

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Manitoba Conservation, Parks and Natural Areas
PROPOSAL NAME: Big Whiteshell Lake Wastewater Treatment Lagoon
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Waste/Scrap Wastewater Treatment Lagoons
CLIENT FILE NO.: 697.10

OVERVIEW:

On June 28, 2005, the Department received a Proposal from Cochrane Engineering Ltd. on behalf of Manitoba Conservation, Parks and Natural Areas for the remediation and operation of the existing wastewater treatment lagoon located on the southeast quarter of Section 17-13-16 EPM in Whiteshell Provincial Park. Additional information was received from the proponent on April 14, 2006. Treated wastewater from the wastewater treatment lagoon will be discharged between June 15th and October 31st of any year. Treated wastewater will be discharged southward of the development into a large fen which drains into natural wetlands and eventually empties into Big Whiteshell Lake.

The Department, on July 7, 2005, placed copies of the Proposal in the Public Registries located at 123 Main St. (Union Station), the St. James-Assiniboia Public Library, the Manitoba Eco-Network, the Brokenhead River Regional Library and the LGD of Pinawa office. Copies of the Proposal were also provided to the Technical Advisory Committee (TAC) members. The Department placed public notifications of the Proposal in the Lac du Bonnet Leader on Friday, July 15, 2005, the Winnipeg Free Press on Saturday, July 16, 2005, and the Beausejour Clipper on Monday, July 18, 2005. The newspaper and TAC notifications invited responses until August 12, 2005.

COMMENTS FROM THE PUBLIC:

No responses were received from the public notification.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Agriculture and Food

- *No comments received.*

Conservation - Sustainable Resource Management

- *Fisheries Branch has reviewed the proposal and have no concerns as long as there is no discharge until after June 15th and erosion control measures (revegetation) are in place for construction work.*
- *The Drink Water Office offers the following:*

1. *The expected increase in organic and hydraulic loading has been assumed. For design purposes, the BOD₅ of wastewater from the campground and the surrounding cottages from and hydraulic loading has been based on values from the U.S. EPA's Design Manual – Wastewater Treatment/Disposal for Small Communities. This manual was used since record of wastewater flows and the strength of the wastewater from the campground and surrounding cottages are unavailable or were never recorded.*
The Licence for the operation of the treatment facility should contain requirements for the following:
 - a) *Daily Pumping Records of all lift stations for future estimation of the flow of wastewater to the treatment facility;*
 - b) *Weekly records of summer wastewater flows including the following:*
 - *presence of odours;*
 - *wastewater level in the cells;*
 - *any presence of floating objects and their removal; and*
 - *the maintenance of the wastewater treatment facility*
 - c) *Records of inspection made during the winter period;*
 - d) *Discharge records containing all treated effluent quality analyses, dates of discharge and discharge procedure followed; and*
 - e) *Record of service undertaken to lift stations.*
2. *Since the campground and possibly the surrounding cottages derive their drinking water supply from wells, a monitoring program should be carried to determine whether there is any impact from the wastewater treatment pond on the groundwater quality. Upgradient and downgradient monitoring wells should be established.*
3. *There is no indication in the EIA Report of any Well Head protection measures in place for the water supply wells. It is recommended that such measures should be the responsibility of the owners of the wells.*

Other comments submitted to this branch:

4. *The proposal indicates that treated effluent from the upgraded and expanded wastewater treatment facility will flow through a large fen/wetland area for a distance of approximately 2 km before entering Big Whiteshell Lake. The liner in the existing facility has failed which has resulted in seepage of effluent through the bottom of the lagoon, and regular discharges of effluent from the secondary cell have not been required. Thus, the precise discharge route (as shown in Figure 6.1) and effects of the effluent on vegetation along the route are likely unknown. Since regular discharge periods are planned following the upgrade, the proponent should provide assurance that vegetation will not be negatively impacted by the effluent. The vegetation along the discharge route may very well help to “filter” and refine the effluent prior to it reaching the Lake. However, this should not be done to the detriment of the fen/wetland systems along the discharge route.*
5. *The proponent does not provide any information regarding the plant species present in the discharge area. It is the responsibility of the proponent to inspect*

