



Environment, Climate and Parks

Environmental Approvals Branch
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File No.: 190.50

August 17, 2022

Mike Dumaine
Municipality of Ritchot
352 Main Street, St. Adolphe MB R5A 1B9
mdumaine@ritchot.com

Dear Mike Dumaine:

Re: Environment Act Licence No. 2577 RRR

Thank you for your proposal. The Environment Act licensing process is intended to ensure a healthy environment, society, and economy for now and tomorrow.

Enclosed Licence No. 2577 RRR is issued to the Municipality of Ritchot. The licence is for the expansion, reconfiguration, and operation of the Ile des Chenes wastewater treatment lagoon and land application of biosolids from the lagoon.

The Municipality of Ritchot must operate the development according to all licence requirements as well as all applicable federal, provincial and municipal regulations and by-laws.

The licence holder must secure approval from the Director of the Environmental Approvals Branch prior to altering the development as licensed.

Anyone affected by the issuance of this licence may appeal this decision to the Minister of Environment, Climate and Parks. If anyone wishes to appeal, they can do so, in writing, to the Minister's attention by September 16, 2022.

If you have any questions regarding this approval, please contact Nada Suresh, Regional Supervisor, Environmental Compliance and Enforcement Branch at Nada.Suresh@gov.mb.ca or 204-945-8214.

Sincerely,

Original Signed by
James Capotosto
Director

Enclosure

- c. Kristal Harman, Yvonne Hawryliuk, Nada Suresh - Environmental Compliance and Enforcement
Siobhan Burland Ross, Robert Boswick - Environmental Approvals
Public Registry

LICENCE

File No.: 190.50

Licence No. / Licence n°: 2577 RRR
Issue Date / Date de délivrance : August 17, 2022

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) et 14(2)

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

MUNICIPALITY OF RITCHOT: “the licensee”

for the expansion, land application of biosolids, and continued operation and maintenance of the development being a wastewater collection system and a wastewater treatment lagoon serving the Community of Ile des Chenes and the Grande Pointe – North Grassie Development, with an average flow rate of 798.2 cubic metres per day and located at NE 29-8-4 EPM in the Rural Municipality of Ritchot, with effluent being discharged from the wastewater treatment lagoon to existing municipal ditches that flow into the Seine River Diversion that flows into the Red River in accordance with the proposal filed under The Environment Act on March 29, 2022, and subject to the following specifications, limits, terms, and conditions:

DEFINITIONS

In this licence,

"accredited laboratory" means a laboratory accredited by the Standard Council of Canada (SCC), another accrediting agency recognized by Manitoba Environment, Climate and Parks to be equivalent to the SCC, or at a laboratory which can demonstrate to Manitoba Environment, Climate and Parks 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, or an assigned environment officer, in writing;

"aquifer" means a water saturated geologic unit that will yield water to wells or springs at a sufficient rate so that the wells or springs can serve as practical sources of water supply;

"biosolids" means accumulated organic solids, resulting from wastewater treatment processes, that have received adequate treatment to permit the material to be recycled;

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

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

"first order waterway" means a drain or watercourse serving a watershed with a drainage area of up to one square mile;

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

"fourth order waterway" means a drain or watercourse formed at the point of confluence of at least two third order waterways and may have tributaries of the third order and lower;

"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, 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.

"plant-available nitrogen" means nitrogen which is readily available to plants by uptake through the roots and is determined by adding 20 percent of the organic nitrogen (as nitrogen), 100 percent of the ammonia (as nitrogen) and 100 percent of the nitrate (as nitrogen);

"reference material" means soil or biosolids material which is used as a reference;

"reference value" means the value established by the agency that supplied the reference material;

"second order waterway" means a drain or watercourse servicing a watershed with a drainage area greater than one square mile or having a tributary or tributaries which are first order waterways;

"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;

"third order waterway" means a drain or watercourse formed at the point of confluence of a least two second order waterways and may have tributaries of the second order and lower;

"waste management facility" means a landfill, a composting facility, a transfer station, a material recovery facility or a remote seasonal waste facility;

"water table" means the upper surface of the zone of saturation of a water bearing geologic unit;

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

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

"wastewater treatment lagoon" means the component of the development which consists of impoundments into which wastewater is discharged for treatment and storage.

