



December 29, 2021

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Manitoba Conservation and Climate  
Environmental Stewardship Division  
Environmental Approvals Branch  
1007 Century Street  
Winnipeg, MB R3H 0W4

Attention: Shannon Kohler, Director

**RE: ASSESSMENT OF OPTIONS TO ENHANCE PHOSPHOROUS REMOVAL TO MEET  
1.0 MG/L TOTAL PHOSPHOROUS REMOVAL**

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This letter is to satisfy Clause 2 of Manitoba Conservation and Climate's May 28, 2021 letter regarding Interim Phosphorous Reduction Plan for the North End Sewage Treatment Plant (NEWPCC). The Water and Waste Department, with AECOM as its consultant, evaluated the flows and loads of various scenarios for the anticipated sludge treatment system. These scenarios included treating the NEWPCC to both 2.5 mg/L and 1.0 mg/L phosphorous in its final effluent.

In the original 2019 Biosolids Enhanced Preliminary Design (EPD), the design life of the new sludge treatment system was 2037. As the Water and Waste Department finalizes the updated EPD, we will evaluate the need and/or the benefits of extending the design life of the facility which may accommodate a higher phosphorous removal rate.

The sludge loads from the South End Sewage Treatment Plant (SEWPCC), NEWPCC, West End Sewage Treatment Plant (WEWPCC), and Interim Phosphorous Removal were then modeled to estimate sludge loads and the impacts of interim phosphorous removal.

The analysis found that with a 2.5 mg/L interim phosphorous removal, the new biosolids facility would be operating at 93% capacity in 2031. To achieve a 1 mg/L phosphorous removal, the new biosolids facility would be at 99% capacity in 2031. This is due to the existing high purity oxygen reactors (HPO) and interim phosphorous removal processes which produce large quantities of sludge. The 1 mg/L phosphorous level in the final effluent assumes that the existing HPO processes can operate with these ferric chloride dosing rates; full scale testing is required to confirm this. Once the NEWPCC biological nutrient removal (BNR) process is online, the sludge volumes are expected to decrease thereby extending the design life of the facility.

The Water and Waste Department will continue with its plans to implement interim phosphorous removal at the NEWPCC. Removal rates and final effluent concentrations for phosphorous will depend on full scale trials, chemical reactions, and sludge production. The operators will use their experience and new infrastructure from the Interim Phosphorous Reduction Project to

maximize phosphorous removal at the NEWPCC based on real time conditions and the tools that are available to them.

Should you have any questions on this, please contact Michelle Paetkau at 204-986-4904 or by email at [mpaetkau@winnipeg.ca](mailto:mpaetkau@winnipeg.ca).

Sincerely,



Cynthia Wiebe, P. Eng., CAMP  
Manager of Engineering Services

MP/dr

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