

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: Peter Ballantyne Cree Nation
PROPOSAL NAME: Sturgeon Landing Wastewater Treatment Lagoon
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Wastewater Treatment Lagoon
CLIENT FILE NO.: 5102.00

OVERVIEW:

On May 2, 2005, the Department received an Environment Act Proposal (EAP) on behalf of Peter Ballantyne Cree Nation for the construction and operation a wastewater treatment lagoon to serve Sturgeon Landing I.R. No. 205. The proposed facility will be located on SW 19-61-29WPM near the Saskatchewan – Manitoba provincial boundary. Treated wastewater from the wastewater treatment lagoon will be discharged between June 15th and November 1st of any year to a ditch that will flow southeast to a large muskeg area located adjacent to Medrick Bay of Namew Lake. Following successful commissioning of the wastewater treatment lagoon, an existing one cell wastewater pond and several septic tanks currently serving portions of the community will be decommissioned.

The proposal and supporting documentation prepared by UMA Engineering Ltd. identified clay soils at the proposed site. The supporting documentation indicated that the clay soil is expected to meet provincial standards regarding hydraulic conductivity of soils used for construction of wastewater treatment lagoons.

The Department, on May 19, 2005, placed copies of the EAP report in the Public Registries located at; 123 Main St. (Union Station); the St. James Assiniboia Public Library (Winnipeg); the The Pas Public Library; and the Manitoba Eco-Network and provided copies of the EAP report to the Canadian Environmental Assessment Agency (CEAA), the Clean Environment Commission, and TAC members. As well, the Department placed public notifications of the EAP in and in the Opasquia Times on Friday, May 27, 2005. The newspaper and TAC notifications invited responses until June 24, 2005.

On July 5, 2005, Manitoba Conservation submitted pertinent comments and requests for additional information from the TAC to the consultant. On July 6, 2005, Manitoba Conservation submitted responses from the TAC members to the appropriate Public Registries. The responses consisted of comments and requests for additional information. No comments were received from the public.

On July 7, 2005, Manitoba Conservation received responses from the consultant. On July 11, 2005 the responses were forwarded to the appropriate TAC representatives for review and comment. No additional comments were received from the provincial TAC representatives.

On August 2, 2005, Manitoba Conservation requested responses to TAC requests for additional information that were not included with the July 5, 2005 requests. On August 2, 2005 the consultant provided responses to the requests.

COMMENTS FROM THE PUBLIC:

There were no comments from the public.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Intergovernmental Affairs & Trade

- *Community Planning Services, Thompson has no land use or development concerns with this proposal as presented.*

Historic Resources

- *No concerns.*

Sustainable Resources Management Branch

- *How was the daily water usage value determined? The usage should not be based simply on figures for "representative communities", but is in fact based upon site-specific conditions for this community.*
- *There should be some advanced development planning for expansion to the proposed lagoon treatment facility beyond the ten-year design population. Normally the design population is calculated on a 20-year population projection.*
- *The Proponent proposes to install a clay liner for the lagoon cells. This type of liner for the proposed lagoon cell should be clearly stated and the specifications should meet Manitoba Conservation requirements regarding the liner's hydraulic conductivity.*
- *The decommissioning of the existing lagoon facility require further details with respect to the procedures for decommissioning and an identification of the facility which is proposed to receive the contents from the decommissioned lagoon.*
- *The report is unclear on the identification of the facility which would receive the contents from septic tanks when they are pumped out.*

