

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Rural Municipality of North Cypress
PROPOSAL NAME: L.U.D. of Brookdale Wastewater Treatment Lagoon
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Wastewater Treatment Lagoon
CLIENT FILE NO.: 5291.00

OVERVIEW:

On November 24, 2006, the Department received an Environment Act Proposal (EAP) on behalf of the Rural Municipality of North Cypress for the construction and operation of a wastewater treatment lagoon located in NW 27 - 12 – 16WPM to serve the L.U.D. of Brookdale. Treated wastewater from the wastewater treatment lagoon would be discharged between June 15th and November 1st of any year via discharge piping that will discharge to the existing south ditch of Provincial Road 353 that discharges to Brookdale Drain that flows into Lake Irwin that discharges via Boggy Creek into the Whitemud River.

On November 28, 2006, the Department requested that the consultant provide additional supporting information regarding land agreements prior to commencing review of the EAP.

On September 10, 2007, the Department received the additional supporting information.

The proposal and supporting documentation, prepared by KGS Group, identified that clay type soils at the site are expected to meet provincial standards regarding hydraulic conductivity of soils used for construction of wastewater treatment lagoons.

The Department, on September 12, 2007, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station); the Millennium Public Library, Manitoba Eco-Network, and the Western Manitoba Regional Library and provided copies of the EAP report to the Canadian Environmental Assessment Agency, the Clean Environment Commission, and TAC members. As well, the Department placed public notifications of the EAP in the Neepawa Banner on Monday, September 24, 2007. The newspaper and TAC notifications invited responses until October 19, 2007.

Six TAC responses and a letter with attachments from the Canadian Environmental Assessment Agency were received while there were no letters from the public. On November 7, 2007 the Department forwarded requests for additional from the TAC to the proponent. On November 13, 2007, the Department submitted responses from the public and TAC members to the appropriate Public Registries.

On November 29, 2007 Manitoba Conservation received a response to the requests. On December 3, 2007 the response material was distributed to TAC, federal government representation and public representation for review and comment. Manitoba Water Stewardship responded identifying no additional concerns while Manitoba Intergovernmental Affairs suggested a larger capacity lagoon may provide for more growth in the area to be serviced by the lagoon.

COMMENTS FROM THE PUBLIC:

There were no comments from the public.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Health

- *The need for fencing, gates and warning signs should be included in the license to ensure public safety, in case of unsupervised public access to the development;*
- *Consideration of inclusion of odor nuisance clause;*
- *Please ensure that any discharge of effluent is in compliance with Manitoba Environment's guidelines;*
- *Please ensure containment design (in this case a clay liner) provides the best possible groundwater protection for the area; and*
- *Consideration of leachate monitoring.*

Disposition:

- Limits, terms and conditions of the draft Environment Act Licence provide construction requirements and standard operating criteria regarding monitoring and controlling effluent discharges that are conventional for standard lagoons in Manitoba.

Historic Resources

- *No concerns.*

Intergovernmental Affairs

- *The proposed site of the new lagoon is in the R.M. of North Cypress. The land is zoned "A80", General Agricultural, sewage disposal lagoons are a conditional use in this zone. This means that the Council must proceed with a conditional use application to establish the lagoon site. This process must include a public hearing and council may approve or deny the use with or without conditions. In this By-law the use requires a minimum of a 3 acre site with 300 feet of site width, a front yard of 125 feet, and side and rear yards of 50 feet each. These requirements can be varied, if considered appropriate, by Council. If this structure is approved it appears that it will need a variation of the front yard and north side yard, which appear to be planned for approximately 10 meters (32 feet) and zero meters respectively.*
- *The North Cypress Zoning By-Law also states that; "A dwelling unit shall not be located within a distance of one thousand (1,000) feet of a municipal sewage lagoon, and this required distance of separation shall be increased to one thousand six hundred (1,600) feet in the probable direction of future expansion of the lagoon". All of the surrounding residential buildings are beyond these minimum distances.*
- *I would also like to make a couple of comments regarding the capacity of the proposed lagoon;*
 1. *Has the possibility of adding capacity to the lagoon so that it would be large enough to provide septage service to some of the surrounding farms been considered? This could alleviate some of the current pressure on the Carberry lagoon.*
 2. *The combination of serviced lots, a school, and a close proximity to Brandon could potentially increase the potential for Brookdale to be promoted as a satellite community. By investing in a larger lagoon now the community may be able to support some additional growth without an upgrade to the waste water treatment system.*

Proponent Response – November 27, 2007:

- Once the final design phase is complete the proponent (R.M. of North Cypress) will proceed with a conditional use application for the proposed lagoon facility and a public hearing. As stated in the memorandum provided by Community Planning Services, the By-law requires minimum dimensions for the lagoon facility. It will be up to the discretion of the Council to vary these requirements if deemed appropriate.
- To date there has been no consideration to add capacity to the proposed lagoon in order to provide septage service to surrounding farms.
- Sizing of the proposed lagoon was based on discussions with representatives from the Rural Municipality of North Cypress and the L.U.D. of Brookdale. The size of the proposed lagoon is based on a current population of 84 residents with an expected population growth of 36 people. The design of the lagoon will be able to handle

sewage loading from the present development and the additional estimated flow from future development as well as septage from the septic tanks of the homes and other buildings connected to the proposed low-pressure sewer system.

