



April 27, 2016

Project No: 151-12617-00

Asit Dey, P. Eng.

Environmental Engineer

MANITOBA CONSERVATION AND WATER STEWARDSHIP

160-123 Main Street

Winnipeg, MB R3C 1A5

Dear Mr. Dey:

**RE: RM OF RITCHOT – ST. ADOLPHE LAGOON
NOTICE OF ALTERATION – LICENCE No: 2776 (REVISED)**

On behalf of our client, the RM of Ritchot, we would like to apply for an alteration to Environment Act Licence No. 2776 for the RM of Ritchot - St. Adolphe Wastewater Treatment Lagoon. Based on our original request of March 11, 2016 and the March 30, 2016 email response requesting additional information, we have revised the original request and added the additional information requested and the \$500 notice of alteration fee payable to the Minister of Finance. The proposed changes do not affect the overall footprint of the lagoon system, but rather re-purpose the original primary and the newest secondary cells to allow for additional organic capacity.

The recent expansion to the lagoon in 2009, expanded the primary cell to add additional organic capacity and a new secondary cell to add hydraulic capacity to be able to service all lots within the existing dyke area of St. Adolphe. Since then, the northern subdivisions are being built out and there are only about 50 lots left within the old dyke area. Last fall, a new perimeter dyke was under construction to expand the available land for residential development. There are plans for a new development called "Tourond Creek" with an additional 1000 lots or approximately

3,000 people, mostly single family with some multi-family units. The first phase is expected to add 260 residential units or approximately 780 people and is expected to take 5-10 years to build out depending on demand. Construction for the required infrastructure for this phase is now underway.

A simple solution for the short term (Phase 1) is to convert the newest (east) secondary cell to the primary cell and convert the primary cell to a secondary cell. The new forcemain from the new subdivision lift station will be installed along the south municipal road before entering the new primary (east secondary). The old forcemain from the existing lift station is to be twinned from the existing lift station to a point across the St. Adolphe Coulee from the lagoon, joined with a "T" and then a new line will be directionally drilled into the new primary (east secondary) cell. The new secondary (old primary) will then require a discharge pipe and valve which will be located on the north side and drain along the north side of the lagoon facility to the St. Adolphe Coulee, utilizing the existing discharge route. The new primary will have its' discharge pipe on the north side capped off. This is further detailed in the attached drawing.

The RM has set aside land to the east of the existing lagoon system for future development and it is expected that an expansion will be required before Phase 2 of the development proceeds. At that time, a new EAP will be submitted for review. The RM has been monitoring the lift station flows for several years now and are seeing a significant drop in the flows to the lagoon and thus the Lpcd values which allows the storage available to support a larger population than originally planned.

The 2009 expansion was designed for a population of 1,912 people which included the bussed-in school component. The primary cell was designed for 147.2 kg-BOD per day and the storage for 171,500 cubic metres. The Phase 1 population of 780 added to the 1,912 for existing build-out will result in a design population of 2,692 or approximately 2,700 people.

With the re-configuring of the cells, the east secondary/new primary will provide a surface area of approximately 7.93 hectares, good for approximately 5,770 people and the resulting storage will be approximately 141,325 cubic metres. The present flows are averaging 290,000 L/d over the storage period and divided by the present

population of approximately 1,780 = 163 Lpcd, which although low, appears consistent with the present levels being seen in the storage cells the last few years. At this rate, the new storage (141,325) would be good for a population of 3,820 people. Even using a higher Lpcd of 200, would allow for a population of 3,110 people or at 225 Lpcd, would allow for 2,770 people, more than adequate for the first phase of the new development.


On this basis, the re-configuring of the primary and secondary cell will provide for the first phase of the development with no need for an expansion of the existing lagoon system.

The existing primary cell is approximately 40 years old and will have a sludge build-up within it, even though it has not been used for septic tank dumping. No sludge depth survey nor sludge characterization has been done to date. However, once the cell becomes a secondary cell, it can be taken off line if need be and a detailed sludge survey, quantification and characterization can be undertaken. Assuming the sludge depth is significant enough that removal is required, the RM has indicated that they would be interested in trying out the bacteria product, BactiDomus, marketed by Nordevco Associates Ltd. to break down the accumulated organic sludge in order to assess its effectiveness. The cell is a manageable size and shape and can be taken off line to try this out and see how successful it is in this case. If the product is not successful or if there is too much sludge to treat in this manner, the RM will develop a de-sludging plan to deal with the issue and if land applied, an EAP is assumed to be required.