GENERAL TERMS AND CONDITIONS

This section of the licence contains requirements intended to provide guidance to the licensee 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.

Retain Copy of Licence

1. The licensee shall at all times maintain a copy of this licence at the development or at the premises from which the development's operations are managed.

Wastewater Treatment

2. The licensee shall direct all wastewater generated within the Community of Ile des Chenes and the Grande Pointe – North Grassie Development toward the wastewater treatment lagoon or other approved wastewater treatment facilities.

Future Sampling

3. In addition to any of the limits, terms and conditions specified in this licence, the licensee shall, upon the request of the director:
 - a) sample, monitor, analyze and/or investigate specific areas of concern regarding any segment, component or aspect of pollutant storage, containment, treatment handling, disposal or emission systems, for such pollutants or ambient quality, aquatic toxicity, leachate characteristics and discharge or emission rates, for such duration and at such frequencies as may be specified;
 - b) determine the environmental impact associated with the release of any pollutant(s) from the development;
 - c) conduct specific investigations in response to the data gathered during environmental monitoring programs; or

- d) 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.

Reporting Format

4. The licensee shall submit all information required to be provided to the director or environment officer under this licence, in writing, in such form (including number of copies), and of such content as may be required by the director or environment officer, and each submission shall be clearly labelled with the licence number and file number associated with this licence.

Equipment Breakdown or Process Upset

5. The licensee shall, in the case of physical or mechanical equipment breakdown or process upset where such breakdown or process upset results or may result in the release of a pollutant in an amount or concentration, or at a level or rate of release, that causes or may cause a significant adverse effect, immediately report the event by calling 204-944-4888 (toll-free 1-855-944-4888). The report shall indicate the nature, time, estimated duration and volume of the event, and the reason for the event.
6. The licensee shall, following the reporting of an event pursuant to Clause 5,
 - a) identify the repairs required to the mechanical equipment;
 - b) undertake all repairs to minimize unauthorized discharges of a pollutant;
 - c) complete the repairs in accordance with any written instructions of the director; and
 - d) submit a report to the director about the causes of breakdown and measures taken, within one week of the repairs being done.
7. The licensee shall, during construction and operation of the development, report spills of fuels or other contaminants to an environment officer in accordance with the requirements of the Environmental Accident Reporting Regulation or any future amendment thereof.

Respecting Odour Nuisance

8. The licensee 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.

Heritage Resources

9. The licensee shall comply with the requirements of The Heritage Resources Act, and suspend construction and immediately notify the Historic Resources Branch if heritage resources are encountered during the construction of the development.

Future Studies

10. The licensee shall actively participate in any future watershed-based management study, plan or nutrient reduction program, approved by the director, for the Red River and associated waterways and watersheds.

SPECIFICATIONS. LIMITS. TERMS AND CONDITIONS

Respecting Construction – General

11. The licensee shall notify the assigned environment officer prior to beginning construction of the development. The notification shall include the intended starting date(s) of construction and the name(s) of the contractor(s) responsible for the construction.
12. The licensee shall:
 - a) conduct all ditch related work activities during no flow or dry conditions and not during the April 1 to June 15 fish spawning and incubation period;
 - b) not construct the development during periods of heavy rain;
 - c) place and/or isolate all dredged and construction material where it will not erode into any watercourse;
 - d) implement effective long-term sediment and erosion control measures to prevent soil-laden runoff, and/or silt from entering any watercourse during construction and until vegetation is established;
 - e) routinely inspect all erosion and sediment control structures and immediately complete any necessary maintenance or repair;
 - f) revegetate soil exposed during the construction of the development with native or introduced grasses or legumes. Native species shall be used to revegetate areas where native species existed prior to construction; and
 - g) use rock that is free of silt and clay for riprap.
13. The licensee shall, during construction of the development, operate, maintain and store all materials and equipment in a manner that prevents any deleterious substances (fuel, oil, grease, hydraulic fluids, coolant, paint, uncured concrete and concrete wash water, etc.) from entering the wastewater treatment lagoon, the discharge route and associated watercourses, and have an emergency spill kit for in water use available on site during construction.
14. The licensee shall dispose of non-reusable construction debris from the development at a waste disposal ground operating under the authority of a permit issued pursuant to the Manitoba Waste Management Facilities Regulation, or any future amendment thereof, or a licence issued pursuant to The Environment Act.
15. The licensee shall locate all fuel storage and equipment servicing areas established for the construction and operation of the development a minimum distance of 100 metres from any waterbody, and shall comply with the requirements of the Manitoba Storage and Handling of Petroleum Products and Allied Products Regulation or any future amendment thereof.

