

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Dauphin River First Nation
NAME OF DEVELOPMENT: Dauphin River First Nation Facultative Lagoon
CLASS OF DEVELOPMENT: Two
TYPE OF DEVELOPMENT: Wastewater Treatment Lagoon
CLIENT FILE NO.: 5774.00

OVERVIEW:

The Proposal was received on April 23, 2015. The advertisement of the proposal was as follows:

“A proposal was filed by JR Cousin Consultants Ltd. on behalf of Dauphin River First Nation for the construction and operation of a wastewater treatment lagoon on NE 27-34-05 WPM, approximately 1.5 km southwest of the Dauphin River First Nation Community Centre. The new facility will consist of a two cell clay-lined facultative lagoon. The treated effluent from the lagoon will be discharged between June 15th and November 1st to a drainage ditch flowing to the Dauphin River and eventually into Lake Winnipeg.”

The Proposal was advertised in Gimli Interlake Spectator on Thursday, June 25, 2015. It was also placed in the Legislative Library, the Millennium Public Library and in the online public registry.

The Proposal was distributed to TAC members on June 25, 2015.

The closing date for comments from members of the public and TAC members was July 10, 2015.

COMMENTS FROM THE PUBLIC

No public comments were received during the public comment period.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE

Manitoba Conservation and Water Stewardship – Environment Compliance and Enforcement

- *The report accounts for future population growth.*
- *The site selected for this development (Site 2) is appropriately located at a distance from Dauphin River, and in terms of elevation seems to have reasonable separation from the 100-year flood elevation sufficient to offer sufficient protection from possible floods.*
- *Native soils offer materials that will facilitate construction.*
- *The drainage route seems unnecessarily long, and runs along the existing ditch beside PR 513. The location of the connection between the drainage ditch and Dauphin*

River is not clear on the plan. There are several houses located in the area in which it would appear that the discharge would be made into the river.

- *Based on the submission by the proponent in application for a Crown Lands Permit for this site, the intention is to include a Waste Transfer Station at this location as well. Design must be confirmed to ensure that separate access for these two facilities does not conflict.*

Additional Information Request : A request for additional information was sent out to the proponent's consultant on July 28, 2015.

Proponent's Consultant's Response (received on August 4, 2015):

- The proposed drainage route collects runoff water from the lagoon perimeter and directs it along the access road to the East. The site drainage will connect to the existing Provincial Road 513 drainage ditch. This existing ditch flows North-East along the road until it is diverted East under the road through a culvert. Once through the road, the existing ditch turns South-East and arcs through the tree line and enters into the river. Please refer to the attached updated plan.
- The proposed Waste Transfer Station will no longer be located adjacent to the lagoon site.

Disposition: The above information from the Proponent's consultant was forwarded to the Environmental Compliance and Enforcement Section (ECE) on August 5, 2015 and no further comment from ECE was received.

Manitoba Conservation and Water Stewardship – Water Control Works and Drainage Licensing Section

All water control works require licensing under the Water Rights Act. Additionally, and in consideration of the nature of the land in the area, that it is peat/marsh land that floods in close proximity to Lake Winnipeg, we recommend that the lagoon be flood proofed by design, if that has not already been considered.

Any inquiries in regards to obtaining a Water Rights License may be directed to the local Water Resource Officer. Their contact information may be found at:

http://www.gov.mb.ca/conservation/waterstewardship/licensing/pdf/areas_of_focus_jan_23_12.pdf

Disposition: This information was provided to the project's consultant for information on July 28, 2015.

Office of the Fire Commissioner

No concerns or comments.

Manitoba Conservation and Water Stewardship – Parks and Protected Spaces

No comments or concerns.

Manitoba Conservation and Water Stewardship – Water Use Licensing Section

No concerns.

Manitoba Conservation and Water Stewardship – Wildlife

- *The Central Region Wildlife Section has no concerns with the proposed development in the vicinity of Dauphin River First Nation.*
- *The only potential very minor issue is the removal of some land from the operating area of two of our bear outfitters. However, the fact that they are members of the community and likely support the development, I do not foresee any resistance from them.*

Disposition: Not applicable.

Manitoba Health

No concerns.

