



March 11, 2022

Client File No.: 1071.1  
Our File Nos.: S-972, S-1146, EMS  
020-17-08-11-00  
020-17-08-11-0N

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

Attention: James Capotosto, Director

**RE: NORTH END WATER POLLUTION CONTROL CENTRE (NEWPCC) – ENVIRONMENT  
ACT LICENCE NO. 2684 RRR – RESPONSE TO ASSESSMENT OF OPTIONS TO  
ENHANCE INTERIM PHOSPHOROUS REDUCTION**

---

The following is in response to your letter of February 25, 2022 requesting additional information with respect to the Water and Waste Department's (City's) December 29, 2021 letter.

1. A list of actions taken between June 28, 2021 and December 29, 2021 to evaluate enhanced interim phosphorus reduction to 1 mg/L:
  - a. On May 25, 2021, AECOM commenced work on the enhanced preliminary design for the NEWPCC Phase 2 Biosolids Facility Project.
  - b. As part of enhanced preliminary design, AECOM completed a sludge loading assessment on the new Biosolids Facility. The loading assessment assumed the highest sludge-generating scenario and compared estimated sludge loading rates to the design capacity of the future Biosolids Facility.
  - c. AECOM's sludge loading assessment was completed and submitted to the City at the end of September, 2021.
  - d. The City reviewed the sludge loading assessment and submitted the overall findings to the Province in the December 29, 2021 letter.
  
2. A list of proposed actions to be taken going forward until implementation of enhanced phosphorous reduction:
  - a. As per the monthly and quarterly reports, and the City's February 15, 2022 letter and Upgrade Plan Update, the City is on schedule to reach total performance for the Interim Phosphorous Removal Facility by August 2023. A one-year testing and optimization period will follow to optimize phosphorous removal and test the impacts of the additional ferric chloride on biosolids and the biosolids reuse program.
    - i. As per the 'NEWPCC Interim Phosphorous Removal Detail Review and Bench Scale Testing' report, the anticipated total phosphorous concentration in the

final effluent is estimated to be 2.5 mg/L. This value may increase over time as biosolids capacity is consumed.

- b. As indicated in the City's February 15, 2022 NEWPCC Upgrade Plan Update, the date for substantial completion of the new Biosolids Facility will be finalized once ICIP funding is approved. The City will undertake a constructability review to determine if there are opportunities to accelerate the completion of the upgrades. Interim chemical phosphorous removal using the existing Biosolids Facility will continue until the new Biosolids Facility is operational.
  - c. Following the completion of the new Biosolids Facility, the City will gradually increase ferric chloride dosing at a variety of dosing set points to optimize phosphorous reduction. The final dosing configuration will depend on sludge loading and process stability, which will be evaluated as ferric chloride dosing increases
    - i. As per the City's December 29, 2021 letter 'Assessment Options to Enhance Interim Phosphorous Reduction', AECOM estimates that, based on projected sludge loads, the new Biosolids Facility can meet a final effluent total phosphorous concentration of 1 mg/L until approximately 2031.
  - d. Following 2031, ferric chloride dosing may be adjusted to keep chemical sludge load production within the design capacity of the new Biosolids Facility, though this scenario assumes the largest chemical sludge production. The NEWPCC operators will experiment with chemical dosing points to minimize sludge production.
  - e. Refer to Attachment 2 in the City's February 15, 2022 Upgrade Plan Update for more information on project sequence.
3. Update regarding assessment of the factors identified in the September 30, 2020 Report:
- a. No impacts on the Class A biosolids production have been identified to date, other than the capacity constraint identified in the City's December 29, 2021 letter.
  - b. The impacts of chemical phosphorous removal on the biosolids reuse program will be evaluated as part of the one-year process review and optimization period. The biosolids are expected to have higher salt and total phosphorous concentrations.
    - i. For the land application program, this may decrease the allowable land application rate, resulting in more land requirements.
    - ii. For the soil mixing program, additional woodchips and sand amendments may be required.
    - iii. For the composting program, additional woodchip amendments may be required.
4. The anticipated start and finish dates for full-scale trial:
- a. As stated in the City's February 15, 2022 letter and Upgrade Plan Update, construction of the interim phosphorous facility is planned for mid 2022 to 2023 with

full-scale trial using the existing Biosolids Facility scheduled for September 2023 to September 2024.

- b. The full-scale trial using the new Biosolids Facility is anticipated to last one year following the commissioning of the new Biosolids Facility. The new Biosolids Facility would be operating at 99% capacity to meet a 1 mg/L total phosphorous concentration in 2031, based on current growth under maximum sludge projections.

5. Specific best estimates of phosphorous removal at each stage:

- a. Please see Table 1 below. The numbers presented are estimates that are dependent on a variety of factors including chemistry, biology, city growth, and capacity. Phosphorous concentrations will continue to be reported as part of the City's compliance reporting process.

Table 1. Estimates of Total Phosphorous Concentration in NEWPCC Final Effluent. (Dates to be finalized upon receipt of ICIP funding for Biosolids Upgrade and constructability review.)

<b>Phase</b>	<b>Period</b>	<b>Estimated total phosphorous concentration in NEWPCC Final Effluent</b>
<b>Stage 1:</b> Phosphorous reduction with existing infrastructure	Until August 2021	Approximately 4.0 to 4.5 mg/L on average
<b>Stage 2:</b> Maximized phosphorous reduction through optimization with existing infrastructure	August 2021 to current	Approximately 3.5 mg/L on average
<b>Stage 3:</b> Interim phosphorous reduction through additional infrastructure as approved on May 28, 2021	August 2023 to December 2030	Approximately 2.5 to 3.0 mg/L on average (phosphorous levels may increase as City growth consumes capacity)
<b>Stage 4:</b> Enhanced interim phosphorous reduction to as low as the 1.0 mg/L effluent phosphorous limit upon commissioning of the biosolids facility	January 2031 to January 2032	1 mg/L – new sludge treatment capacity may be consumed in 2031 due to chemical sludge loading (assuming maximum sludge generating scenario)
<b>Stage 5:</b> Ongoing phosphorous removal meeting the 1.0 mg/L effluent phosphorous limit upon commissioning of the biological nutrient removal facility	Dependent on constructability review and funding for NEWPCC Nutrient Removal Facility	1 mg/L

6. The specific date by which the 1.0 mg/L level can be achieved:

- a. The City anticipates meeting a 1.0 mg/L total phosphorous concentration in the trial period for the new Biosolids Facility, as shown in Table 1. However, depending on

city growth, sludge loading, dosing optimization, and capacity constraints of the new Biosolids Facility, this concentration may increase over time as growth-related sludge competes with chemical-related sludge.

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,



Linda McCusker, P. Eng.  
Acting Manager of Engineering

Attachment

MP/dr

- c: Siobhan Burland Ross, M. Eng., P.Eng., Environment, Climate and Parks (email)
- Yvonne Hawryliuk, MSc, Environment, Climate and Parks (email)
- C. D. Wiebe, P. Eng., CAMP, Water and Waste Department (email)
- R. Grosselle, Water and Waste Department (email)
- C. Javra, P. Eng., Water and Waste Department (email)
- M. Paetkau, P.Eng., Water and Waste Department (email)