16. The licensee shall, during construction and maintenance of the development, prevent the introduction and spread of foreign aquatic and terrestrial biota by cleaning equipment prior to its delivery to the site of the development in accordance with the requirements of the Manitoba Aquatic Invasive Species Regulation, or any future amendment thereof.

Respecting Construction – Wastewater Treatment Lagoon

17. The licensee shall, prior to the construction of any cell of the development, remove all organic topsoil from the area where the dykes will be constructed.
18. The licensee shall construct and maintain the primary cell and the secondary cell of the development with continuous liners, including cut-offs, under all interior surfaces of each cell 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 at all locations;
 - d) the liner shall be constructed of clay which has been mechanically compacted and;
 - e) the liner shall be constructed to an elevation of 2.5 metres above the base of each cell of the wastewater treatment lagoon.
19. The licensee shall install and maintain fences around the cells. The fence shall be a minimum of 1.2 meters high and have a locking gate, which shall be locked at all times except to allow access to the primary and secondary cells.

Respecting Certification

20. The licensee shall obtain and maintain classification of the development pursuant to the Water and Wastewater Facility Operators Regulation or any future amendment thereof and maintain compliance with all requirements of the regulation including, but not limited to, the preparation and maintenance of a table of organization, emergency response plan and standard operating procedures.
21. The licensee shall carry out the operation of the development with individuals properly certified to do so pursuant to the Water and Wastewater Facility Operators Regulation or any future amendment thereof. In the event that the development is reclassified pursuant to the regulation, the licensee shall provide a development plan to the director to have certified operator(s) upgrade their certification.

Respecting Operation – Primary and Secondary Cells

22. The licensee shall operate and maintain the wastewater treatment lagoon in such a manner that:
 - a) the organic loading on the cells, in terms of the five-day biochemical oxygen demand, is not in excess of 56 kilograms per hectare per day;
 - b) the depth of liquid in each cell does not exceed 1.5 metres; and
 - c) a minimum 1.0 metre freeboard is maintained in each cell at all times.

23. The licensee shall not discharge, or permit discharge of, septage into the wastewater treatment lagoon. The licensee shall erect and maintain information signs, acceptable to the director, indicating that septage may not be discharged at the facility and directing septage haulers to an appropriate facility.

Respecting Operation – Effluent Discharge

24. The licensee shall not discharge effluent from the development:
- where the organic content of the effluent, as indicated by the five day carbonaceous biochemical oxygen demand, is in excess of 25 milligrams per litre;
 - where the total suspended solids content of the effluent is in excess of 25 milligrams per litre, unless the exceedance is caused by algae;
 - where the fecal coliform content of the effluent, as indicated by the MPN index, is in excess of 200 per 100 millilitres of sample;
 - where the concentration of the total phosphorus of the effluent is in excess of 1.0 milligram per litre;
 - where the unionized ammonia content of the effluent is in excess of 1.25 mg/L, expressed as nitrogen (N), at $15^{\circ}\text{C} \pm 1^{\circ}\text{C}$;
 - between the 1st day of November of any year and the 15th day of June of the following year;
 - when flooding from any cause is occurring along the effluent drainage route; or
 - when such a discharge would cause or contribute to flooding in or along the effluent drainage route.
25. The licensee shall discharge the wastewater treatment lagoon over at least a two-week period, while accelerating discharge as necessary to maintain normal operation of the wastewater treatment lagoon, such that increased nutrient uptake from the wastewater effluent may occur along the discharge route.

Respecting General Maintenance

26. The licensee shall provide and maintain a grass cover on the dykes of the primary and secondary cells of the development and shall regulate the growth of the vegetation so that the height of the vegetation does not exceed 0.3 metres on all dykes.
27. The licensee shall annually remove by mechanical methods all reeds, rushes and trees located above the low water mark in the cells of the primary and secondary cells of the development.
28. The licensee shall implement an ongoing program to remove burrowing animals from the site of the development.