Manitoba Conservation and Water Stewardship – Groundwater Management Section

The selected site for the lagoon at NE27-34-5W is referenced as Site 2 in the geotechnical investigation report. Information from two test holes estimated the clay ranging in depth from 4.6 to 6.1 m (15 to 20 feet) below ground surface. The clay at this site is categorized as a silty, sandy clay and was observed to be fissured and containing silt inclusions. The hydraulic conductivity testing of a remolded clay soil sample determined a $k = 5.2 \times 10^{-7}$ cm/s, greater than the 1×10^{-7} cm/s which is required for an earthen liner. Based on these results, the geotechnical investigation report contained in Appendix C states “If site 2 is selected as the preferred site for the proposed wastewater lagoon, a detailed geotechnical investigation, encompassing the footprint of the site, would be required to confirm the soil stratigraphy, hydraulic conductivity and related soil characteristics at the site. Alternatively, a geosynthetic liner should be considered for this site.

As recommended in the geotechnical investigation report, a detailed geotechnical investigation should be carried out to ensure the proposed lagoon site and design meets guideline requirements for lagoon construction in Manitoba. This will help ensure an adequate protection of the local groundwater resources underlying and surrounding the proposed lagoon site.

It is recognized that the EAP proposal states that additional geotechnical testing is currently underway.

Additional Information Request: A request for additional information was sent out to the project's consultant on July 28, 2015.

Proponent's Consultant's Response (received on August 4, 2015):

As indicated in the submitted EAP, additional geotechnical investigation titled: Geotechnical Investigation Water, Sewer and School Project, Dauphin River First Nation, Manitoba, was carried out by Amec Foster Wheeler Environment and Infrastructure between March 31, 2015 and April 08, 2015. The following list provides a quick reference to the section in the document that relates to the lagoon site and the laboratory results indicating that the available clay is expected to meet design requirements when remoulded:

- Table 1, Page 4: Number of test pits and ID
- Table 3, Page 8: Summary of remolded hydraulic conductivity test results
- Figure 2: Test Hole and Probe Locations Plan
- 4.1 Discussion and Recommendations, Lagoon. Page 12 to 15.

The test holes in close proximity to the proposed Lagoon (L2 to L8) primarily consisted of around 1.5 m to 2.1 m of peat underlain by 1.5 m to 3.0 m of medium to high plastic clay and clay till to the depths explored (4.6 m). Amec Foster Wheeler field staff collected bulk samples of the clays between 1.5 m and 3.0 m below grade for testing of remoulded hydraulic conductivity. Based on hydraulic conductivity tests conducted on the three remoulded samples compacted to 96% of its SPMDD, the average hydraulic conductivity was determined to be of 7.92×10^{-9} cm/sec. Therefore, remoulded clay from the site is expected to meet Manitoba Conservation's requirements of a minimum hydraulic conductivity of 1×10^{-7} cm/sec.

An additional hydraulic conductivity test was also performed on a Shelby tube sample from the native clay at a depth of 3.1 to 3.7 m below grade at test hole L12, located about 230 m northeast of the proposed Lagoon footprint. The hydraulic conductivity was determined to be 9.39×10^{-9} cm/sec. The test result indicates that the native clays below the surrounding peat in the proposed lagoon area likely have hydraulic conductivity that meets Manitoba Conservation's requirements. However, regardless of hydraulic conductivity, it should be noted that the shallow clay thickness encountered in some test holes below the lagoon design base elevation (i.e. 222 m), such as test hole L08 (300 mm of clay) and test hole L06 (800 mm of clay). In these instances, utilizing the native clays as the natural liner without rework for the lagoon is not recommended. Rework of the compacted clay liner would allow the identification of unsuitable soils (i.e. more permeable soil such as till) and thin clay, thus allowing a consistency of liner construction and performance.

Below is a link to our FTP site containing the Geotechnical Investigation completed by AMEC.

<http://www.jrcc.ca/DR/Geotechnical%20Investigation%20-%20DRFN.pdf>

Disposition: The above information from the Proponent's consultant was forwarded to the Groundwater Management Section on August 5, 2015 and no further comment was received.

Manitoba Conservation and Water Stewardship – Forestry

There should not be any impacts to the forestry industry nor to the peat industry with this land transfer.

Manitoba Conservation and Water Stewardship – General Land Use

- *The EAP highlights that the peat from the construction of the lagoon needs to be disposed and there will also be peat from the road construction. Will the peat be salvaged or what is the disposal plan for this peat including where will it be hauled?*
- *If the clay on site is not sufficient for the construction of the lagoon what is the contingency plan regarding finding an alternate location?*
- *A Crown Land Work Permit or a Letter of Authorization will be required under the Approvals Section prior to any work commencing.*

Additional Information Request: A request for additional information was sent out to the project consultant on July 28, 2015.

