



Environment and Climate Change
Environmental Stewardship Division
Environmental Approvals Branch
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April 12, 2024
Client File No.: 1071.10
Our File No.: S-972, S-1146, EMS
020-17-08-11-00
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Attention: Agnes Wittmann, Director

**RE: QUARTERLY PROGRESS REPORT FOR NEWPCC UPGRADES
JANUARY 1 – MARCH 31, 2024**

This report summarizes progress on the North End Sewage Treatment Plant (NEWPCC) upgrades, operating under Environmental Act Licence No. 2684 RRR, from January 1 to March 31, 2024.

1. INTERIM CHEMICAL PHOSPHOROUS REMOVAL FACILITIES

Update on items from last report:

- Building work is complete with minor deficiencies
- Planned shutdowns are complete
- Railway work is complete
- Final inspection report for the chemical tanks is complete
- Electrical work, mechanical work, and piping installations are complete except for minor deficiencies
- Civil work is approximately 75 percent complete
- The remote dosing system is complete and testing is underway

Other works progressed:

- Electrical panels were received and installation is ongoing

Next steps:

- Commissioning will begin in April and is anticipated to be completed in May
- Exterior insulation for the third building and landscaping will be completed in spring following substantial performance
- A site tour for wastewater process experts is planned to inspect dosing locations. They will assist in the future optimization of the dosing system

Schedule update:

- The current project schedule is provided in Table 1 in the Appendix
- The anticipated substantial performance date has been revised to May 17, 2024 due to a delay in the delivery of the electrical panels
- The anticipated total performance date is July 15, 2024

Table 1

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 2024 is 17.6 kg/day, which corresponds to an average SBR effluent concentration of 9.2 mg/L
- The SBRs are performing better than anticipated in the original design and are producing effluent below the licence limit of 119 kg/day of phosphorous specified in Clause 27 of the NEWPCC Licence No. 2684 RRR
- Estimated phosphorous concentrations through various stages of the NEWPCC upgrades are provided in Table 2 in the Appendix

2. HEADWORKS FACILITIES

An overall site plan for the headworks project is provided in Figure 1 in the Appendix.

Update on items from last report:

- Submission of various 60%, 90%, and Issued for Construction (IFC) Design Submission packages continues; 60% and 90% submissions are nearing completion
- Tunnels and Chambers:
 - Tunnel 2 is complete
 - Raw Sewage Pump Station Chamber: concrete base slab is cured; concrete wall to be placed in multiple pours over several months
 - Installation of supports for the Northwest Interceptor is complete
 - Reinforcement of the Main Street Interceptor to minimize risk when it is exposed is complete
- Grit Building: grit cell coatings are complete; installation of grit trays, flushing water lines, and slide gates is ongoing
- Fine Screening Area: various formwork, rebar, and concrete work is ongoing
- Solids Handling and Mechanical Rooms: formwork, rebar, and concrete works are complete; erection of structural steel is ongoing
- Y4 Gallery Connection: underground flushing water line, backfilling, and installation of cable trays is complete
- Transformer Yard: transformers are installed
- Existing UV Effluent Conduit: dowel installation is complete
- Main Control Building: installation and alignment of hollow core (roof level) is complete
- Standby Generator Building: sewer line is installed; generator assembly is ongoing

Other works progressed:

- During the excavation in the east yard for overflow piping, several objects were uncovered including glass bottles, plates, kettles, metal scraps etc. Work was stopped in the area and Peguis First Nation investigated the objects in consultation with the Provincial Historic Resources Branch. Peguis First Nation will monitor the remaining excavation for the overflow piping.