the construction site and discharge route prior to and during construction to determine if any species listed as rare or endangered may be impacted by the development. The proponent needs to be aware that if rare or endangered species are present, removal or destruction of the species or their habitat may be in contravention of Subsection 10(1) "Prohibition" of The Endangered Species Act (Manitoba). Since many areas of the province have never been thoroughly surveyed, the absence of records of listed species in this area does not mean that listed species or other species or ecological communities of concern are not present. If species of concern are present, the proponent must contact the Biodiversity Conservation Section of the Wildlife and Ecosystem Protection Branch (Nicole Firlotte, 945-6998) to discuss possible mitigation options.

Proponent Response (April 14, 2006):

1. The proponent will abide by all conditions placed in the Environment Act Licence.
2. The proposed development will incorporate monitoring wells up-gradient and down-gradient of groundwater flow around the expanded facility. A monitoring program will be in place to record groundwater quality. The proponent will incorporate in their monitoring any conditions placed in the Licence.
3. There are currently no Well Head protection measures in place. The recommendation is noted.
4. Based on experience at similar facilities, with suitably sized cells and with solely residential waste, it is anticipated that the impacts to the existing vegetation along the discharge swale will be negligible. However, in time, species such as bulrushes may reach their maximum uptake of nutrients. Monitoring plant health along the discharge route and in the early portions of the fen can assist in assessing these impacts and may provide suitable time to take any necessary actions. Actions such as, harvesting the bulrushes and disposing of them at an appropriate disposal site; or modifying the location the discharge enters the fen. As stated, the actual effects are unknown at this time, but regular monitoring can develop this information.
5. A species search prior to the preparation of the EAP found no occurrences at this location in their database. A preliminary examination of the surrounding site and discharge route found no uniqueness of the proposed development area compared to the general surrounding area. However, if required in the Licence, the proponent may contract a biologist to inspect the site and prepare a species survey. If any concerns are noted, the development can be reviewed for mitigation options.

Disposition:

After receiving the additional information from the proponent, no further comments were received from the Sustainable Resource Management Branch. This was assumed to indicate that the original comments were satisfied and are no longer of concern.

Manitoba Water Stewardship – Water Quality Management

- *How were total septic pump out volumes for the two lodges determined? Projected hydraulic and organic loading calculations for cottages have been based on the assumption that septic fields will be converted to holding tanks. I would recommend that the same assumption be made for the two lodges.*

- *Estimates of total hydraulic loading from the cottages seem reasonable considering the lack of data available to the proponent. However, I would recommend that the proponent attempt to verify these calculations with additional information obtained from haulers.*
- *The proponent has not assessed the impact of the discharge on water quality in Big Whiteshell Lake. Information should be provided on expected changes in water quality (in particular nutrient and chlorophyll a concentrations) in Big Whiteshell Lake.*
- *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, for Big Whiteshell Lake and associated waterways and watersheds.*

Proponent Response (April 14, 2006):

- The original pump out volumes were estimates based on discussions with the lodge owners. However, at the request of the Parks Department, we will take Ms. Armstrong's recommendation, and will assume that both lodges will convert to holding tanks. The owner's of both lodges were contacted and this scenario was discussed. Both lodge owner's agreed that if they were to convert to holding tanks the additional capital and operational costs would put them out of business under market conditions. However, if market conditions were favourable in the future, assumptions were made on occupancy rates. The following matrices outline the capacity of each lodge and optimistic year round occupancy rates. (Current conditions are that both lodges are seeing a decline in occupancy; and only one is open during the winter in a limited fashion for snowmobilers.)