Project Consultant's Response (received on August 4, 2015):

- The peat layer removed from the lagoon footprint will be stockpiled on site, adjacent to the lagoon construction area.
- Through the additional geotechnical investigation, the quality of the clay is suitable for a lagoon liner construction. If there is a shortage of clay within the lagoon cell floor, a borrow pit will be constructed adjacent to the lagoon. The test holes L1 to L12 (Figure 2 and Appendix A: Soil logs) cover an area larger than the lagoon footprint and indicate the presence of suitable clay.
- Under Section 2.1 Land Title/Location, of the submitted EAP, JRCC indicated that an application has been submitted to the Manitoba Crown Lands & Property Agency for a permit to be issued to use the site for the construction and operation of the lagoon.

Additional Information Request: A comment was received from General Land Use on August 12, 2015 regarding the proposed use and permanent stockpile location of the peat

generated from this project. The comment was forward to the project consultant on August 12, 2015.

Project Consultant's Response (received on August 13, 2015): The peat material was proposed to be permanently stockpiled on the site.

Additional Information Request: Another comment was received from the General Land Use on August 14, 2015 regarding the potential Fire Hazard associated with the peat that will be generated from this project. The comment was for considering hauling the peat to a more suitable location to be determined by the project consultant and the location should have appropriate approvals. The comment was forwarded to the project consultant on August 17, 2015.

Disposition:

- Due to the significant volume of peat that will be generated from this project, it was not economically feasible to haul it to a different secured location.
- The overall objective of peat removal was a) preventing the peat from potential fire hazard, b) managing the runoff from the site where peat was proposed to be permanently stockpiled, and c) making the stockpile accessible for future beneficial use purposes.
- On September 4, 2015, the Provincial Peat experts from the Forestry and Peat Management Group, Approvals Branch representatives, and the project consultant met to discuss the acceptable peat management practices that will address the overall objectives. A decision was taken to place the peat at an adjacent site with a 0.3m clay cover.
- The project consultant submitted an amended preliminary engineering drawing on September 9, 2015, which was forwarded to the Forestry Branch and Approvals Branch representative on the same day. No further comment was received.
- The project consultant submitted the final stamped engineering drawing on September 23, 2015.
- A clause is included in the draft Licence that requires that the Licencee shall stockpile the peat generated from this project and shall maintain an effective clay cover on the entire stockpiled peat in accordance with the alteration request submitted on September 23, 2015.

Manitoba Infrastructure and Transportation – Highway Planning and Design Branch

- *Under The Highways and Transportation Act permits are required from MIT for:*
 - o *any new, modified or relocated access to a Provincial Road or Access Road;*
 - o *any structures (including advertising signs, wells, septic fields, etc.) on, under or above the ground within the 38.1 meter (125 ft) Controlled Area adjacent to Provincial Roads;*
 - o *discharging of water or other liquid materials into a ditch of a Limited Access*

- Highway, Provincial Road or Access Road; or*
 - o placing any trees or plantings within 15.2 metres (50 feet) of the edge of right-of-way of a Limited Access Highway, Provincial Road or Access Road.*
- An underground utility agreement will be required for any pipelines that will go under any Provincial Road (PR) or Provincial Trunk Highway (PTH).*
- MIT West Central Region has concerns with the effluent discharge rate and how it would affect the drainage within the highway right-of-way. On July 7, 2015, MIT contacted JR Cousins Consultants Ltd (JRCC) to discuss concern and we were advised of the following:*
 - o The effluent will be released through a 200mm diameter pipe into an open ditch along the north side of the lagoon access. The discharge rate will have minimal effect to the existing drainage. The lagoon has been proposed to release once a year, preferably in the late fall (Sept/Oct) and expect the release to last approximately 2 weeks.*
 - o Currently the PR ditch has been holding water and causes a concern with the existing standing water and the proposed effluent release. JRCC advised MIT that they will be submitting a proposal and part of that proposal is re-grading of the existing ditch to ensure there is proper drainage from the lagoon to the existing 900mm through-grade culvert in PR 513 into the Dauphin River.*

For details on permit applications and underground utility agreements, please contact Ms. Cheri Percival, Regional Planning Technologist, at (204) 622-2377 or via email at Cheri.Percival@gov.mb.ca.

Disposition: This information was provided to the project's consultant for information on July 28, 2015.

Manitoba Agriculture Food and Rural Development – Crops Branch

No concerns.

Manitoba Conservation and Water Stewardship – Water Quality Management Section

No comments.