Respecting Alterations

29. The licensee shall notify the director and receive approval for any alterations to the development as licensed, prior to proceeding with such alterations.

Non-reusable Construction Debris Disposal

30. The licensee shall dispose of non-reusable construction debris from the development:
- a) at a waste disposal ground operating under the terms of a permit issued pursuant to the Waste Management Facilities Regulation, or any future amendment thereof, or a licence issued pursuant to The Environment Act; or
 - b) at a temporary storage facility(s) or by other alternative method satisfactory to the environment officer.

MONITORING AND REPORTING SPECIFICATIONS

Respecting Liquids Sampling and Samples Preservation, Analysis, and Reporting

31. The licensee 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) carry out all sampling of, and preservation and analyses on, soil, compost, and air samples in accordance with methodologies approved by the director;
 - c) have all analytical determinations undertaken by an accredited laboratory; and
 - d) report the results to the director, in writing and in an electronic format acceptable to the director, within 60 days of the samples being taken.

Respecting Monitoring – Wastewater Treatment Lagoon

32. The licensee shall, prior to each effluent discharge campaign from the wastewater treatment lagoon, obtain grab samples of the treated wastewater and have them analyzed for:
- a) the organic content as indicated by the five-day carbonaceous biochemical oxygen demand and expressed as milligrams per litre;
 - b) the fecal coliform content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample;
 - c) the total suspended solids content expressed as milligrams per litre;
 - d) the unionized ammonia nitrogen expressed as milligrams per litre; and
 - e) the total phosphorus content expressed as milligrams per litre.

Respecting Soil Liner Sampling, Testing and Reporting

33. The licensee shall, to the satisfaction of the designated environment officer of the approvals branch, arrange to take and test undisturbed soil samples, in accordance with Schedule "A" attached to this licence.
34. The licensee shall, not less than 2 weeks before the wastewater treatment lagoon is placed in operation, submit for the approval of the environment officer of the approvals branch the results of the tests carried out pursuant to Clause 33 of this licence.

Respecting Records Maintenance and Reporting – Lagoon

35. The licensee shall during each year maintain the following records and retain them for a minimum period of five calendar years:
- a) reports of visual inspections conducted at a minimum of once per month;
 - b) wastewater sample dates;
 - c) original copies of laboratory analytical results of the sampled wastewater and water;
 - d) a summary of laboratory analytical results;
 - e) cell isolation dates (i.e., valve operation records);
 - f) effluent discharge dates;
 - g) estimated effluent discharge volumes;
 - h) maintenance and repairs;
 - i) expansions to the wastewater collection system with associated capacity assessment;
 - j) updated organization charts identifying all certified operators, including backup operators; and
 - k) a summary of any wastewater collection system overflows.

Respecting Annual and Initial Characterization Reporting

36. The licensee shall submit an annual report of the previous year's operation of the development to the environment officer by February 28 of each following year including all records required by clause 35 and Schedule "B" of this licence.
37. The licensee shall, during the first year of operation of the development, obtain and analyze grab samples of the effluent from the final discharge point of the development and report the results of the analysis in accordance with Schedule "C" attached to this licence.

Respecting Operating Depth and Freeboard Non-Compliance Events

38. The licensee shall immediately notify the director each time the operating depths of any cell of the development do not comply with the maximum operating depth and minimum freeboard requirements for those cells as specified in Clause 22 of this licence.
39. The licensee shall, if reporting is required pursuant to Clause 38 of this licence in two consecutive years:
- a) engage the services of a qualified consultant, acceptable to the director, to undertake an investigation of the wastewater treatment lagoon and related infrastructure, to determine the ability or inability of the existing system to meet the hydraulic loading capacity of the development. The investigation shall include but not be necessarily limited to:
 - i) diagnosis of the cause(s) of the recent exceedances of maximum operating depth;
 - ii) sources of infiltration into the wastewater system including the infrastructure of the development;
 - iii) current hydraulic loading of the system;
 - iv) lack of storage capacity due to biosolids build-up within existing cells;
 - v) the organic loading on the aerated cells in terms of the five day biochemical oxygen demand; and
 - vi) operating procedures;

- b) provide to the director, within four months of the notification given pursuant to Clause 38 of this licence, an engineering report describing in detail the results and observations concluded by virtue of the investigation; and
- c) provide to the director, within four months of the report provided pursuant to sub-Clause b) of this section, a remedial action plan in the form of a detailed engineering report describing recommended modifications, repairs or upgrading works to overcome excessive hydraulic loading of the system.

