

SUMMARY OF COMMENTS/RECOMMENDATIONS

PROPONENT: City of Dauphin
PROPOSAL NAME: City of Dauphin Lagoon Dredging and Biosolids
Land Application
CLASS OF DEVELOPMENT: 2
TYPE OF DEVELOPMENT: Waste Treatment
CLIENT FILE NO.: 5273.00

OVERVIEW:

On May 23, 2007, the Department received an Environment Act Proposal (EAP) from the City of Dauphin for the removal of biosolids and sludge solids from Cell 4 and Cell 6 of its aerated wastewater treatment lagoon located in SE 23-25-19WPM. The biosolids and sludge solids will be removed from the two cells of the lagoon, transported to farmlands, and injected into the soils. The parcels of land proposed to receive the biosolids and sludge solids are located in SE 8-25-18WPM, NE 34-25-19WPM, SW 35-25-19WPM, and SW 12-26-19WPM in the Rural Municipality of Dauphin.

The Department, on June 11, 2007, placed copies of the EAP report in the Public Registries located at 123 Main St. (Union Station), the Millennium Public Library, the Manitoba Eco-Network, and the Dauphin Public Library 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 the Dauphin Herald on Tuesday, June 19, 2007. The newspaper and TAC notifications invited responses until July 16, 2007.

On July 26, 2007 Manitoba Conservation forwarded requests for additional information from the TAC to the proponent. The proponent's July 27, 2007 response to the requests was then provided to the participating TAC for review and comment on August 1, 2007. One component of the participating TAC requested an extension to receive and compile comments until September 4, 2007. As of September 5, 2007, there were no additional comments for consideration from the TAC.

COMMENTS FROM THE PUBLIC:

There were no comments from the public.

COMMENTS FROM THE TECHNICAL ADVISORY COMMITTEE:

Historic Resources Branch – Culture, Heritage and Tourism

- *No concerns.*

Sustainable Resource & Policy Management Branch

- *The proposal does not appear to address the potential for the release of odours from dredging and land injection operations of lagoon biosolids. The proposal should identify what odour impacts have typically been observed with such operations in the past at other locations and how the release of odours (if an issue) will be mitigated from this operation;*
- *Though land injection of biosolids is noted to occur in the fall season, there is no indication as to how many days this practice will be undertaken over what period of time;*
- *The proposal indicates that biosolids will be applied at agronomic rates based on soil analysis. Biosolids application rates should be based on soil test levels, biosolids nutrient concentrations and realistic target yields; fields should be prioritized to manage residual nitrate-N and phosphorus levels. Manure application to land is regulated on the basis of Mortalities Management Regulation. It is recommended that the proponents consider these values as guidelines for application of biosolids;*
- *The EA Licence should include a set back distance of at least 50m from any water feature such as a water well, stream or other wetland for the land injection. Because the EA proposal does not specify when during the year the land injection will occur, the EA Licence should specify an appropriate timeframe for land injection (e.g. May to October);*
- *It should be noted that the CCME soil quality guidelines referenced in Table 5.2 of the application are not intended as levels to which metals should be permitted to rise (i.e. they are not “pollute up to” levels);*
- *Conditions of the license should include measures to ensure all material is confined during transport in a manner to prevent spillage;*
- *A minimum setback distance from property boundaries to be included in the license; and*
- *The regional office of Manitoba Conservation to be contacted at least 5 working days prior to application.*

Proponent Responses – July 27, 2007:

- *Lagoon dredging and land injection of biosolids produces no appreciable odour during their respective operations. Jacques Whitford AXYS has completed several*

biosolid land application programs, attendance of these operations have not found no noticeable odour is produced. Biosolid material has limited exposure to the atmosphere as the dredging is completed beneath the water surface then piped to a transport tanker and then piped directly into the nurse tank and Terregator. As indicated in section 6.7 of the EAP, odour is minimal during the land injection since the liquid biosolid is injected to a depth of 15 cm.

- The anticipated lagoon dredging and land application will begin on August 15th and continue until September 10th, 2007. The operation is dependent upon weather conditions.
- The application of biosolids is limited by dry matter application rates as outlined in the perspective Environmental Act Licence (15 tonne). Application of biosolids limited to 15 tonnes of dry matter greatly limits the available nitrogen and phosphorous application (section 5.2 of the EAP). Biosolids typically supply half of the required nitrogen and phosphorus requirements of an average yielding crop. The available nitrogen application will be approximately 57.8 kg ha⁻¹ and approximately 50.6 kg ha⁻¹ of total phosphorous (Cell 4) approximately 15 kg ha⁻¹.
- Appropriate setback distances will be applied as outlined in THE ENVIRONMENT ACT (C.C.S.M.c. E125) Livestock Manure and Mortalities Management Regulations 42/98, Schedule C, subsection 12(2.1)). The Wilson Creek (NE 34-25-19W1), a third order stream has approximately a 10 metre vegetated riparian zone; a 10 metre application buffer zone will be applied in addition from the vegetated zone. All first order in field drains (SE8-25-18W1) will have an 8 metre set back buffer from application. Domestic water wells will have a 50 metre setback and property boundary setbacks of 10 metres.
- Heavy metals concentrations in biosolids from municipal waste are at very low concentrations (Table 5.4 and 5.5). The addition of metals from biosolids application does not significantly increase the natural occurrence metal concentrations in the soil as outlined in Table 5.5 (Cell 4 and Cell 6);
- All equipment used in the dredging, pumping, transporting and land application is maintained in good working order. Precautions are made as to contain drips from valves and pipe stands with catch buckets in place;
- Written notification will be faxed to the regional office and Mr. Robert Boswick five working days prior to the setup and land application of biosolids.

