

Information Request Form Crystal Springs Lagoon Project

**Information Request
Number:**

REPLY Second Round - Information Request No. 2 (Gimli)

Submitted by:

The Proponent

Date Submitted:

March 20, 2026

Subject Matter:

Surface Water Management (Quality)

Reference document:

N/A

Request: The stated goal for Zone 2 is to improve the management of surface water to maximize economic benefit of cattle and forage crop production *while minimizing negative impacts downstream and to the environment* The project proposal does not achieve the goal statement for the watershed zone in which it resides. While the project proposal has accounted for BOD, it has not accounted for any other parameters of concern such as nitrogen and phosphorus.

The project proposal states that natural filtering of any contamination will take place along the Creek prior to reaching Lake Winnipeg. However, the stated objectives for Willow Creek under the Willow Creek Integrated Watershed Management Plan include the following:

- There will be a 10% **reduction** in nitrogen and phosphorus concentrations and/or loading in Willow Creek;
- There will be a **reduction** in the number of bacteria exceedances above the recreational water quality guidelines in Willow Creek.

The proposed drainage improvements will likely accelerate the migration of contaminants downstream and reduce potential for uptake. Given the foregoing, please provide the following information.

Request 1: Provide a quantitative analysis in relation to contaminant loading and treatment for the parameters beyond (i.e., nutrient loading) in order to demonstrate that no significant negative effect on water quality is likely to occur based on the current design.

Proponent Reply 1: A receiving water assessment to develop site-specific effluent discharge objectives for the lagoon was not completed for the Willow Creek Watershed and would not be a typical design practice. Manitoba Environment and Climate Change has developed an “*Information Bulletin – Design Objectives For wastewater Treatment Lagoons*”. The design objectives in Manitoba are Effluent Quality based as per section 1.i) of the Bulletin. In Manitoba the policy is concentration-based rather than nutrient loading based and site specific. As such, the lagoon has been designed to meet the provincial concentration-based discharge criteria within the Information Bulletin.

Follow-Up Information Request 1: The Proponent has indicated that the lagoon has been designed in accordance with Manitoba’s concentration-based effluent criteria. Please provide any available estimates of expected nitrogen and phosphorus concentrations in the treated effluent at discharge;

Reply to Follow-Up Request 1: Manitoba’s *Information Bulletin – Design Objectives For wastewater Treatment Lagoons* provides geometric and loading criteria for lagoon design within Manitoba’s climate. When designed accordingly they have proven to be an effective means of treatment for domestic wastewater.. The BOD loading rate, size, depth of liquid parameters have been developed empirically and are proven to be effective treatment to the discharge criteria required. Based on BMCE’s experience with comparable lagoon projects it is anticipated that the lagoon will meet a total phosphorus of ≤ 1.0 mg/L and nitrogen of ≤ 15 mg/L. In the event that the phosphorus levels have not been reduced to ≤ 1.0 mg/L, the secondary cell will be dosed with Aluminium Sulphate (Alum), agitated and allowed to rest. This additional treatment will precipitate the phosphorus where it will become part of the sludge on the floor of the lagoon. Nitrogen removal from a facultative lagoons is efficient with typically nitrogen concentrations of < 10.0 mg/L being achieved.

In addition, please indicate whether the Proponent undertook any analysis of the potential nitrogen and phosphorus contributions to Willow Creek associated with the proposed discharge. If so, please describe the nature and results of that analysis. If no such analysis was undertaken, please advise why not.

Reply to Follow-Up Request 1 (continued): Effluent released from the lagoon will have phosphorus levels $\leq 1\text{mg/L}$ and nitrogen levels $\leq 15\text{mg/L}$ as these are the effluent standards enforced by the Province of Manitoba and effluent cannot be discharged until it meets or exceeds these requirements.

No additional analysis of the nitrogen and phosphorus levels contributed to Willow Creek was undertaken as Manitoba utilizes concentration based discharge criteria.

Request 2: Provide evidence to identify whether the proposed drainage works and loss of surface water retention will or will not aggravate the migration of contaminants?