- *At Item (a) Pollutants Page 5 of the Report, it is stated that the goal of the treatment process is to minimize the impact of all listed pollutants including ammonia. There is no indication how the minimization of the impact of un-ionized ammonia will be accomplished.*
- *The Proponent has stated that West of the community, the sewage force main would have to be installed in bedrock across the Sturgeon Weir River. The Proponent has not stated what factors have been considered to prevent freezing of the forcemain during winter conditions.*
- *There appears to be no monitoring plan for the quality of the water in the Sturgeon Weir River.*
- *A new well will be installed to provide drinking water for the Community. Since the source of drinking water would be groundwater, the Proponent should install monitoring wells upgradient and downgradient of the groundwater flow to determine any adverse impact to the groundwater quality as a result of the proposed lagoon so that corrective action could be taken to mitigate or obviate any health concerns which may arise as a result of any impairment to the groundwater quality.*
- *The proposal indicates that discharged treated effluent from the new wastewater treatment facility will flow into and eventually pass through a natural muskeg area before emptying into Medrick Bay of Namew Lake. Presumably the passage through the muskeg area will further refine the effluent before it enters Namew Lake. The proponent should provide some assurance that the effluent from the proposed facility will not have a negative impact on the muskeg area over the long-term. This should include an estimation of the retention time of the effluent within the muskeg area – i.e. how long will it take for the effluent to pass through the muskeg area. Periodic monitoring should be considered in order to determine whether or not the effluent is negatively impacting the vegetation and/or wildlife of the muskeg area.*
- *Although, according to the Conservation Data Centre (CDC), there are no recorded occurrences of rare species in the project area, the proponent should be aware that there are records for the following species adjacent to PTH 10 in this region of the province.*
 - *Woodsia glabella (Smooth Woodsia) - G5 S2 ranking*
 - *Pellaea glabella ssp. occidentalis (Cliff-brake) - G5T4 S2 ranking*
 - *Vaccinium caespitosum (Dwarf Bilberry) - G5 S2 ranking*

Since many areas of the province have never been thoroughly surveyed, the absence of records of other listed species in this area does not mean that other species or ecological communities of concern are not present. The information should therefore not be regarded as a final statement on the occurrence of any species of concern nor can it substitute for on-site surveys for species that will be

impacted by the development. It is the responsibility of the proponent to inspect the construction site prior to and during construction to determine if any listed species may be impacted. 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). 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.

- *Fisheries Branch has reviewed this proposal and does not recommend approving this proposal until additional information has been provided for review.*
 - *Concerns were expressed with the construction of the lagoons given the presence of bedrock within the 1.5 m required depth in some locations. Do the proponents intend to scrape or dig the bedrock down to the depth that is required to ensure the lagoon volume required is achieved.*
 - *Concerns were expressed with the use of an overflow culvert out of the secondary cell. This appears to be an unconventional feature and could lead to overflow discharging directly out of the lagoon into the drainage channel prior to being tested or treated effectively.*
 - *Proponent hasn't described how they will operate the lagoon. How the lagoon will be discharged and effluent tested is important given the spring and fall spawning fish species that are present in Namew Lake. It is also important given the short discharge route (200m) to the muskeg marsh prior to entering the bay. Additional sampling areas, particularly at the muskeg/lake water interface would indicate potential effluent impact on the aquatic ecosystem.*
 - *As there are a number of spring-spawning species we would want the proponent to release after June 30th instead of the indicated date of June 15th. The June 30th deadline reflects the later spawning periods that occur in the north.*

Response From Proponent:

- There are no site specific water usage records available for this community. The daily water usage assumed was taken from recommendations in the INAC Operating instruction #14 where 235 Lpcd shall be used in the absence of reliable data stating otherwise.
- INAC stated that the lagoon be designed to meet the 10 year criteria with an allowance to expand to meet the 20 year criteria.

- The liner proposed in the EAP is a 1000 mm thick, compacted clay liner. The specifications are such that it would meet the Manitoba Conservation requirements once installed including a tested hydraulic conductivity of 1×10^{-7} cm/s or less.
- The existing lagoon is in Saskatchewan and the liquid contents (if any) would be disposed of at the new lagoon upon completion. The existing lagoon is small, leaks sewage and has trees growing in it. The existing lagoon decommissioning specification is below:
 - The existing sewage force main shall be drained and capped and the liquid in the lagoon shall be removed to an approved location.
 - Existing lagoon structures, trees within the disturbed area and contaminated soil shall be removed and hauled to an approved location secured by the Contractor (at the landfill which is in Saskatchewan).
 - The existing dykes shall be leveled, graded and compacted so as to restore the natural drainage pattern. Fill material shall be hauled, placed, compacted and graded as required to restore the natural drainage pattern.
 - Topsoil shall be placed 150 mm deep on the disturbed area and the disturbed area shall be seeded.
 - Clean up of the decommissioned lagoon area shall include leveling and trimming the disturbed areas.
- The new, completed lagoon would receive the contents of the five septic tanks (approx. 3,000 L).
- It has been discussed with various members of Manitoba Conservation that sizing the lagoon according to Manitoba guidelines to store sewage from November 1 to June 15 or June 30 and limiting the liquid depth in the lagoon to not more than 1.5 metres would allow sufficient time and ice-free exposure for oxidation of the un-ionized ammonia to more stable forms of nitrogen for assimilation into the environment. Implementing this accepted design is how the impact of un-ionized ammonia will be minimized.
- Installing a lagoon to the west of the community was eliminated as an option because it would involve installing a force main through bedrock across the Sturgeon Weir River. The lagoon site to the east (in Manitoba) was chosen due to the constraints developing on other sites outlined in the EAP. The force main will be insulated with 50 mm thick polyurethane in a HDPE jacket and will be buried to a minimum soil cover of 2.5 m. The sewage pumping station barrel and manholes will also be insulated to retain as much heat as possible.
- The Sturgeon Weir River enters Namew Lake approximately 1,800 m to the west of the effluent ditch outlet. It is understood, however, that a monitoring protocol for Namew Lake and management study participation would be part of the environmental license conditions. The Band will have a trained operator for the lagoon.