Disposition:

- The draft Environment Act Licence contains specifications, limits, terms and conditions relative to organic and hydraulic loads.

Sustainable Resource & Policy Management Branch – Manitoba Conservation

- *Does the Municipality plan on having holding tank wastes disposed of at the new lagoon?; and*
- *Is a truck dump pad/station planned for the lagoon?.*

Proponent Responses – November 27, 2007:

- The Municipality of North Cypress does not plan on having holding tank wastes disposed of at the new lagoon. Currently, each private property has a septic tank (35 homes, 1 school and 1 community hall). A low pressure sewage collection system will be installed to convey sewage from the septic tanks to the lagoon. Sludge from the existing septic tanks will be removed and transported to the lagoon on an annual basis.
- A truck dump pad/station is planned for the lagoon. The location and orientation of the truck dump pad/station will be determined during the final design phase. A typical truck dump pad/station is shown on Figure 1.

Disposition:

- The draft Environment Act Licence contains specifications, limits, terms and conditions relative to truck handled sewage dumping that are conventional for standard lagoons in Manitoba.

Infrastructure and Transportation

- *The proposed development is located in the vicinity of Provincial Road (PR) 353 and PR 464 and permits are required from this Department (under the Highways and Transportation Act) for any proposed driveway accesses or installation of any structure within 38.1 meters (125 feet) from the edge of the road right-of-way of these roadways;*
- *We also note that the project proposal indicated that the layout of the wastewater pipeline will be within the existing right-of-way of PR 353 and PR 464. A pipeline crossing was also identified at PR 464. The placement of the pipeline within the road right-of-way and pipeline road crossings requires a formal agreement with this Department prior to construction; and*

- *Lastly, we note that the project proposal indicated that wastewater will be discharged into a pipeline draining into a roadway ditch. Additional drainage information will have to be provided to this Department for review.*

Proponent Responses – November 27, 2007:

- Upon completion of final design the proponent will contact Manitoba Infrastructure and Transportation — Highway Planning and Design Branch to obtain any required permits pertaining to any driveway access or the installation of any structure within 38.1 meters of the road right-of-way as set forth in the Highways and Transportation Act.
- The Rural Municipality of North Cypress has entered into an agreement with the adjacent landowner to purchase land for an easement through the adjacent quarter section (NE 27-12-16W). The revised forcemain location is shown on the attached Dwg. 06-0429-02 Rev 1. The forcemain will still cross PR 464 at the location shown on the drawing. Prior to construction the proponent will contact the Manitoba Infrastructure and Transportation — Regional Utilities Coordinator (Region 3 — Brandon) to request a formal agreement as required by Manitoba Infrastructure and Transportation.
- It is anticipated that effluent will be discharged twice a year between June 15th and November 1st. Effluent will be discharged through a 300 mm diameter effluent pipe to the south ditch of PR 353. It is anticipated that the maximum rate of flow from the effluent pipe will be 0.1138 m³/s (assuming a total volume of 11,809 m³) at the start of the discharge period and will reduce to a rate of 0.0089 m³/s towards the end of the discharge period. Should the scheduled discharge period correspond to a time when the ditch is full of water (i.e. after a storm event), the discharge period will be postponed to allow surface water in the ditch to dissipate in order to prevent overflow of the ditch.

Appropriate erosion protection (i.e. rockfill riprap pad) will be constructed at the discharge pipe outlet in order to prevent erosion of the existing highway ditch.

Disposition:

- General terms and conditions of the draft Environment Act Licence require that the Licencee obtain all necessary provincial and federal permits and approvals for construction of relevant components of the wastewater treatment lagoon prior to commencement of construction.

