

## **SUMMARY OF COMMENTS/RECOMMENDATIONS**

**PROPOSER:** Maxwell Hutterian Mutual Corporation  
**PROPOSAL NAME:** Maxwell Colony Farms Wastewater Treatment Lagoon  
**CLASS OF DEVELOPMENT:** Two  
**TYPE OF DEVELOPMENT:** Waste treatment and storage – wastewater treatment lagoon  
**CLIENT NO.:** 5876.00

### **OVERVIEW**

The Proposal was received on January 27, 2016. Additional information was requested on March 9, 2016 after a preliminary internal review of the Environment Act Proposal (EAP). The consultant provided response to the additional information request on July 19, 2016.

The advertisement of the proposal was as follows:

“Maxwell Hutterian Mutual Corporation has filed a proposal for the construction and operation of a compacted clay lined wastewater treatment lagoon that will be located on River Lot 108 in St. Francois-Xavier Parish of the Rural Municipality of Cartier. Treated wastewater from the wastewater treatment lagoon will be discharged between June 15th and October 31st of any year into the Assiniboine River via the existing Barrickman natural drain. The existing wastewater treatment lagoon that currently serves the Maxwell Colony Farms will be decommissioned.”

The Proposal was advertised in the Winnipeg Free Press on April 1, 2017. It was placed on the public registry:

<https://www.gov.mb.ca/sd/eal/registries/5876maxwell/index.html>

The Proposal was distributed to Technical Advisory Committee (TAC) members on April 3, 2017.

The closing date for comments from members of the public and TAC members was May 1, 2017.

Notice of alteration was received on March 29, 2022, to change the location of the proposed wastewater treatment lagoon. It proposed to be located on the north side of Provincial Road 424 (Rural Municipality of Cartier) on River Lots 106, 107 and 108, Parish of St. Francois Xavier. The new lagoon design adds a wetland treatment cell to reduce phosphorus and changes the size of the primary and secondary cells. Treated effluent from the proposed wetland cell will discharge during the allowable period from June 16 to October 31 of any year. The effluent will discharge into a watercourse connecting Hammercrest Creek and an oxbow. Hammercrest Creek merges with the Assiniboine River via a valve connection. The valve is usually closed for flood control.

**COMMENTS FROM THE PUBLIC**

No public comments were received.

**COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE**

Technical Advisory Committee (TAC) responses are summarized in the table below. Substantive comments and their dispositions follow the table. TAC comments are provided in full in the public registries.

**SUMMARY OF COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE**

No	Technical Advisory Committee Member	Response Provided	Date
1	Manitoba Environment and Climate		
	Environmental Approvals – Water Power Act Licensing	No response	
	Environmental Compliance and Enforcement Branch	No concern	April 24, 2017
	Air Quality Management	No response	
	Climate & Clean Tech.	No response	
	Parks and Protected Spaces Branch	No comments or concerns.	May 1, 2017
	Water Quality Management Section	See below	
	Groundwater Management Section		
	Office of Drinking Water	No concerns	27 April, 2017
	Drainage and Water Rights Licensing	No response	
2.	Natural Resources and Northern Development		
	Wildlife and Fisheries Branch	No wildlife related concerns	May 2, 2017
	Forestry and Peatlands Branch	No response	
	Lands Branch	No comments	1 May, 2017
	Mines Branch	No response	
	Petroleum Branch	No response	
3.	Manitoba Sport, Culture, and Heritage – Historic Resources Branch	No response	
4.	Manitoba Growth, Enterprise and Trade – Office of the Fire Commissioner	No response	
5.	Transportation and Infrastructure - Environmental Services Branch		February 22, 2023
6.	Manitoba Municipal Relations – Community and Regional Planning Branch	No response	
7.	Manitoba Health– Environmental Health Unit	No response	

### **Manitoba Environment and Climate - Water Quality Management Section (May 2, 2017)**

- The following effluent standards should be in place for Maxwell Colony wastewater treatment lagoon as per the *Manitoba Water Quality Standards, Objectives and Guidelines Regulation* (196/2011).
  - 25 BOD mg/L,
  - 25 TSS mg/L,
  - Fecal Coliforms or *Escherichia coli* 200 organisms / 100mL,
  - <1 mg/L TP or demonstrated nutrient reduction strategy
  
- The proponent proposes a submerged limestone bed to assist phosphorus removal by absorption and filtering. Limestone substrates can become phosphorus saturated and thus have an expiry date. As well, there are many different limestones available each with different physical and chemical characteristics and different P-retention properties. The limestone substrate may have to be replaced once phosphorus absorption capacity has been reached, to maintain phosphorus removal capabilities of the proposed nutrient reduction strategy.
  - What is the estimated lifespan of the limestone bed?
  - What size of graded limestone is being used in the bed?
  - Can the proponent provide sizing information on the submerged limestone bed for a discharge volume of 19554 m<sup>3</sup>?
  - What is the hydraulic retention time of the submerged limestone bed?
  - Does the operation of the bed involve macrophyte harvesting?
  - When the limestone has reached the end of longevity what type of re-use is planned for the phosphorus bound to the limestone?
  