Whiteshell Lake Resort

Maximum occupancy including 4 staff members: 70 persons			
Month	Projected Optimistic Occupancy Rate	Total Guests and Staff	Monthly Volume based on 100 Litres/cap/day (cubic metres)
January	60%	42	126
February	60%	42	126
March	80%	56	168
April	80%	56	168
May	100%	70	210
June	100%	70	210
July	100%	70	210
August	100%	70	210
September	80%	56	168
October	80%	56	168
November	60%	42	126
December	60%	42	126

Big Whiteshell Lodge

Maximum occupancy including 3 staff members: 35 persons			
Month	Projected Optimistic Occupancy Rate	Total Guests and Staff	Monthly Volume based on 100 Litres/cap/day (cubic metres)
January	25%	9	27
February	25%	9	27
March	25%	9	27
April	50%	18	54
May	100%	35	105
June	100%	35	105
July	100%	35	105
August	100%	35	105
September	50%	18	54
October	50%	18	54
November	25%	9	27
December	25%	9	27

Based on these new values, the hydraulic and organic projection summaries from Section 4.0 of the EAP are revised as follows.

Table 4.6A – Projected Annual Hydraulic Loading for 2023

Source	Estimated Annual Volume of Wastewater (cubic meters)
South Shore (pump house)	4,700
North Shore (holding tank)	40
Cottages (holding tanks)	2,960
Cottages (septic tanks)	0
Infiltration	300
Lodges	2,733
Future 100 units	1,600
TOTAL:	12,333

Table 4.7A – Projected Organic Loading for Peak in July 2023

	Est. Volume of Wastewater July 2003 (cubic meters)	Estimated Strength (mg-BOD/L)	Avg. Daily Loading Rate (kg-BOD/day)
Campground	1,320	200	9
Cottages			
Holding Tanks	740	400	10
Lodges	315	400	4

Future units	400	400	5
Total:	-	-	28

Table 4.8A – Projected Organic Loading for Peak in September 2023

	Est. Volume of Wastewater Sept. 2003 (cubic meters)	Estimated Strength (mg-BOD/L)	Avg. Daily Loading Rate (kg-BOD/day)
Campground	400	200	3
Cottages			
Holding Tanks	370	400	5
Lodges	222	400	3
Future units	200	400	3
Total:	-	-	14

Peak loading remains in July, however, the loading rate has increased from 25 kg-BOD/day to 28 kg-BOD/day. It is proposed to increase the design capacity of the proposed facility to accommodate this additional loading.

A revised site plan of the larger facility is also attached to this letter (each cell was made 6.0m wider to increase capacity.) The new design capacity of the facility is as follows.

Table 5.1A – Proposed Wastewater Stabilization Pond Expanded Capacity

CELL	Volume of Storage at 1.5m Liquid Depth (cubic meters)	Surface Area at 1.5m Liquid Depth (hectares)	Max Loading rate at 56 kgBOD/day/ha (kg/day)	Total Storage Capacity of Facility (cubic meters)
Primary	6,230	0.50	28	
Secondary	5,824			8,939

Based on these projected volumes, the facility will require two discharges per year to maintain level. There is also sufficient storage capacity to address winter storage required to accommodate the year round hauling that includes the lodges; approximately 1,350 cubic meters from November through to June.

- The Park’s environmental officer contacted the two major haulers in the area. After much effort, the officer was only able to obtain records from one of the haulers, the other has yet to start keeping records. The Park staff believes that it would be reasonable to assume that both haulers are relatively equal in hauling volumes. Thus the volumes from the one hauler were doubled. The records from the one hauler for 2005 show a total annual haul of 285 cubic meters. The records do not differentiate between a septic tank and a holding tank. However, based on the pump out volume of the individual tank (<1.0 m³), it appears that 21% of the volume may be septic

tanks. Doubling this value to 570 m³ places this well under the assumed hauling of 2,360 m³. Thus the estimates are likely conservative and will remain unchanged.

- Based on the long discharge route through a large fen, it is currently not expected that the facility's discharge would have a measurable impact to the water quality of the Big Whiteshell Lake. However, only extensive testing can demonstrate this, since there is no water quality data for the Lake near the fen's discharge location. Many samples will have to be gathered at different points throughout the year and over many years to demonstrate natural levels. Then as the facility discharges, further samples will have to be taken to see if there is an induced change. The extensive testing is required to show that any change is the result of the discharge and not a change due to natural conditions of weather, biology in the fen, or other natural events. If this is a significant concern, the Water Quality Management Section can propose a suitable monitoring program that the Proponent could undertake to demonstrate the appropriate results and any impacts.