Water Stewardship

- *Fisheries Branch has reviewed this proposal to build a wastewater treatment lagoon at NW 27-12-16W. The proponent proposes to discharge the effluent twice a year between June 15th and November 1st. The discharge will be carried along an existing access road ditch for approximately 700 m where it will discharge into the existing south ditch of PTH 353 then enter the headwater of Brookdale Drain;*

- *There has been significant effort by the Whitemud River CD to improve the aquatic health of Brookdale Drain. Much of the work has been directed towards the lower reaches of this drain. Given the location, timing of discharge and discharge route and the need to meet or exceed Manitoba Water Quality Standards, Objectives and Guidelines we should have no fisheries concern. We would expect the proponent to incorporate appropriate erosion and sediment control measures during construction until the site has stabilized to minimize sediment entering the system.*
- *Regarding the use of a clay liner, given one of the reasons to build the lagoon was to minimize the concern of leaching from septic fields into the Assiniboine Delta Aquifer and the fact that this site is adjacent to a wetland area we would think it better to use a PVC liner for the lagoons.*

Proponent Responses – November 27, 2007:

- Appropriate erosion and sediment control measures will be implemented prior to commencement of construction, will be maintained during construction and will remain in place until the site vegetation has been established in order to minimize potential sediment from entering into the drain system. The location and types of erosion and sediment control measures to be installed as part of the construction of the lagoon and installation of the sewage collection system will be included in the tender specifications and construction drawings.
- Polyvinyl chloride (PVC) liners are suitable for sewage lagoon applications however the liner is susceptible to puncturing and damage during installation and must be installed by qualified technicians. The cost to install a PVC liner is approximately double that of the construction of a compacted clay liner.

Based on a preliminary soils investigation at the proposed lagoon site and KGS Group's extensive experience in the construction of waste containment facilities, it is our opinion that it is likely the insitu soils are suitable for the construction of a compacted clay liner. Additional soil testing will be required during the final design stage to determine if the soil meets Manitoba Conservation's minimum hydraulic conductivity requirements (1×10^{-7} cm/sec) for lagoon storage cells. In addition to the testing to be completed during the final design stage, Manitoba Conservation will require testing to be completed during construction of the lagoon cells to ensure that sufficient compaction has been performed and that the constructed liner meets the minimum hydraulic conductivity requirements.

Disposition:

- Limits, terms and conditions of the draft Environment Act Licence provide construction requirements and standard operating criteria regarding monitoring and controlling effluent discharges that are conventional for standard lagoons in Manitoba;

- The draft Environment Act Licence contains Clauses that require the Licencee to construct and operate the wastewater treatment lagoon in such a manner as to prevent the disruption of natural wildlife and fish habitats; and
- The draft Environment Act Licence contains a Clause that requires that the proponent actively participate in any future watershed based management study, plan/or nutrient reduction program approved by the Director, for Lake Irwin, the Whitemud River and associated waterways and watersheds.

Canadian Environmental Assessment Agency

- *Application of The Canadian Environmental Assessment Act with respect to this proposal will be required.*

Canadian Environmental Assessment Agency – Prairie Region

- *On p. 13 of Appendix C, it states that the average sewage load per capita was assumed to be 0.077 kg BOD₅/day. How was this amount determined?*
- *If the proposed lagoon is designed to accept hauled septage, what is the proposed design for the truck dump area?*
- *Is there a potential for additional homes in the municipality with septic tanks to haul their septage to the lagoon?*
- *What are the plans to reduce extraneous flows and infiltration into the wastewater collection system?*
- *What will be the process for sludge removal from the primary cells?*
- *What is the current process for sludge disposal and dewatering?*
- *What are the plans for groundwater monitoring to determine the effectiveness of the primary and secondary cells?*
- *Can you describe any potential cumulative effects of the lagoons by locating them next to the community landfill?*

Proponent Responses – November 27, 2007:

- The 0.077 kg BOD₅/capita/day as outlined in the calculation to determine the organic loading in the primary cell from the sewage load is a design standard that KGS Group uses to estimate the BOD/day (in kilograms).
- The lagoon will have a truck dump area to accept hauled septage, namely sludge from existing septic tanks. The location of the truck dump area will be finalized during the final design phase. A typical truck dump area is shown on Figure 1.
- Sizing of the proposed lagoon was based on discussions with representatives from the Rural Municipality of North Cypress and the L.U.D. of Brookdale. The size of the proposed lagoon is based on a current population of 84 residents with an expected

population growth of 36 people. The design of the lagoon will be able to handle sewage loading from the present development and the additional estimated flow from future development as well as septage from the septic tanks of the homes and other buildings connected to the proposed low-pressure sewer system.