- For demonstrating a nutrient reduction strategy equivalent to <1mg/L total phosphorus, it is recommended the Proponent be advised that a monitoring plan is requested, for approval. Additionally for approval, results of the monitoring plan would be required to demonstrate nutrient reduction equivalent to <1mg/L total phosphorus, at the outlet of the limestone bed.
  
- The Water Quality Management Section is concerned with any discharges that have the potential to impact the aquatic environment and/or restrict present and future uses of the water. Therefore it is recommended that the license require the proponent to actively participate in any future watershed based management study, plan/or nutrient reduction program, approved by the Director.

### **Proponent's response (August 8, 2017):**

I have for reply a copy of a Memorandum dated May 2, 2017 from Joy Kennedy, Manitoba Water Quality Management Section in connection with the above noted Environment Act Proposal (EAP). I am responding to the four issues in the Memorandum.

1. With regard to the proposed effluent standards, I am confident that the standards can be met, with a qualification on the phosphorus reduction strategy as indicated in the following items.

2. The questions relating to phosphorus reduction in the limestone bed appears to anticipate that a comprehensive design of such a facility is proposed. There is little data available for such an application. More experience and monitoring is required. For this project, it is now proposed that an alternate nutrient reduction strategy be pursued which does not include a limestone filter and which is detailed below.
3. We have consulted with the Maxwell Colony regarding the method of discharge and the discharge route. The Maxwell Colony has suggested an alternative method and discharge route from the proposed lagoon. Rather than pumping the effluent from the lagoon in a temporary overland pipeline to the Barrickman Drain, they propose to use a controlled gravity discharge into a field drain on their own property that would take the route shown on the attached photomap, Figure 1-R. From the outlet on the south side of the secondary cell, a perimeter drain would convey the effluent to an existing shallow swale that provides cropland drainage eastward from the field into an existing shallow municipal ditch on the west side of the municipal road as shown on the photomap. The drainage gradient is maintained by the Colony when the crop is off. During the summer the entire area is in crop as shown in the attached Photo Plate. It is proposed that the lagoon will be drained at such time as the crop is off, expected to be in the months of September and October of any year over a period of about 30 days. The combined length of perimeter and field drains is 900 metres. The length of the municipal drain from the swale to the Barrickman Drain is also 900 metres. From there the effluent will flow into the Barrickman Drain which, as described in the EAP is a wide drain with a heavy growth of wetland vegetation.

The proposed discharge from the lagoon in any year will begin with testing of the contents of the secondary cell (beginning a few weeks prior to the proposed discharge date) to determine that the BOD, TSS (of sewage origin) and Fecal Coliform levels meet the limits prescribed in the Environment Act Licence. The phosphorus concentration will also be determined. Once the crop is removed, a slow release discharge (6 L/s to 10L/s, depending on the anticipated volume to be discharged) will be commenced, the rate of flow being measured. Some of the flow will be absorbed and evaporated in the discharge route. At the outlet to the Barrickman Drain, an earthen block with a culvert will be installed, of sufficient size to accommodate normal field drainage. This culvert will be used to enable flow measurement and monitoring. The rate of flow and the phosphorus concentration will be measured to compare with that in the release from the lagoon. At full capacity for the full loading from 220 people for 365 days, the volume would be approximately 22,000 m<sup>3</sup>. At an average P concentration of about 2.5 mg/L (estimated from monitored discharges from 5 separate tests on Colony projects) the mass of P would be about 55 kilograms from the complete discharge.

The total mass of the P in the effluent at the outlet into the Barrickman Drain could be determined and compared to that at the outlet from the lagoon. Undoubtedly, some of the P will be absorbed and removed in the 1,800 metres of field drain and roadside ditch ahead of the discharge into the Barrickman Drain (We have observed a 34% reduction in P in a 1,400 m length of flow in a roadside ditch discharge on another Colony project).

From the outlet into the Barrickman Drain to its outlet into the Assiniboine River, the length of the Barrickman Drain is about 4,000 metres. The width of the emergent vegetation in the Drain is estimated to average about 15 metres. The gradient is minimal and there has been water in the base area whenever I have been on location. The overall area of the base of the drain in this stretch is about 6 hectares (Ha). From a review of the USEPA Manual Constructed Wetlands of Municipal Wastewaters, the net annual phosphorus uptake by emergent wetland species varies from 1.8 to 18 grams of P/m<sup>2</sup>/year. While P uptake

occurs during the growth phase, release happens as the plant dies followed by decomposition in the plant litter. Some phosphorus is lost to accretion in the sediments.