- UMA supports continued monitoring of the groundwater as it relates to the establishment of the new lagoon and well. The establishment and evaluation of monitoring wells will be presented to the project management team and further direction in this matter will be from them or according to the environment license requirements;
- The lagoon was designed ignoring the treatment capacity of the muskeg but the treated effluent will reach the muskeg before it reaches the lake and receive further treatment there. The muskeg consists of peat and vegetation and extends approximately 300 metres to the lake shore. It is expected that the effluent, once it reaches the muskeg, will spread out to a shallower, slower moving flow as there would be no defined channel and the vegetation stand would dissipate energy further. Some effluent would percolate into the peat and organic layer in the muskeg where further biological processes and oxidation would occur while the rest would flow toward the lake in a relatively thin layer and collect in local, shallow low spots where further oxidation would occur. The retention time in the muskeg is difficult to define as there is limited topographical data for the muskeg because it was a difficult area to survey, however, it would be reasonable to assume that most of the effluent would be absorbed by the organic layer of the muskeg and remain there for a number of days to receive further treatment in addition to that received in the lagoon. It is anticipated this will have little impact to the muskeg over the long-term. The additional treatment capacity of the muskeg decreases the impact that would be associated with otherwise releasing treated effluent directly to the lake. Periodic monitoring will be done in accordance with the environment license requirements;
- It is acknowledged that there are rare species adjacent to PTH 10 in this area of the province and that these species may exist on the proposed lagoon site despite available information stating otherwise. It is also acknowledged that if these species are found, the proper authorities must be contacted for further action.
- These are the responses to comments from the Fisheries Branch.
 - The bedrock will be blasted to allow for the full depth of the liner to be installed.
 - The overflow structure out of the secondary cell has been removed from the design.
 - Typically, the operation and maintenance of the lagoon is arranged by the Prince Albert Grand Council for Peter Ballantyne Cree Nation reserves such as Sturgeon Weir and conducted in accordance with Saskatchewan Environment. Since the lagoon is in Manitoba, the operation and maintenance procedures would be in accordance with Manitoba Conservation guidelines. A sampling and monitoring program would be outlined in the environment license containing the location of sampling points and the frequency of sampling to monitor the level of each parameter listed.

- There is capacity in the current design to store sewage from November 1 to June 30 of the following year based on the 10 year design.

Disposition:

- The draft Environment Act Licence contains a Clause that does not permit effluent discharge between November 1st of any year and June 30th of the following year;
- The Province of Saskatchewan has identified the decommissioning requirements for the existing one-cell wastewater pond located in the Province of Saskatchewan;
- Clauses 31 and 32 of the draft Environment Act Licence require that the Licencee monitor effluent being discharged during each discharge campaign and the receiving surface body of water for a period of at least five years. The liquids shall be analyzed for total phosphorus, total Kjeldahl nitrogen, ammonia and nitrate-nitrite, field temperatures, and field pH. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence;
- The draft Environment Act Licence contains clauses that require the proponent to propose a groundwater quality investigations and monitoring plan;
- 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;
- The draft Environment Act Licence contains a Clause that requires that, prior to and, if necessary during construction, the construction sites be inspected, incorporating the requirements of The Endangered Species Act, by a specialist practicing within their stated area of expertise. Reports to the Director and to the Biodiversity Conservation Section of the Wildlife and Ecosystem Protection Branch are required to be submitted at least two weeks prior to construction. If species of concern are present, the proponent must contact the Biodiversity Conservation Section of the Wildlife and Ecosystem Protection Branch to obtain written direction; 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 the Namew Lake and associated waterways and watersheds.