- The installation of a low pressure sewer collection system will reduce extraneous flows and infiltration into the wastewater collection system.
- It is anticipated that in approximately 15 to 20 years sludge from the primary cell will have to be removed. The sludge will be removed and either transported to a facility licenced to handle sludge from sewage lagoons or to a facility with sludge drying beds.
- As there is no existing sewage treatment facility in the LUD of Brookdale, there is no current sludge disposal or dewatering in place.
- Should a groundwater monitoring program be required as part of the Manitoba Environment Act Licence for the facility, then groundwater monitoring wells and a monitoring program will be implemented as per the requirements of the licence.
- The design of the proposed wastewater lagoon will meet all the requirements of Manitoba Conservation's Design Objectives for Standard Sewage Lagoons. Therefore no potential cumulative effects are expected by constructing the lagoon adjacent to the existing community landfill. A copy of Manitoba Conservation's Design Objectives for Standard Sewage Lagoons is attached in Appendix B.

Disposition:

- Limits, terms and conditions of the draft Environment Act Licence provide construction requirements and standard operating criteria regarding monitoring and controlling effluent discharges that are conventional for standard lagoons in Manitoba.

Fisheries and Oceans Canada

- *The map shows a watercourse crossing along the North South ditch road to the existing landfill, however from our drainage maps it appears that the natural watercourse has been connected to the south ditch of PR 353. Is this the case?*
- *Our database shows Indicator species (sport fish) being present in the South ditch of PR 353 that flows into Brookdale Drain which also contains sport fish;*
- *From the drawings provided it appears that the FORCEMAIN crosses Brookdale Drain at the bridge site and will follow the South ditch of PR 353. Is this the case? If so, what crossing techniques are proposed at Brookdale Drain at the bridge site and how will the FORCEMAIN be installed along the south ditch of pr 353;*

- *The project description lacks detail on the FORCEMAIN route as it relates to the watercourses in the area. These should be clarified with detailed maps, drawings and photographs of these areas;*
- *Also, if the outfall is to be discharged directly into the South Ditch of PR 353 which appears to be connected directly to the Brookdale Drain then details on this should also be provided; and*
- *Sediment and Erosion Control measures for the project have been provided.*

Proponent Responses:

- No watercourse was observed to cross the north south ditch (and access road) to the existing landfill transfer station as indicated on the map provided in the Environment Act Proposal (Dwg. 06-0429-02 Rev 0). Photo 1 (included in Appendix C) shows no evidence of a watercourse crossing the existing landfill station access road.
- As shown on the attached Dwg. 06-0429-02 Rev 1 the forcemain has been relocated to cross PR 464 and then quarter section NE 27-12-16W to the proposed lagoon site. Should re-alignment of the forcemain cross any portions of the Brookdale Drain south of PR 353, the forcemain will be installed using directional drilling methods. The method(s) in which the directional drilling is completed will be in accordance with the requirements set forth in the Fisheries and Oceans Canada — Manitoba Operational Statement for High Pressure Directional Drilling. A copy of the Fisheries and Oceans Canada — Manitoba Operational Statement for High Pressure Directional Drilling is attached in Appendix D.
- The revised forcemain location is shown on Dwg. 06-0429-02 Rev. 1. The forcemain will cross PR 464 and cross the quarter section NE 27-12-16 to the proposed lagoon site. At those locations where the forcemain crosses the Brookdale Drain the forcemain will be installed using high pressure directional drilling techniques. Along those sections where there are no watercourse crossings the forcemain will be installed using a standard trench excavation. Photos showing typical conditions at the proposed site are attached in Appendix C.
- The 300 mm diameter outfall discharge pipe will enter the south ditch of PR 535 as shown on Dwg. 06-0429-02 Rev1. A rockfill riprap splash pad will be installed at the pipe outlet in order to prevent erosion of the existing highway ditch. The lagoon will be discharge twice a year between June 15th and November 1st. Based on the volume of treated effluent to be discharged from the lagoon the flows entering the highway ditch are estimated to range between 0.1138 m³/s and 0.0089 m³/s over the discharge period. Should the scheduled discharge period correspond to a time when the ditch is full of water (i.e. after a storm event), the discharge period will be postponed to allow surface water in the ditch to dissipate in order to prevent overflow of the ditch.
- Appropriate erosion and sediment control measures will be implemented prior to commencement of construction, will be maintained during construction and will remain in place until the site vegetation has been established in order to minimize

sediment from entering into the drain system. The location and types of erosion and sediment control measures to be installed as part of the construction of the lagoon and installation of the sewage collection system will be included in the tender specifications and construction drawings.

Disposition:

- Where practical, the concerns identified by DFO have been addressed through limits, terms and conditions as well as through specific monitoring and reporting requirements of the draft Environment Act Licence.

PUBLIC HEARING:

A public hearing has not been requested.

RECOMMENDATION:

Issue an Environment Act Licence in accordance with the attached draft. Enforcement of the Licence should be assigned to the Environmental Assessment and Licensing Branch until the soil testing has been completed.

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February 14, 2008

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