceptable time and date for any required soil sampling between the 15th day of May and the 15th day of October of any year.
12. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "A" attached to this Licence, from the liner; the number and location of samples and test methods to be specified by the designated Environment Officer up to a maximum of 20 samples.
13. The Licencee shall, not less than 2 weeks before the wastewater treatment lagoon is placed in operation, submit to the Director the results of the tests carried out pursuant to Clause 12 of this Licence.
14. The Licencee shall ensure that if, in the opinion of the Director, significant erosion of the interior surfaces of the dykes occurs, rip rap shall be placed on the interior dyke surfaces from 0.6 metres above the high water mark to at least 0.6 metres below the low water mark to protect the dykes from wave action.
15. The Licencee shall construct and maintain an all-weather access road and a sewage dumping station for truck hauled sewage. The dumping facility shall be sized to handle peak truck traffic and shall have a surface splash ramp with a smooth hard surface that can be easily washed free of solids.
16. The Licencee shall install and maintain a fence around the wastewater treatment lagoon to control access.
17. The Licencee shall advise the landowners along the effluent drainage route seven (7) calendar days in advance of discharging the lagoon.
18. The Licencee shall not discharge effluent from the wastewater treatment lagoon:
 - a. where the organic content of the effluent, as indicated by the five day biochemical oxygen demand, is in excess of 30 milligrams per litre;
 - b. where the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample;
 - c. where the total coliform content of the effluent, as indicated by the MPN index, is in excess of 1500 per 100 millilitres of sample; or
 - d. between the 1st day of November of any year and the 15th day of June of the following year;
19. The Licencee shall not discharge effluent from the wastewater treatment lagoon where the discharge of effluent will cause or contribute to flooding along the effluent drainage route.
20. The Licencee shall:
 - a. prepare "as constructed drawings" for the Development and shall label the drawings "As Constructed"; and
 - b. provide to the Director, on or before June 1, 1998, two sets of "as constructed drawings" of the wastewater treatment lagoon.
21. The Licencee shall maintain a record of all hauled waste including the number of loads on a daily and weekly basis, the volume of each load, the name of the hauler, and the source of the contents of each load according to the type of waste and the name and location of each property serviced. The Licencee shall submit an annual report of all the waste hauling information to the Director by the 15th of January of the following year.
22. The Licencee shall conduct a monitoring program along the effluent drainage route and the monitoring program shall, unless otherwise approved by the Director include:
 - a. a minimum monitoring period of five years during which effluent is flowing in the effluent drainage route;
 - b. a minimum of two sample collections during each effluent discharge period, with a minimum time period of 48 hours between sample collections, of the effluent discharged and at sample collection sites located

at:

- i. the point of discharge from the wastewater treatment lagoon to the municipal drain system; and
 - ii. the point where the effluent crosses Provincial Road 270, or at an alternate site approved by the Director;
- c. the sample analysis and calculations for the following parameters:
- i. pH;
 - ii. conductivity;
 - iii. nitrate-nitrite nitrogen;
 - iv. Total Kjeldahl nitrogen;
 - v. BOD5;
 - vi. total chlorine, if chlorine has been used during effluent treatment;
 - vii. total and fecal coliform content;
 - viii. total dissolved solids;
 - ix. total suspended solids;
 - x. total alkalinity;
 - xi. total aluminum;
 - xii. total arsenic;
 - xiii. total boron;
 - xiv. total cadmium;
 - xv. total chromium;
 - xvi. total cobalt;
 - xvii. total copper;
 - xviii. total fluoride;
 - xix. total lead;
 - xx. total mercury;
 - xxi. total nickel;
 - xxii. total selenium;
 - xxiii. total zinc; and
 - xxiv. sulphate.

The Licencee may submit, to the Director for approval, proposed amendments to the monitoring program. The Licencee shall implement any amendments approved by the Director in a manner and within the time frames specified by the Director.

23. The Licencee shall, not less than 60 days after the results of the sample analysis are available, submit to the Director the results of the monitoring program for each year of the five year monitoring program, carried out pursuant to Clause 22 of this Licence.