Water Quality Management Section

- *I have reviewed the proposal to construct a wastewater treatment lagoon for Sturgeon Landing I.R. No.205 and have the following comments for your consideration.*
 - *I understand that the decision to add a dump chute to the lagoon was made late in the design process. It is not clear if the proponent has included the*

wastewater received from the dump chute in calculations of organic and hydraulic loading to the lagoon (and the resulting size of the primary and secondary cells). New drawings that include the dump chute should be provided.

- *The proponent has indicated that the maximum allowable concentrations of nitrogen and phosphorus in the effluent would be 15 and 1 mg/L, respectively. However, no information is provided as to what process will be used to provide this level of wastewater treatment.*
- *The proponent notes that Namew Lake has a large buffering capacity for effluent due to the relative size of the lake and the small size of the lagoon (section ix.a.). However, no data are provided to substantiate this statement. The proponent also indicates that Namew Lake will be impacted by the release of treated effluent with low concentrations of nitrogen and phosphorus, and that these increased nutrient concentrations could accelerate eutrophication of the lake (section vii.d.). What are the background concentrations of nitrogen and phosphorus (total, dissolved, organic, inorganic) in Namew Lake? What concentrations of nitrogen and phosphorus (same fractions) would be expected to occur after the discharge of treated wastewater effluent? How will the change in nitrogen and phosphorus concentrations impact chlorophyll a (algae) concentrations in the lake?*
- *No information has been provided to evaluate the impact of the effluent on water quality in Namew Lake. It is recommended that in addition to the standard lagoon effluent monitoring requirements, the following variables also be monitored in the effluent and in Namew Lake during each lagoon discharge event:*
 - *Total kjeldahl nitrogen*
 - *Nitrate-nitrite nitrogen*
 - *Ammonia nitrogen*
 - *Total dissolved phosphorus*
 - *Total particulate phosphorus*
 - *Total inorganic phosphorus*
 - *pH*
 - *Temperature*
 - *Total suspended solids*
- *Sampling Protocol:*
 - *Effluent discharge site: three samples to be collected during the beginning, middle and end of discharge event.*
 - *Two sites in Namew Lake: One site in Medrick Bay and one near the centre of Namew Lake. The two water samples from Namew Lake (Medrick Bay and centre) should be collected three times per year: in spring (prior to effluent discharge), during each discharge period, and in late August.*

- *An accredited laboratory should be utilized for sample analyses.*
- *The volume of discharge should also be reported.*
- *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 Lake Winnipeg, and associated waterways and watersheds.*

Response from Proponent:

- The dump chute was included because the Sturgeon Landing Outfitter camp occupants (approximate range is zero to 40-50 maximum at the peak season to average 25 people every day for three months) would produce a small amount of sewage. The cabins do not have showers or washing machines or other large water consumption appliances. The original design, according to INAC, was to completely exclude the outfitter camp from the design unless they contributed funds. It was then identified that the lagoon could treat and store the small amount of sewage trucked to the lagoon so a dump chute was included so the dykes would not be damaged by a truck. It is anticipated that sewage from the camp would be hauled mostly from June 30 through November 1 and was estimated to consist of a total volume of 50 m³ in that time. There is enough storage volume to handle this as illustrated below:

June 30 to November 1

$$(73 \text{ people} \times 235 \text{ Lpcd} \times 123 \text{ days} + 50,000 \text{ L}) / 1,000 \text{ L/ m}^3 = 2,160 \text{ m}^3$$

There is also sufficient volume to store sewage from November 1 to June 30 if there are 25 occupants of the camp which is unlikely:

November 1 to June 30

$$(73 \text{ people} \times 235 \text{ Lpcd} \times 242 \text{ days} + 50,000 \text{ L}) / 1,000 \text{ L/ m}^3 = 4,200 \text{ m}^3$$

The BOD loading used in this design was 30 kg BOD/ha-day considering the community only which is more conservative than 56 kg/ha-day required by Manitoba. When the outfitter camp occupants are considered, the BOD loading would be approximately 40 kg BOD/ha-day based on 98 people contributing 77 g BOD/day to the primary cell.

New drawings were submitted to Manitoba Conservation that included the dump chute. A detail was attached.