Proponent Reply 2: As discussed in the Proponent's Reply to Information Request No. 1, the proposed drainage works are not related to the lagoon EAP and they have been licensed by MTI. The works that are part of the EAP include a shallow ditch from the SE corner of the lagoon to the South Malonton Drain. It is not anticipated that these minor works will have an impact downstream.

Request 3: Provide the proposed monitoring plans that demonstrate compliance prior to, and at the point of mixing with Willow Creek?

Proponent Reply 3: A monitoring plan has not been developed as this is not a requirement of the EAP process or licensing. The license is concentration-based at the point of discharge which will require that wastewater is tested for compliance prior to the trickle discharge of the lagoon.

Request 4: Describe how the Proponent will minimize negative impacts downstream and to the environment through discharge to Willow Creek?

Proponent Reply 4: As previously stated, the discharge will consist of a trickle discharge over an approximately 30-day period. This will be completed during times of low/medium flow therefore allow for maximum plant uptake of any remaining nutrients within the wastewater

Follow-up Information Request 4: The Proponent has indicated that effluent will be released via a trickle discharge over an approximately 30-day period during times of low to medium flow. Can the Proponent please confirm:

a) The anticipated discharge rate associated with the proposed trickle discharge;

Reply to Follow-Up Request 4(a): The maximum discharge rate would be 0.014 m³/s, over a 2-week trickle discharge.

b) The criteria or indicators that will be used to determine when downstream conditions are considered low or medium flow;

Reply to Follow-Up Request 4(b): Low/medium flow can be indicated by water level within the Malonton Drain at the time of release, a low/medium flow would be considered any flow less than that generated during a Q50% event (2-yr) or 1.2m³/s. From the Hydrologic and Hydraulic Assessment report the depth of water within the Malonton Drain at the discharge location was modelled to be approximately 0.75m during a Q50% event. The discharge shall be limited to times in which the flow depth is less than 0.75m in the Malonton Drain at the discharge location.

c) Whether any operational guidance, procedures, or design assumptions were used to support the conclusion that vegetation uptake and channel capacity will be sufficient during discharge.

Reply to Follow-Up Request 4(c): As per the hydraulic analysis completed by Trek Geotechnical, the South Malonton Drain's 50% exceedance runoff event results in a channel flow of 1.2m³/s, the addition of the maximum lagoon discharge of 0.014m³/s results in a 1.2% increase in channel flow, which is in the Proponent's opinion is a negligible impact on channel capacity.

The assumption was made that during low/medium flow events, plant uptake would be at its highest due to lack of available water. The effluent released from the lagoon will meet Manitoba Water Quality Standards as specified in the lagoon's license. Plant uptake will provide additional treatment of the released effluent along the drainage path but is not required to meet treatment objectives.



As such the Proponent has not utilized any specific guidance, or procedures in regard to plant uptake.

Request 5: As the Willow Creek Integrated Watershed Management Plan has included stated goals with measurable reduction in nutrients, bacteria, and TSS for Willow Creek, can the proponent provide alternative treatment plans that would meet these stated goals, as opposed to using Willow Creek for ‘natural filtering of any contamination?’

Proponent Reply 5: The Willow Creek Integrated Watershed Management Plan recommends that trickle discharge of lagoons be considered as a potential nutrient reduction strategy for lagoon discharges.¹ This strategy has been implemented for the proposed lagoon discharge.

¹ Willow Creek Integrated Watershed Management Plan, p. 33.

Request 6: Further to Question 5, can the Proponent advise whether it has taken any steps to investigate the potential reliance on the Rural Municipality of Gimli Wastewater Treatment Plant as an alternative treatment plan for the contaminant discharge?

Proponent Reply 6: The Proponent and their engineer met with the RM of Gimli to discuss the development; at this meeting the RM of Gimli expressed an interest in the Proponent constructing a forcemain to connect to their infrastructure so that the Town of Gimli could process the wastewater within their Wastewater Treatment plant.

At a high level the concept was explored but ultimately abandoned due to the considerable upfront capital costs, long-term operation, maintenance and unit rate disposal costs.

The decision was made to design and obtain a license for a facultative wastewater lagoon as a lagoon has long been a proven technology for wastewater treatment and is the preferred option of Hutterite Colonies due to simplicity of operation.