REVIEW AND REVOCATION

- A. In addition to Clause D of this Licence, 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.
- B. If the Licencee has not commenced construction of the Development within three years of the date of this Licence, the Licence is revoked.
- 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. The Director will review the specifications, limits, terms, or conditions, of this Licence following the fifth year during which the lagoon discharged effluent to the effluent drainage route or at such time as the Rural Municipality proposes a piped sewage collection system for connection to the lagoon or at such time as the

Director determines that the effluent may be adversely affecting the quality of the natural drainage route.

"original signed by"
James C. McCrae
Minister

Client File No.: 4118.00

Schedule "A" to Environment Act Licence No. 2206 E

Soil Sampling:

1. The Licencee shall provide a drilling rig, acceptable to the designated Environment Officer, to extract soil samples from the liner which is not placed or found at the surface of the lagoon structure. This includes all wastewater treatment lagoons constructed with clay cutoffs at the interior base of the dyke or with a clay cutoff in the centre of the dyke. The drill rig shall have the capacity to drill to the maximum depth of the clay cutoff plus an additional 2 metres. The drill rig shall be equipped with both standard and hollow stem augers. The minimum hole diameter shall be 5 inches.
2. For lagoon liners placed or found at the surface of the lagoon structure, the Licencee shall provide a machine, acceptable to the designated Environment Officer, capable of pressing a sampling tube into the liner in a straight line motion along the centre axis line of the sample tube and without sideways movement.
3. Soil samples shall be collected and shipped in accordance with ASTM Standard D 1587 (Standard Practice for Thin-Walled Tube Sampling of Soils), D 4220 (Standard Practice for Preserving and Transporting Soil Samples) and D 3550 (Standard Practice for Ring-Lines Barrel Sampling of Soils). Thin-walled tubes shall meet the stated requirements including length, inside clearance ratio and corrosion protection. An adequate venting area shall be provided through the sampling head.
4. At the time of sample collection, the designated Environment Officer shall advise the Licencee as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample were the Environment Officer determines that the soil sample is taken from an undisturbed clay soil which has not been remoulded and which is homogeneous and unweathered. The triaxial test shall be used for all samples taken from disturbed and remoulded soils or from non homogenous and weathered soils.
5. The Licencee shall provide a report on the collection of soil samples to the designated Environment Officer and to the laboratory technician which includes but is not limited to: a plot plan indicating sample location, depth or elevation of sample, length of advance of the sample tube length of soil sample contained in the tube after its advancement, the soil test method specified by the Environment Officer for each soil sample and all necessary instructions from the site engineer to the laboratory technician.
6. All drill and sample holes shall be sealed with bentonite pellets after the field drilling and sampling has been completed.

Soil Testing Methods:

1. Triaxial Test Method

- a. The soil samples shall be tested for hydraulic conductivity using ASTM D 5084 (Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter).

- b. Soil specimens shall have a minimum diameter of 70 mm (2.75 inches) and a minimum height of 70 mm (2.75 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The hydraulic gradient shall not exceed 30 during sample preparation and testing. Swelling of the soil specimen should be controlled to adjust for: the amount of compaction measured during sample collection and extraction from the tube and the depth or elevation of the sample. The effective stress used during saturation or consolidation of the sample shall not exceed 40 kPa (5.7 psi) or the specific stress level, that is expected in the field location were the sample was taken, which ever is greater.
- c. The complete laboratory report, as outlined in ASTM D 5084, shall be supplied for each soil sample collected in the field.

2. Oedometer Test Method

- a. The soil samples shall be tested for hydraulic conductivity using ASTM D 2435 (Standard Test Method for One-Dimensional Consolidation Properties of Soils).
- b. Soil specimens shall have a minimum diameter of 50 mm (2 inches) and a minimum height of 20 mm (0.8 inches). The soil specimens shall be selected from a section of the soil sample which contains the most porous material based on a visual inspection. The soil specimen shall be taken from an undisturbed soil sample. The soil specimen shall be completely saturated.
- c. The complete laboratory report, as outlined in ASTM D 2435, shall be supplied for each soil sample collected in the field.