- UMA has had various discussions with Manitoba Conservation about nutrient removal. The EAP identified the maximum allowable levels according to Manitoba guidelines only for illustrative purposes to show that UMA supports the proactive direction Manitoba Conservation is going in regard to nutrient removal. The goal of this sewage treatment process is to meet the current Manitoba

requirements by implementing accepted design measures and best practices and, as discussed with Manitoba Conservation, allowing for adequate storage time (November 1 to June 30) and allowing a maximum liquid depth of 1.5 m would be sufficient design measures to allow for the uptake of nutrients into the natural environment. There are no extra measures in place to remove nutrients such as adding a coagulant and allowing settlement.

- The statement that Namew Lake has a large buffering capacity was made based on the relative size of the lake to the lagoon. Assuming a conservative average lake depth of 4 metres, the lake has a volume of approximately 800,000,000 m³ and the lagoon has a volume of 4,200 m³. A release of the entire storage volume of the lagoon of 4,200 m³ would increase the lake volume by approximately 0.0005%. The general statement that Namew Lake will be impacted by the release of treated effluent was made because the introduction of any new source of nutrients will have some impact and that the goal is to address and minimize any impact. The statement pertaining to nutrients accelerating eutrophication of the lake was also a general statement made as an acknowledgement of the type of impact that nutrients have on the environment. The magnitude of this impact will be small in the case of this sewage lagoon especially since the lagoon effluent will receive further treatment in the muskeg adjacent to the lake.

There are no records available indicating the background levels of nutrients of nitrogen and phosphorus in Namew Lake nor was there funding to investigate those levels. Expected nutrient concentrations in sewage effluent according to Saskatchewan Environment would range from 3.5 mg/L in the spring to 2 mg/L in the late fall for phosphorus and 20 mg/L in the spring to 5 mg/L in the late fall for nitrogen. It is anticipated that since there is extra primary cell treatment capacity and the effluent will be released to the muskeg before the lake that the change to the concentration of nitrogen and phosphorus in the lake will be small and thus have little impact to the algae growth.

- We support the standard lagoon effluent monitoring program and the monitoring of the effluent impact to Namew Lake. It is understood that the practical monitoring protocol and management study participation would be part of the environmental license conditions.

Disposition:

- Clauses 31 and 32 of the draft Environment Act Licence require that the Licencee monitor effluent being discharged during each discharge campaign and the receiving surface body of water for a period of at least five years. The liquids shall be analyzed for total Kjeldahl nitrogen, nitrate-nitrite nitrogen, ammonia nitrogen, total dissolved phosphorus, total particulate phosphorus, total inorganic phosphorus, pH, temperature, and total suspended solids. Effluent samples shall be obtained at the beginning, middle and end of each discharge period. Samples of surface water from Medrick Bay and one near the centre of Namew Lake in spring (prior to effluent discharge), during each discharge period, and in late August. The volume of

discharge should also be reported. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence;

- 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 the Namew Lake and associated waterways and watersheds.

Transportation and Government Services

- *Manitoba Transportation and Government Services has reviewed the above-noted proposal and has no concerns.*

COMMENTS FROM FEDERAL REPRESENTATION:

Canadian Environmental Assessment Agency

- *Based on the responses to the survey, the application of the Canadian Environmental Assessment Act (the Act) will be required for this project.*
- *Health Canada and Environment Canada indicated that they may be able to provide specialist information with respect to the project review.*

Department of Fisheries and Oceans Canada

- *Use and maintain sediment and erosion control measures during all phases of the work to prevent sediment from leaving the work site. Measures should be left in place, monitored and maintained until new vegetation is fully established;*
- *All disturbed areas should be sloped, stabilized and seeded as soon as possible and reclaimed to vegetation within one growing season. The effluent drainage ditch and muskeg area adjacent to Namew Lake should be monitored to evaluate the effectiveness of erosion control measures, the physical stability of the lake shore and any impacts of effluent upon aquatic life. Problems should be rectified as they arise.*
- *No work should occur during heavy rain events;*
- *The deposit of deleterious substances into water frequented by fish is prohibited under the Fisheries Act. Appropriate precautions must therefore be taken to ensure deleterious substances (e.g. gasoline, sediment, etc.) do not enter the watercourse;*
- *Equipment operating near any water body should be free of fluid leaks, external grease, oil and mud, and contain environmentally friendly hydraulic fluids. Fuel*

should be stored at least 100 m away from any water body. All equipment should be cleaned, refueled and services at least 100 m away from the high water mark of Namew Lake. An emergency spill kit should be available at all times and all workers trained in its use.