Respecting Record Drawings

40. The licensee shall:
- a) prepare "record drawings" for the development and shall label the drawings "record drawings"; and
 - b) provide to the director, within four months of the environment officer's approval of the reports required by Clause 36 of this Licence, two electronic copies of the "record drawings".

DECOMMISSIONING OF WASTEWATER TREATMENT LAGOON CELLS

Respecting Biosolids Removal and Land Application

41. The licensee shall land apply the biosolids generated from the wastewater treatment lagoon cells located in SE 32-8-4 EPM that operated under Environment Act Licence No. 2577 RR in accordance with the specifications, limits, terms, and conditions prescribed under Schedule "B" of this Licence.

Respecting Decommissioning of Cells

42. The licensee shall, upon completion of biosolids removal and land application in accordance with Clause 41 and full commissioning of the development, decommission the wastewater treatment lagoon cells located in SE 32-8-4 EPM that operated under Environment Act Licence No. 2577 RR in a manner that includes the beneficial use of all recyclable components to the satisfaction of the environment officer.

REVIEW AND REVOCATION

- A. Licence No. 2577 RR is hereby rescinded.
- B. If, in the opinion of the director, the licensee 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.
- 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 or request the filing of a notice of alteration.

Original Signed by

James Capotosto
Director

SCHEDULE "A" TO ENVIRONMENT ACT LICENCE NO. 2577 RRR

Liner Sampling and Testing Requirements Pursuant to Clause 33

Soil Sampling:

1. The licensee 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 licensee 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 licensee as to the soil testing method that must be used on each sample. The oedometer method may be used for a sample where 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 licensee 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 the following: a plot plan indicating all drill holes, onsite visual observations, 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.

SCHEDULE "A" TO ENVIRONMENT ACT LICENCE NO. 2577 RRR (cont'd)

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 where the sample was taken, whichever 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.

SCHEDULE "B" TO ENVIRONMENT ACT LICENCE NO. 2577 RRR

Pursuant to Clause 41 Respecting Land Application of Biosolids

Respecting Land Application of Biosolids

1. The licensee shall only apply biosolids onto agricultural land or other licensed facilities approved by the director.
2. The licensee shall, during all biosolids land application activities, comply with the requirements of the Manitoba Nutrient Management Regulation or any future amendment thereof.
3. The licensee shall, prior to land application of biosolids, submit a detailed plan for review and approval of the director of the environmental approvals branch. The plan must provide supporting documentation demonstrating that the land application of biosolids materials would be carried out in an environmentally sustainable and agronomically suitable manner.
4. The licensee shall, not less than two weeks prior to land application of biosolids, publish a public notice in the local newspaper(s) to advise local residents of the intended biosolids application sites and submit a copy of the notice to the designated environment officer of the environmental approvals branch.
5. The licensee shall not dispose of biosolids in a manner other than that approved in Clause 3 of this schedule.

Respecting Operations – Withdrawal, Handling, and Transportation of Biosolids

6. The licensee shall notify the environment officer not less than ten days prior to the commencement of removal, transportation and land application of biosolids. The notification shall include the intended starting date of the activities, the means by which the biosolids will be land applied, and the name of the contractor responsible for the activities.
7. The licensee shall, during removal, transportation, and application of biosolids to land, operate, maintain and store all materials and equipment in a manner that prevents any deleterious substances (fuel, oil, grease, hydraulic fluids, coolant, paint, uncured concrete and concrete wash water, etc.) from leaving work locations or entering adjacent watercourses.
8. The licensee shall transport biosolids in containers in such a manner to prevent loss of biosolids and associated liquids to the satisfaction of an environment officer.
9. The licensee shall:
 - a) only use access roads for hauling biosolids to the land application site(s) that are acceptable to the municipality wherein biosolids application site(s) are located; and
 - b) upon the completion of the biosolids land application program, restore the condition of the utilized access roads as agreed upon between the licensee and the municipality in advance of the biosolids application program.