Water Quality Management Section Response (May 12, 2006):

- *In light of concerns regarding potential nutrient enrichment of Big Whiteshell Lake, I would recommend that effluent discharged from the proposed facility not exceed a total phosphorous concentration of 1 mg/L (average over each discharge event). The proposed phosphorous limit of 1 mg/L is consistent with the considerable efforts underway across Manitoba and in upstream jurisdictions to reduce nutrient loads to surface waters.*

Water Quality Management Section Response (June 16, 2006):

- *We originally identified having no concerns with this proposal, as long as the effluent is not discharged until after June 15th. The proponent's response indicates there will be the need to discharge twice per year but no timeframes are given. No discharge should occur before June 15 or after November 1 of any year.*

Disposition:

- The wastewater effluent quality limits in the draft Licence are consistent with the Manitoba Water Quality Standards, Objectives, and Guidelines, and do not include phosphorous limits.
- The draft Licence requires the Licencee to actively participate in any future watershed based management study, plan and/or nutrient reduction program, approved by the Director, for Big Whiteshell Lake and/or associated waterways and watersheds.
- The draft Licence includes a clause limiting the discharge of effluent from June 15th until November 1st of any year.

Culture, Heritage and Tourism - Historic Resources

- *No concerns.*

Manitoba Health

- *No comments received.*

Transportation and Government Services

- *No concerns.*

Intergovernmental Affairs

- *No comments received.*

Canadian Environmental Assessment Agency

- *Following a review by all federal departments with a potential interest in the proposed development, the application of the CEAA will not be required.*
- *DFO, Environment Canada and Health Canada have offered to provide specialist advice with respect to the project. DFO has provided general information regarding additional measures to be incorporated into the plans.*
- *Health Canada provided the following comments:*
 - *Due to the apparent seepage of the existing stabilization pond liner, an assessment of any adverse effects that the septage plume may have on local ground and surface water resources is recommended. Potential users of drinking, recreational or agricultural waters in the area should be identified. Bacteriological and chemical analysis should be undertaken and reported against acceptable standards and available baseline data for the aquifer. The assessment results would be beneficial in determining whether additional remediation actions are necessary to protect the health of the resource users and the environment.*

Proponent Response to Fisheries and Oceans (April 14, 2006):

- The proposed development will incorporate the environmental protection measures recommended in this letter.

Proponent Response to Health Canada (April 14, 2006):

- The Parks have been taking steps to monitor the groundwater quality. Based on their findings in 2002, they were of the opinion that seepage from the lagoon may be impacting one of their wells. They worked with the Manitoba Water Services Board to abandon one of their camp's water supply wells and install another further removed from the area and out of the possible plume.
- The installation of the new facility with a synthetic liner will mitigate against any further seepage. The installation of monitoring wells surrounding the facility will improve the process of monitoring the groundwater quality as per the recommendation.

Disposition:

After receiving the additional information from the proponent, no further comments were received from Health Canada or DFO. This was assumed to indicate that the original comments were satisfied and are no longer of concern.

PUBLIC HEARING:

A public hearing is not recommended.

RECOMMENDATION:

The Proponent should be issued a Licence for the construction, remediation and operation of the collection system and wastewater treatment lagoon in accordance with the specifications, terms and conditions of the attached draft Licence. Enforcement of the Licence should be assigned to the Environmental Assessment and Licensing Branch until the liner testing has been completed and the Development is commissioned.

PREPARED BY:

Jennifer Smaizys
Environmental Engineer
Municipal, Industrial and Hazardous Waste Section

June 23, 2006
Telephone: (204) 945-7012
Fax: (204) 945-5229
E-mail Address: jsmaizys@gov.mb.ca