

Environment Act Licence

Manitoba
Environment



Licence No. 2075
Issue Date July 19, 1995

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

THIS LICENCE IS ISSUED TO:

RURAL MUNICIPALITY OF WINCHESTER; "the Licencee"

for the construction and operation of the Development being a wastewater treatment lagoon located on the south-west quarter of Section 22-1-22 WPM in the Rural Municipality of Winchester and with disposal of treated effluent by evaporation, in accordance with the Proposal filed under The Environment Act on March 24, 1995 and amended on May 10, 1995, and subject to the following specifications, limits, terms and conditions:

DEFINITIONS

In this Licence,

“**affected area**” means a geographical area affected by an odour nuisance;

“**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;

“**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;

“**effluent**” means treated wastewater flowing or pumped out of the wastewater treatment lagoon;

“**evaporation cell**” means a cell of the wastewater treatment lagoon system which is the cell that receives treated wastewater from the secondary cell;

“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;

“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°C;

“flooding” means the flowing of water onto lands, other than waterways, due to the overtopping of a waterway or waterways;

“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;

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

if the odour, smell or aroma

- (d) is the subject of at least 5 written complaints in a form satisfactory to the Director and from 5 different persons falling within clauses (a), (b) or (c), who do not live in the same household, received by the Director within a 90 day period; or
- (e) is the subject of at least one written complaint 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 from 5 different persons who do not live in the same household within a 90 day period;

“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;

“sludge” means accumulated solid material containing large amounts of entrained water, which has separated from wastewater during processing;

“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;

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

“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 REQUIREMENTS

1. The Licencee shall direct all sewage generated within the Lake Metigoshe recreational area toward the primary cell of 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 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
 - (b) the depth of liquid in the primary cells or the secondary cells does not exceed 1.5 metres; and
 - (c) the depth of liquid in the evaporation cells does not exceed 0.75 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 collection and/or treatment system;
 - (c) undertake all repairs to minimize unauthorized discharges of wastewater; and
 - (d) complete the repairs in accordance with any written instructions of the Director.

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.
5. The Licencee shall install and maintain a fence around the Development to control access. The Licencee shall erect and maintain warning signs along the fence indicating the nature of the Development and advising against trespassing. At least one sign shall be provided on each side of the Development and one for every 150 metres of its perimeter.
6. The Licencee shall not construct, alter or operate the Development, or permit the Development to be constructed, altered or operated, in a way which causes or results in an odour nuisance, and shall take steps as the Director may require to eliminate or mitigate an odour nuisance.
7. The Licencee shall, within one year from the date on which the liquid level in the secondary cell exceeds a depth of 0.75 metres, as measured at any location within the cell, ensure that the following actions are taken:
 - (a) file a notice of intention to construct an evaporation cell with the Director prior to commencing construction;
 - (b) construct the evaporation cell in accordance with this Licence and the plans submitted for this Development and, if the plans are to be altered, the Licencee shall file notice of its intention to alter the licenced Development in accordance with The Environment Act;
 - (c) complete all the required soil testing in accordance with Clause 15 of this Licence; and
 - (d) place the cell into operation.

CONSTRUCTION SPECIFICATIONS

8. 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.
9. The Licencee shall construct and maintain the wastewater treatment lagoon with a continuous liner under all interior surfaces of the primary and secondary 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^{-7} 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.
10. The Licencee shall construct and maintain the wastewater treatment lagoon with a continuous liner under all interior surfaces of the evaporation 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^{-7} centimetres per second or less; and
 - (d) the liner shall be constructed to an elevation of 1.75 metres above the floor elevation of the evaporation cells.
11. 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.
12. The Licencee shall construct and maintain an all-weather access road and a sewage and septage dumping station for truck hauled sewage and septage. The dumping facility shall have a inclined splash ramp with a flat, smooth and hard surface that can be easily washed free of solids.

DISCHARGE LIMITS, TERMS AND CONDITIONS

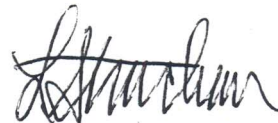
13. The Licencee shall not discharge effluent from the wastewater treatment lagoon.

MONITORING AND REPORTING SPECIFICATIONS

14. 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.
15. The Licencee shall take and test undisturbed soil samples, in accordance with Schedule "A" attached to this Licence, from the liner and the cut-offs ; the number and location of samples and test methods to be specified by the designated Environment Officer up to a maximum of 10 samples for each cell of the wastewater treatment lagoon.
16. The Licencee shall, not less than 2 weeks before each cell of the wastewater treatment lagoon is placed in operation, submit to the Director the results of the tests carried out pursuant to Clause 15 of this Licence for that cell.
17. 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 1st day of September, 1996, "as constructed drawings" of the wastewater treatment lagoon; and
 - (c) if an additional evaporation cell is constructed, the Licencee shall, within 6 months of commencing construction of the additional cell, prepare a revised "as constructed drawing" for the altered Development, label the drawing "As Constructed" and submit the revised "as constructed drawing" of the wastewater treatment lagoon to the Director.

REVIEW AND REVOCATION

18. 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 herein, the Director may revoke, temporarily or permanently, this Licence.



**Larry Strachan, P. Eng.
Director
Environment Act**

FILE: 4001.00

Schedule "A" to Environment Act Licence No. 2075

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).

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- (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.