Respecting Operations – Land Application of Biosolids

10. The licensee shall:
 - a) apply biosolids to the agricultural lands approved in accordance with Clause 3 of this schedule by injecting or incorporating biosolids into the soil such that the depth at which the biosolids are introduced is a minimum of 15 centimetres below the soil surface and there is no surface expression;
 - b) when incorporation of the biosolids is the application method, complete incorporation of the biosolids within 48 hours of land application; and
 - c) complete the application such that it is acceptable to the environment officer.

11. The licensee shall apply biosolids such that the amounts of residual nitrate-nitrogen in the 0-24 inch soil depth and Olsen-P phosphorus in the 0-6 inch soil depth do not exceed the limits of the most limiting Nutrient Management Zone, regardless of size, set forth in the Nutrient Management Regulation under The Water Protection Act or any future amendment thereof.

12. The licensee shall not permit the land application of biosolids:
 - a) between November 10th of any year and April 10th of the following year, unless otherwise authorized in writing by the director;
 - b) to frozen soil;
 - c) less than 75 metres from any occupied residence (other than the residence occupied by the owner of the land on which the biosolids are to be applied);
 - d) less than 400 metres from a residential area;
 - e) less than 8 metres from a major wetland, bog, marsh or swamp;
 - f) less than 15 metres from a first order waterway;
 - g) less than 30 metres from a second, third or fourth order waterway and less than 90 metres from any other waterway;
 - h) less than 50 metres from any groundwater well; or
 - i) on land that is subject to flooding.

13. The licensee shall not apply biosolids on land:
 - a) with a depth of clay or clay till of less than 1.5 metres between the soil surface and the water table;
 - b) within 100 metres of an identifiable boundary of an aquifer which is exposed to the ground surface; or
 - c) where the surface slope of the land is greater than 5 percent.

14. The licensee shall not apply biosolids on land:
 - a) where, prior to the application of biosolids, the soil pH is less than 6.0; or
 - b) where, prior to the application of biosolids, the concentration of sodium bicarbonate extractable phosphorous, as P, exceeds 60 micrograms per gram in the upper 15 centimetres of the soil.

15. The licensee shall:
 - a) at least 30 days prior to the commencement of any application of biosolids to land, produce scaled site plans of each site intended for the application of biosolids, showing all the applicable features and set back boundaries relevant to the surface and sub-surface criteria specified in Clauses 12, 13, and 14 of this schedule, and indicating the total remaining eligible area (in hectares) available in each intended biosolids application site; and
 - b) employ geographic information system mapping technology or physically mark the determined boundaries of each intended biosolids application site in

advance of the application of biosolids, to ensure that the biosolids are applied to the land in conformity with Clauses 12, 13, and 14 of this schedule.

16. The licensee shall not allow cattle to pasture on land on which biosolids have been applied, for a period of three years from the date of application of the biosolids.
17. The licensee shall, on all agricultural land onto which biosolids have been applied, plant one of the following crops at the commencement of the next growing season following such application and for a period of three years from the date of application of biosolids:
 - a) a cereal crop;
 - b) a forage crop;
 - c) an oil seed crop;
 - d) field peas; or
 - e) lentils.

For application on land not owned by the licensee, this requirement shall be included in any agreement between the licensee and the landowner.

18. The licensee shall apply biosolids onto agricultural land such that the cumulative weight per hectare of each heavy metal in the soil, as calculated by adding the amount of each heavy metal in the biosolids applied to the background level of the same metal, does not exceed the following levels: *

<u>Metal</u>	<u>Kilogram per Hectare</u>
Arsenic	21.6
Cadmium	2.5
Chromium (total)	115.2
Copper	113.4
Lead	126
Mercury	11.9
Nickel	90
Zinc	360

* Calculated values shall be based on a soil bulk density of 1200 kilograms per cubic metre and a soil depth of 15 centimetres. Analysis for heavy metals must be carried out in accordance with this Schedule.

MONITORING AND REPORTING SPECIFICATIONS

19. The licensee shall submit to the director, at least two weeks prior to commencing with the biosolids land application activities, the details of the biosolids sampling and analysis program used to determine if phosphorus-based or nitrogen-based biosolids application limits are most appropriate and for determining field-specific application rates for the lands on which the biosolids are to be applied.
20. The licensee shall submit to the director, not later than on or before the 15th day of March in the year following biosolids land applications, the details of the biosolids sampling and analysis programs used to determine the volumes and solids contents of the biosolids removed on a daily basis and the volume and the solids contents of biosolids applied to each field.

