



Manitoba Environment and Climate
Environmental Stewardship Division
Environmental Approvals Branch
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April 21, 2023
Client File No.: 1071.10
Our File No.: S-1146, EMS
020-17-08-11-00
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Attention: Siobhan Burland Ross, Acting Director

**RE: QUARTERLY PROGRESS REPORT FOR NEWPCC INTERIM PHOSPHOROUS
REMOVAL: JANUARY 1 - MARCH 31, 2023**

The City of Winnipeg (City) is pleased to submit 2023 Quarter 1 Progress Report for Interim Phosphorous in accordance with the conditional approval of the Notice of Alteration for the North End Sewage Treatment Plant (NEWPCC). The work conducted for the period of January 1 to March 31, 2023 are summarized in this report.

January

Piling was completed for the new sodium hydroxide building. Pre-boring piling for the new ferric chloride and railcar shelter was completed and pile hammering was started.

February

The subcontractors began heating, hording, and frameworks for the building foundations. Flowable silt was discovered in the area which led to shoring redesign.

A ground water monitoring well was installed and samples collected for monitoring purposes. A piping tie-in to the truck unloading area was completed.

A previously unidentified concrete slab was discovered and its removal process began and continued into March.

March

The contractor continued with heating, hoarding, and frameworks for the various buildings. Due to the silt found in the area, the contractor had to switch to sheet piling. This led to redesign and construction delays because the sheet piles required a different subcontractor. As a result, substantial and total performance have been delayed seven weeks.

Six of the seven piping tie-ins for the dosing points have been completed and planning is underway for running electrical cables.

The estimated phosphorous concentrations throughout the various phases of the NEWPCC Upgrade were based on preliminary AECOM studies and are shown in Table 1.

Changes from last reporting period:

- The start of Stage 3 was updated from October 2023 to December 1, 2023 to reflect the impact of silt in ground conditions.

Table 1: Estimated phosphorous concentrations through various phases of the NEWPCC Upgrade

Phase	Period	Estimated total phosphorous concentration in NEWPCC Final Effluent
Stage 1: Phosphorous reduction with existing infrastructure	Until August 2021	Approximately 4.0 to 4.5 mg/L on average
Stage 2: Maximized phosphorous reduction through optimization with existing infrastructure	August 2021 to November 30, 2023	Approximately 3.5 mg/L on average
Stage 3: Interim phosphorous reduction through additional infrastructure as approved on May 28, 2021	December 1, 2023 to December 2030	Approximately 2.5 to 3.0 mg/L on average (phosphorous levels may increase as City growth consumes sludge processing capacity)
Stage 4: 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 – beyond January 2032, 1 mg/L is dependant on the sludge loading levels. This assumes the maximum sludge generating scenario.
Stage 5: 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

Optimizing with the various dosing points may improve removal rates and the reduce concentrations listed in Table 1. This will be determined during full scale testing.

Phosphorous concentrations in the final effluent are reported in the NEWPCC’s monthly compliance reports and can be found online at winnipeg.ca/wwcompliance.

The overall schedule for the Interim Phosphorous Removal project is shown in Table 2.

Table 2: Schedule for Interim Phosphorous Removal

Deliverable	Description	Contractual Dates	% Complete February Report	% Complete March Report	Originally Projected Date	Revised or Completed Date	Work Remaining
Consultant RFP	Draft, review and post for Tender	N/A	100%	100%	July 2021	July 31, 2021	Complete
	Evaluation, Admin Report, approvals and Award	N/A	100%	100%	September 30, 2021	September 28, 2021	Complete
Preliminary Design (PD)	PD plus reviews and approval by WWD	February 3, 2022	100%	100%	March 31, 2022	February 2, 2022	Complete
Detailed Design (DD)	DD plus reviews and approval by WWD	May 18, 2022	100%	100%	June 30, 2022	May 18, 2022	Complete
Construction Tender	Draft, review and post for Tender	May 26	100%	100%	June 30, 2022	June 13, 2022	Complete
	Tender posting period	May 26, 2022 to June 23, 2022	100%	100%	June 30, 2022	June 13, 2022 to July 28, 2022	Complete
	Award Recommendation, Admin Report, approvals & Award	July 15, 2022	100%	100%	June 30, 2022	September 22, 2022	Complete
Construction and Commissioning	Substantial Performance	July 20, 2023	20%	25%	June 30, 2023	October 9, 2023 November 30, 2023	Ongoing
	Total Performance	August 31, 2023			September 30, 2023	December 5, 2023 January 26, 2024	
	Warranty Period	August 31, 2024			December 31, 2024	December 6, 2024 January 29, 2025	
Full Scale Testing and Implementation	Process review, dosing estimates, trouble shooting, optimization	August 31, 2024			December 31, 2024	December 31, 2024 January 29, 2025	
Closeout	Certificate of Acceptance	September 2, 2024			December 31, 2024	December 9, 2024 January 30, 2025	

Phosphorous Optimization

The NEWPCC Operators have maximized ferric dosing to the sequencing batch reactors (SBRs) and digesters based on the existing ferric chloride pumping capacity. The average SBR effluent phosphorous load for Q1 2023 is 6.0 kg/day which corresponds with an average effluent concentration of 3.6 mg/L.

This is less than historical levels, which ranged from 20 to 35 kg/day. The lower effluent levels may be caused by lower phosphorous in the digesters due to ferric chloride dosing at the South End Sewage Treatment Plant. Dry weather, steady state conditions may have also resulted in more efficient digestion. The operators will continue to observe and monitor the centrate phosphorous levels.

The SBRs are performing better than intended in their original design and are below the licence limit of 119 kg/day of phosphorous specified in Clause 27 of the NEWPCC Licence No. 2684 RRR.

Should you have any questions on this report, please contact Michelle Paetkau at 204-986-4904 or by email at mpaetkau@winnipeg.ca.

Sincerely,

A handwritten signature in black ink that reads "C. Wiebe".

Cynthia Wiebe P. Eng., CAMP
Manager of Engineering

MP/jkm

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