Manitoba Conservation and Water Stewardship- Approvals Branch:

By an email dated July 28, 2015, the project consultant was requested to submit additional information regarding how the annual organic loading generated from each household serviced by a 4500 L septic tank was calculated.

Project Consultant's Response (received on August 4, 2015): Both the South Reserve Parcel and CDR populations were assumed to be serviced by septic tanks. In design year 20, there will be a total of 23 houses on septic tanks (six in the South Reserve Parcel and 17 in the CDR). The average septic tank volume was assumed to be 4,500 L (1,000 Imp.

gal.). When septic tanks are pumped out, the highly concentrated septage (sludge) and domestic sewage present in the tank at that time are pumped out together. Therefore the average hydraulic loading per pump out is equal to the tank size. Septic tanks are pumped out on average once per year. Based on an assumed allowable haulage period of 135 days, this corresponds to approximately 0.17 tanks/day being hauled to the proposed lagoon ($23 / 135 = 0.17$). For design purposes, it will be assumed one tank per day will be hauled to the proposed DRFN lagoon.

To calculate the total load produced by the septic tanks per day, the concentration or organic strength of the two components (septage and domestic sewage) inside the septic tank and their respective volumes is required.

Typically, septage (sludge) from a septic tank has a larger organic load than wastewater discharged to a gravity sewer system. The organic strength was calculated based on a septage concentration of $7.0 \text{ kg BOD}_5/\text{m}^3$ (Source: Ontario-MOE Design Guidelines for Sewage Works 2008) and a domestic sewage concentration in the septic tank of $0.486 \text{ kg BOD}_5/\text{m}^3$.

Considering a population of 80 people between the South Reserve Parcel and CDR and a total of 23 houses, the average density is 3.48 people/house. The typical septage generation rate of 200 L/person/year (Source: US EPA - Guide to Septage Treatment and Disposal - 2.1. 1994) multiplied by the population density indicate that on average 695.7 L ($3.48 \times 200 = 695.7$) of septage are generated per house during one year. This volume multiplied by the $7.0 \text{ kg BOD}_5/\text{m}^3$ concentration provides a total Septage Load of 4.9 kg BOD_5/tank . ($695.7 \times 7 / 1000 = 4.9$)

The remaining volume of the septic tank (4,500L minus 695.7 L equals 3,804.3 L) is filled by the domestic sewage. This volume multiplied by the $0.486 \text{ kg BOD}_5/\text{m}^3$ concentration calculated before provides a total Domestic Sewage Load of 1.8 kg BOD_5/tank . ($3,804.3 \times 0.486 / 1000 = 1.8$)

Therefore, the Total Load produced by a septic tank per day is 4.9 kg BOD_5 (septage) plus 1.8 kg BOD_5 (domestic sewage) equals 6.7 kg BOD_5 .

Disposition: The above design calculation is acceptable.

Submission of Alteration Request

The project consultant submitted an alteration request on October 2, 2015 indicating that further geotechnical investigation revealed that samples collected of the in-situ clay soils meet the liner requirements of $1 \times 10^{-7} \text{ cm/s}$; therefore, remolding the entire site as presented in the original EAP is not required. Remolding will only be done for 1 m thick soil under the keyway and inside slope of the perimeter dikes and under the inter-cell dike. For areas with insufficient depth of clay, additional excavation will be done into the cell floor to confirm the availability of the minimum 1 m thick in-situ clay liner.

Disposition: In accordance with the draft Licence Clause 18, the soil liner will be tested for the hydraulic conductivity requirement of 1×10^{-7} cm/ s by an Environment Officer.

PUBLIC HEARING

No requests for a public hearing were made, and a public hearing is not recommended.

CROWN-ABORIGINAL CONSULTATION

The Government of Manitoba recognizes that it has a duty to consult in a meaningful way with First Nations, Métis communities and other Aboriginal communities when any proposed provincial law, regulation, decision or action may infringe upon or adversely affect the exercise of a treaty or Aboriginal right of that First Nation, Métis community or other Aboriginal community.

The proposal involves the construction of a wastewater treatment facility on Crown land. The facility has been designed to improve the environmental performance of the First Nation Community. Since resource use is not adversely affected by the project, it is concluded that Crown-Aboriginal consultation is not required for the project.

RECOMMENDATION

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.

It is further recommended that enforcement of the Licence be retained by the Environmental Approvals Branch until construction of the wastewater treatment lagoon is completed. Enforcement of the licence then should be assigned to the Interlake Region of the Environmental Compliance and Enforcement Branch.

Prepared by:

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October 19, 2015
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