Disposition:

- The draft Environment Act Licence contains clauses which;
 - cause the Licencee to apply the biosolids to areas within the designated area which are not subject to flooding;
 - require that the biosolids remain the furrow opening; and

- require that the surface expression of the injected biosolids is acceptable to an Environment Officer.
- Minimum setbacks from any occupied residence, residential area, waterways and groundwater wells are designated in the draft Environment Act Licence.
- The draft Environment Act Licence contains Clauses that require the Licencee to remove, transport, and inject the biosolids into the soils in such a manner as to prevent the disruption of natural wildlife and fish habitats.

Ecological Services Division – Water Stewardship

- *While the proponent indicates the biosolids will be injected to a depth of 15 cm minimizing any opportunity to overland flow to the Wilson River (NE 34-25-19 W) and a first order tributary (SE 8-25-18W) a buffer area needs to be implemented as well.*
- *The proponent should be reminded of the need to manage the application of nutrients to land to minimize impacts to surface water quality. When nitrogen and phosphorus are applied to land surfaces in greater amounts than can be used by growing plants, excess nutrients can leach into ground water or run-off into surface water with heavy rainfall, floods, and melting snow.*
- *Nitrate-nitrogen should be applied at a rate that results in a residual concentration of nitrate-nitrogen within the top 0.62 metres of the soil at the end of the growing season of no greater than 157.1 kg/ha.*
- *No nutrients should be applied within 8 metres of rivers, creeks, streams, wetlands or Third, Fourth, Fifth or Sixth order drains (3 metres if the area is covered with permanent vegetation). Nutrients should also not be applied to roadside ditches or First or Second Order drains.*

Proponent Responses – July 27, 2007:

- Appropriate setback distances will be applied as outlined in THE ENVIRONMENT ACT (C.C.S.M.c. E125) Schedule C, subsection 12(2.1)) Livestock Manure and Mortalities Management Regulations 42/98. The Wilson Creek (NE 34-25-19W1), a third order stream has a 10 metre vegetated riparian zone; a 10 metre application buffer zone will be applied in addition from the vegetated zone. All first order infield drains (SE8-25-18W1) will have an eight (8) metre set back buffer from application.
- Nitrate-nitrogen application at the end of the 2008 growing season will be no greater than 157.1 kg ha⁻¹. The limiting factor for biosolids application is dry tonnes (15 tonnes), the nitrogen and phosphorus inputs from the limiting dry matter will only supply approximately half of what the crop will require for suitable crop production.

- Clarification of nitrogen inputs for Table 5.5 on page 12 of the EAP is outlined as follows;

Cell 4: Total Available Nitrogen

$$\text{Organic N} = \text{Total N} - \text{Ammonium N}$$

$$\begin{aligned} \text{Organic N} &= 194.7 \text{ kg ha}^{-1} - 12.2 \text{ kg ha}^{-1} = 182.5 \text{ kg ha}^{-1} \\ \text{Available Organic Nitrogen} &= 182.5 \text{ kg ha}^{-1} \times 0.25 \text{ (available in year 1)} = 45.6 \text{ kg ha}^{-1} \end{aligned}$$

$$\begin{aligned} \text{Total Available N} &= \text{Available Organic N} + \text{Available Ammonium N} \\ \text{N} &= 45.6 \text{ kg ha}^{-1} + 12.2 \text{ kg ha}^{-1} = 57.8 \text{ kg ha}^{-1} \end{aligned}$$

Cell 4: Biosolids Loading Rate for Nitrate Nitrogen

*assumes a liquid density of 1 kg/liter

$$\begin{aligned} \text{Biosolids loading rate (Nitrate-nitrogen)} &= \text{application rate} \times \text{concentration} \\ &= 190,910 \text{ litres hectare}^{-1} \text{ applied} \times 0.02 \text{ mg L}^{-1} \text{ NO}_3\text{-N} / 1,000,000 \text{ mg kg}^{-1} \\ &= 0.0057 \text{ kg ha}^{-1} \text{ NO}_3\text{-N applied} \end{aligned}$$

Disposition:

- Minimum setbacks from any occupied residence, residential area, waterways and groundwater wells are designated in the draft Environment Act Licence.

COMMENTS FROM FEDERAL REPRESENTATION:

Canadian Environmental Assessment Agency

- *Based on the responses to the CEAA survey, application of The Canadian Environmental Assessment Act with respect to this proposal will not be required. Health Canada would be able to provide specialist advice if requested.*

PUBLIC HEARING:

A public hearing was not requested.

RECOMMENDATION:

The Proponent should be issued a Licence to remove biosolids from its wastewater lagoon for sub-surface injection on the described land locations subject to the specifications, limits, terms and conditions of the Licence. The Licence should be assigned to the Western Region.

PREPARED BY:

Robert Boswick, P. Eng.
Environmental Engineer
Environmental Assessment and Licensing Branch
Manitoba Conservation
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Telephone: (204) 945-6030

Fax: (204) 945-5229

E-mail Address: robert.boswick@gov.mb.ca