21. The licensee shall conduct a monitoring and analysis program that is acceptable to the director, and in accordance with Appendices "1" and "2" of this schedule to determine:
 - a) the composition of the biosolids;
 - b) the background levels of selected soil parameters for each parcel of land;
 - c) the surface slope of each parcel of land;
 - d) the presence of clay or clay till to a depth of 1.5 metres for each parcel of land;
 - e) whether metals-based, phosphorus-based, or nitrogen-based application limits are most appropriate for field-specific application rates for the lands on which the biosolids are to be applied; and
 - f) the crops grown on land on which biosolids have been applied during the previous 3-year period.

22. The licensee shall, on or before the 15th day of March of each year that this licence is in effect, submit to the director a report, which will include the following:
 - a) details of the biosolids land application programs carried out during the previous 12 month period including:
 - i) a description of each parcel of land on which biosolids were distributed;
 - ii) the background levels of soil parameters as listed in Appendix 1 of this schedule, for each parcel of land;
 - iii) the dry weight of biosolids applied per hectare;
 - iv) the weight of each heavy metal, in milligrams per kilogram of soil, added to each parcel of land for the metals listed in Appendix 2 of this schedule; and
 - v) the cumulative weight, in kilograms per hectare, of each heavy metal for each parcel of land as calculated by adding the amount of each heavy metal applied to the background level of the same metal;
 - b) the amount of nitrogen, phosphorus, and potassium which was added per hectare for each parcel of land;
 - c) the results of analysis of the biosolids and soil required by this licence;
 - d) a copy of the analytical procedures used and the results of analysis of reference materials in accordance with this schedule of this licence; and
 - e) the type of crops grown on land on which biosolids were applied during the previous 3-year period.

23. The licensee shall undertake annual post harvest soil testing of each field for nitrate-N (0 – 24") and phosphorus using the Olsen-P test (0 – 6") for 3 years following biosolids application. Additionally, the licensee shall supply information from the producer regarding the amounts of nutrients from other sources (fertilizer, manure, etc.) being added to the field. Such soil test, fertilization, and cropping information shall be submitted to Manitoba Environment, Climate and Parks on or before the 15th day of March of each year following a year when application of biosolids occurred.

Appendix 1 to SCHEDULE "B" of Environment Act Licence No. 2577 RRR

Pursuant to Clauses 21 - 23 of Schedule B outlining the biosolids sampling and analysis requirements

Biosolids

A representative sample of biosolids shall be collected from each cell from which biosolids will be removed for land application. A representative sample of biosolids from each cell shall be a composite of biosolids samples taken from a minimum of 5 locations distributed over the area of that cell.

1. The sample of biosolids shall be analyzed for the following parameters:*

- | | | | |
|----|-------------------------|----|-----------|
| a. | conductivity | j. | lead |
| b. | pH | k. | mercury |
| c. | total solids | l. | nickel |
| d. | volatile solids | m. | potassium |
| e. | nitrate nitrogen | n. | cadmium |
| f. | total Kjeldahl nitrogen | o. | copper |
| g. | ammonia nitrogen | p. | zinc |
| h. | organic nitrogen | q. | chromium |
| i. | total phosphorus | r. | arsenic |

* Analysis for heavy metals must be carried out in accordance with Schedule "C" of this licence.

Soil

1. Composite samples from each field onto which biosolids will be applied shall be taken prior to application of biosolids. Each field of twenty-four hectares or less shall be sampled from a minimum of twelve representative sites or a minimum of one sample site per two hectares for larger fields. Each sample site shall be sampled from 0 to 15 centimetres and from 0 to 60 centimetres. The entire core extracted for each sample shall be collected. All samples from similar depths within a field shall be bulked in one container for thorough mixing prior to analysis yielding two samples per field.

2. Soil samples from 0 centimetres to 15 centimetres shall be analyzed for the following:

*

- | | | | |
|----|---|----|----------|
| a. | pH | g. | cadmium |
| b. | potassium | h. | chromium |
| c. | nickel | i. | copper |
| d. | mercury | j. | lead |
| e. | zinc | k. | arsenic |
| f. | sodium bicarbonate extractable phosphorus, as P | | |

* Analysis for heavy metals must be carried out in accordance with Appendix "2" of this schedule.