If you have any questions regarding this alteration request, please contact the undersigned.

Regards,

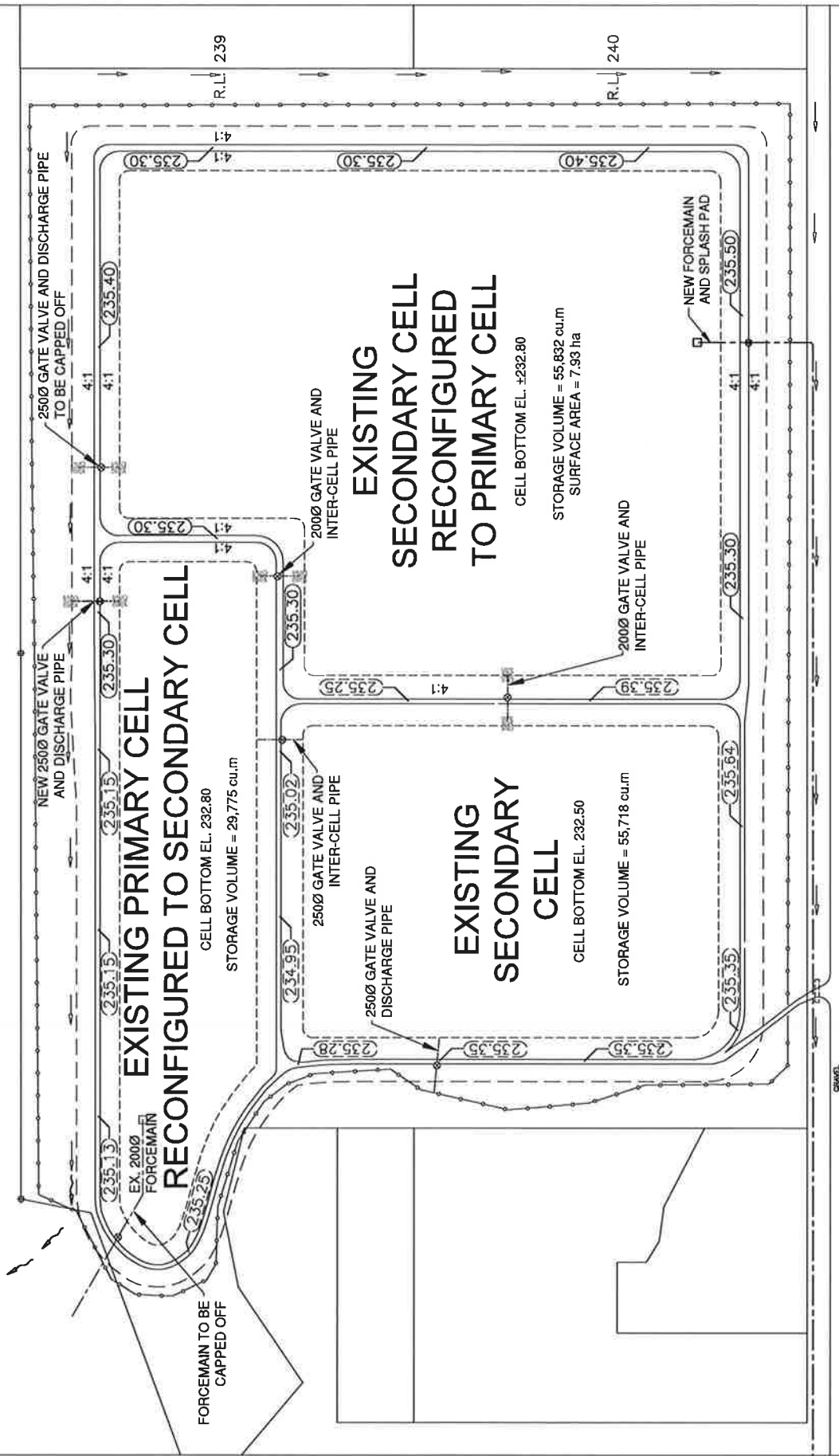
WSP Canada Inc.



Ross Webster, P. Eng.
Manager, Environmental Infrastructure

cc: Mike Dumaine, Manager of Public Works, RM of Ritchot

Attachment



TOTAL LAGOON STORAGE VOLUME = 141,325 cu.m