In designing wetlands for the purpose of phosphorus removal, a common rule of thumb is to use a removal of 1 kg/day per hectare of functional wetland area during the typical summer through autumn discharge period from June 15 to October 31. Using this factor, in a discharge period of 30 days the potential P removal in the estimated 6 hectares would be 180 kg. While this is not to be considered as a discreet engineered wetland, the extent of the system is a good indication that it will be an effective nutrient reduction strategy for the treated effluent. The use of an elongated drain also offers the benefit of plug flow as there will essentially be no short circuiting within the Barrickman Drain. While there will be opportunity to provide a fair degree of monitoring of the P removal in the first 1,800 metres of the discharge route it will not be practical to do the same in the Barrickman Drain as the effluent will be mixed with residual water in the drain and potentially with runoff water in the event of concurrent rainfall.

4. It is understood that any requirement by the Director to participate in a future watershed based management study or plan, that is a condition of the Environment Act Licence, will be an obligation of the applicant.

#### **Manitoba Environment and Climate- Water Quality Management Section response (August 17, 2017)**

- The following effluent standards should be in place for Maxwell Colony wastewater treatment lagoon as per the *Manitoba Water Quality Standards, Objectives and Guidelines Regulation* (196/2011).
  - 25 BOD mg/L,
  - 25 TSS mg/L,
  - Fecal Coliforms or *Escherichia coli* 200 organisms / 100mL,
  - <1 mg/L TP or demonstrated nutrient reduction strategy
- For demonstrating a nutrient reduction strategy equivalent to <1mg/L total phosphorus, it is recommended the Proponent be advised that a monitoring plan is requested, for approval. Additionally for approval, results of the monitoring plan would be required to demonstrate nutrient reduction equivalent to <1mg/L total phosphorus, at the outlet of the field drainage swale.

#### **Disposition:**

The proposed lagoon location was changed to be on the north side of Provincial Road 424 (Rural Municipality of Cartier) of St. Francois Xavier. The new lagoon design adds a wetland treatment cell to reduce phosphorus. Also the comment will be addressed through licence conditions.

#### **Manitoba Transportation and Infrastructure (February 22, 2023)**

##### **Capital Regional Operations and Roadside Development**

Please note the following statutory requirements affecting PR 434.

### Statutory Requirements:

Under the Transportation Infrastructure Act, a permit is required from Manitoba Transportation and Infrastructure to construct, modify, relocate, remove or intensify the use of an access. A permit is also required from Manitoba Transportation and Infrastructure to construct, modify, remove or relocate a structure or sign, or to change or intensify the use of an existing structure (including the alteration of existing buildings) within the 38.1 m (125 ft) controlled area from the edge of the highway right-of-way.

In addition, a permit is required from Manitoba Transportation and Infrastructure for any planting placed within 15 m (50 ft) from the edge of the right-of-way of this highway.

### **Hydrologic Forecasting and Water Management:**

Designated Provincial Waterways are subject to section 14(4) of the Water Resources Administration Act which states:

“No person shall place any material on, remove any material from, or construct, carry out, reconstruct, establish, or place, any works or structures on, over, or across, a provincial waterway, except as may be authorized in writing by the minister and subject to such terms and conditions as the minister may prescribe.”

Provincial Waterway Authorization must be obtained prior to the commencement of any construction or activity along a Provincial Waterway.

Provincial Waterway Authorization can be applied for at: <https://forms.gov.mb.ca/pww/>.

### **Disposition:**

The information was provided to the proponent.

### **PUBLIC HEARING**

As no requests were received for a public hearing, a public hearing is not recommended.

### **CROWN-INDIGENOUS CONSULTATION**

The Government of Manitoba recognizes it has a duty to consult in a meaningful way with Indigenous communities when any proposed provincial law, regulation, decision or action may infringe upon or adversely affect the exercise of the Indigenous rights of that community.

The proposal involves the construction and operation of a wastewater treatment lagoon on privately owned agricultural land. Since resource use is not affected by the project, it is concluded that Crown-Indigenous consultation is not required for the project.

**RECOMMENDATION**

All comments received have been addressed through the provision of additional information, by providing information to the proponent, or through licence conditions. It is recommended that the Development be licensed under The Environment Act subject to the limits, terms and conditions as described on the attached Draft Environment Act Licence. Administration of the licence should be assigned to the Winnipeg Region of the Environmental Compliance and Enforcement Branch.

PREPARED BY:

Barsha Sagan, P. Eng.  
Environmental Approvals Branch

March 9, 2023

Telephone: 204-795-7175 Fax: 204-945-5229  
E-mail: [barsha.sagan@gov.mb.ca](mailto:barsha.sagan@gov.mb.ca)