Disposition:

- 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 the Licencee to notify Fisheries and Oceans Canada 10 days prior to commencement of construction.

Environmental Protection

- *The lagoon has been designed to meet Manitoba requirements for wastewater treatment lagoons. However, Environment Canada recommends that the lagoon be designed to meet federal requirements as outlined in the 1976 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments. These guidelines provide for more stringent effluent quality criteria than provincial requirements, including a BOD limit of 20 mg/L, TSS of 25 mg/L, etc. The guidelines also stipulate a storage holding capacity of 365 days rather than 230 days, as generally stipulated by the province. This provides for improved treatment of the effluent prior to release;*
- *We note that the lagoon is being sized for a 10 year population growth, rather than the typical 20-year period. The rationale for this should be discussed in the EA report;*
- *The report should provide some information on potential impacts of releasing treated effluent into the marshy area adjacent to Namew Lake. For example, what is the expected retention time in the marsh? Will treatment in the marsh help achieve the expected phosphorus concentration of 1 mg/L or will this be achieved prior to release into the marsh? How will nitrogen levels be affected? Are there any plans to monitor the effectiveness of the marsh in providing additional effluent treatment?;*
- *There is no information identifying any potential species at risk in the project area or any migratory birds that may be affected by this project. We recommend that such information be provided by the proponent to ensure that all environmental impacts are duly considered and appropriate mitigation plans developed before the project proceeds, including scheduling of work to reduce/minimize potential impacts.*

Response from Proponent:

- INAC requires that the lagoon meet Manitoba design requirements, however we support the more stringent limits and increased storage time recommended by

Environment Canada and this lagoon was designed more conservatively with respect to primary cell capacity than Manitoba requires.

- INAC requires that the sewage lagoon shall be designed to meet the 10 year criteria with the possibility for expansion to meet the 20-year criteria.
- The treated effluent will reach the muskeg before it reaches the lake. The muskeg consists of peat and vegetation and extends approximately 300 metres to the lake shore. It is expected that the effluent, once it reaches the muskeg, will spread out to a shallower, slower moving flow as there would be no defined channel and the vegetation stand would dissipate energy further. Some effluent would percolate into the peat and organic layer in the muskeg where further biological processes and oxidation would occur while the rest would flow toward the lake in a relatively thin layer and collect in local, shallow low spots where further oxidation would occur.
 - In Section viii a) of the EAP, the maximum allowable concentrations for various pollutants were outlined to show both Manitoba's accepted effluent limits and the proposed numeric limits for nutrients. There are currently no set limits for nitrogen and phosphorus concentrations. This lagoon has been designed to meet current Manitoba design objectives including allowing for adequate storage time (November 1 to June 30) and limiting the liquid depth to 1.5 metres which would provide an ice-free environment sufficient to reduce the concentration of nitrogen and phosphorus to satisfactory levels. There are no extra measures in place to meet the concentrations of 1 mg/L and 15 mg/L of phosphorus and nitrogen, respectively. None of the treatment the effluent will receive in the muskeg was considered in this design. However, we support a monitoring program for the effluent which may include testing before and after the muskeg to ensure the nitrogen and phosphorus levels are satisfactory. We also support the proactive approach Manitoba is taking with respect to nutrients in its waterways.
- The "at risk" species identified in this region is the Woodland Caribou. Local residents have indicated that Woodland Caribou do not frequent this area. There is the potential for migratory birds to inhabit the lake and river but the lagoon development will not disrupt their habitat.

Disposition:

- Clauses 31 and 32 of the draft Environment Act Licence require that the Licencee monitor effluent being discharged during each discharge campaign and the receiving surface body of water for a period of at least five years. The liquids shall be analyzed for total Kjeldahl nitrogen, nitrate-nitrite nitrogen, ammonia nitrogen, total dissolved phosphorus, total particulate phosphorus, total inorganic phosphorus, pH, temperature, and total suspended solids. Effluent samples shall be obtained at the beginning, middle and end of each discharge period. Samples of surface water from Medrick Bay and one near the centre of Namew Lake in spring (prior to effluent discharge), during each discharge period, and in late August. The volume of

discharge should also be reported. The results of the analyses shall be reported to the Director in accordance with the requirements of Clause 3 c) of the Licence;

- 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 the Namew Lake and associated waterways and watersheds.

PUBLIC HEARING:

A public hearing was not requested.

RECOMMENDATION:

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

PREPARED BY:

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August 12, 2005

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