3. Soil samples from 0 to 60 centimetres shall be analyzed for the following:

- | | | | |
|----|------------------|----|----------------|
| a. | nitrate nitrogen | b. | total nitrogen |
|----|------------------|----|----------------|

Crops

1. The type of crop grown on lands on which biosolids have been applied during the previous 3-year period shall be listed along with the legal description of the land and the date of application of biosolids.

Appendix 2 to SCHEDULE "B" of Environment Act Licence No. 2577 RRR

Pursuant to Clauses 18, 21, and 22 of Schedule B for analysis of metals.

The analysis for all metals shall be carried out in accordance with the following requirements:

1. The laboratory performing these analyses shall:
 - a) possess and maintain accreditation with the Canadian Association for Laboratories Accreditation Inc. (CALA);
 - b) operate a quality assurance program acceptable to the assigned environment officer;
 - c) monitor the accuracy of the biosolids and soil analyses for each set of ten or less samples of biosolids or soil through the use of a suitable reference material acceptable to the assigned environment officer; and
 - d) analyze field duplicates of samples based on a frequency of one in each set of ten or less field samples and that the acceptance criteria for duplicate analysis should be within ± 10 percent.
2. A copy of the analytical procedures and the analytical results for associated reference materials used in the laboratory, and any other controls used in the analysis, shall be submitted with the field sample results.
3. If the analytical results of any associated reference materials do not meet the following criteria, the soil and/or biosolids samples must be re-analyzed:

- Arsenic	± 35 percent from the reference value
- Cadmium	± 25 percent from the reference value (for values above $1 \mu\text{g/g}$)
- Cadmium	± 35 percent from the reference value (for values below $1 \mu\text{g/g}$)
- Chromium	± 25 percent from the reference value
- Copper	± 25 percent from the reference value
- Lead	± 25 percent from the reference value
- Mercury	± 35 percent from the reference value
- Nickel	± 25 percent from the reference value
- Zinc	± 25 percent from the reference value

SCHEDULE "C" TO ENVIRONMENT ACT LICENCE NO. 2577 RRR

Initial Characterization of Wastewater Pursuant to Clause 38

Facility Size: Small (500 - 2500 m³/day)

Facility Type: Facultative wastewater treatment lagoon – intermittent discharge

Effluent Sampling:

During the first year of operation:

1. Obtain a representative grab sample of the discharging effluent near the beginning of the discharge period and near the end of the discharge period (i.e., two samples for each discharge event);
2. Obtain a representative grab sample of the discharging effluent on a quarterly basis for each quarter there was effluent discharged; and
3. Determine the temperature of each sample at the time of sampling.

Effluent Analysis:

1. Have the discharge period grab samples analyzed for:
 - a) the organic content as indicated by the five-day biochemical oxygen demand and expressed as milligrams per litre;
 - b) the organic content as indicated by the five-day carbonaceous biochemical oxygen demand and expressed as milligrams per litre;
 - c) the total suspended solids content expressed as milligrams per litre;
 - d) the *Escherichia coli* (*E. Coli*) content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample;
 - e) the fecal coliform content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample;
 - f) the total coliform content as indicated by the MPN index and expressed as MPN per 100 millilitres per sample;
 - g) if chlorine was used as a disinfecting agent, total residual chlorine expressed as milligrams per litre;
 - h) total ammonia nitrogen expressed as milligrams per litre;
 - i) nitrate-nitrite nitrogen expressed as milligrams per litre;
 - j) total Kjeldahl nitrogen (TKN) expressed as milligrams per litre;
 - k) dissolved phosphorus expressed as milligrams per litre;
 - l) total phosphorus expressed as milligrams per litre;
 - m) temperature; and
 - n) pH.
2. Have the quarterly grab samples analyzed for:
 - a) acute toxicity; and
 - b) chronic toxicity.

Effluent Reporting:

1. For each grab sample, report the results to the Director, in writing or in an electronic format acceptable to the Director within 60 days of the sampling date. The report shall include the sampling date, sample temperature, the dates of the effluent discharge, and copies of the laboratory analytical results of the sampled effluent.