Next steps:

- Main Control Building: installation of exterior wall cladding and roofing
- Fine Screening Area: completion of main floor
- Completion of various concrete pours throughout the site

Schedule update:

- The substantial performance date has been revised to March 31, 2026 due to the schedule delays associated with the Northwest Interceptor failure and the differing ground conditions
- The contractor is in the process of re-baselining their project schedule to the new substantial performance date. The project schedule provided in Table 3 in the Appendix will be updated once the schedule re-baselining is complete
 - The Earned Value Analysis (EVA) comparing the baseline schedule to actual schedule will be provided in future reports once the schedule re-baselining is complete

3. BIOSOLIDS FACILITIES

Update on items from last report:

- Request for Proposal (RFP) Step 2 Procurement is on-going. The City is targeting the July 18, 2024 City Council meeting to obtain approval to enter into the Development Phase Agreement with the preferred proponent
- The Province's Environment and Climate Change Department approved the proposed Remedial Action Plan for Parcel B. Removal of the contaminated soil is anticipated in the early works construction tender in the summer of 2024
- Three subsurface applications for Canadian Pacific Railway (CPR) were signed by the City and returned to CPR for execution

Next steps:

- Continue archeological investigations on the Chief Peguis Trail right of way
- Continue detailed design of early works packages and issue tenders for work such as: water main extensions, contaminated soil removal, construction trailer complex, and utilidor construction
- Continue procurement of RFP Step 2

Schedule Update:

- The current project schedule is provided in Table 4 in the Appendix

4. NUTRIENT REMOVAL FACILITIES

Update on items from last report:

- Work on the enhanced preliminary design (EPD) continues and will be ongoing until mid-2024
- The deep tank (Westbank) biological nutrient removal process was selected as the nutrient removal technology; this technology is used at the WEWPCC

Next steps:

- A revised class 3 estimate is being developed concurrent with the EPD work and finalized after the EPD is accepted

Schedule Update:

- The current project schedule is provided in Table 5 in the Appendix

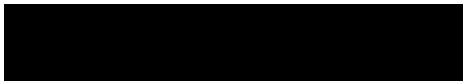
5. NEWPCC UPGRADE PLAN UPDATE

Update on items from last report:

- The NEWPCC Upgrade Plan Update was submitted on December 29, 2023

Should you have any questions, please contact me at 204-986-2142 or by email at scournoyer@winnipeg.ca.

Sincerely,



Stacy Cournoyer, P. Eng.
Acting Manager of Engineering Services

ATTACHMENTS: Figures and Tables

CW/dr

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Table 1: Interim Chemical Phosphorous Removal Facilities - Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Consultant RFP Award	100%			Sep 30, 2021		Sep 28, 2021
Preliminary Design	100%			Feb 3, 2022	Mar 31, 2022	Feb 2, 2022
Detailed Design	100%			May 18, 2022	Jun 30, 2022	May 18, 2022
Construction Tender Award	100%			Jul 15, 2022		Sep 22, 2022
Substantial Completion	85%	90%	95%	Jun 30, 2023	April 3, 2024 May 17, 2024	
Total Completion				Sep 30, 2023	May 30, 2024 July 15, 2024	
Full-Scale Testing and Implementation				Dec 31, 2024	May 30, 2025 July 15, 2025	

Table 2: Estimated Phosphorous Concentrations through NEWPCC Upgrade Stages

Stage	Period	Estimated Total Phosphorous Concentration in NEWPCC Final Effluent ¹	Monitoring Data: Total Phosphorous (NEWPCC Final Effluent)
Stage 1: Phosphorous reduction with existing infrastructure	Until Aug 2021	Approximately 4.0 to 4.5 mg/L on average	3.6 mg/L (Average from 2017 – 2021)
Stage 2: Maximized phosphorous reduction through optimization with existing infrastructure	Aug 2021 to May 17, 2024	Approximately 3.5 mg/L on average	2.6 mg/L (Average from 2022 onward)
Stage 3: Phosphorous reduction with Interim Chemical Phosphorous Facilities	May 17, 2024 to Dec 2030	Approximately 2.5 to 3.0 mg/L on average ²	
Stage 4: Phosphorous reduction with commissioned Biosolids Facilities	Jan 2031 to Jan 2032	1 mg/L to Jan 2032 ³	
Stage 5: Ongoing phosphorous reduction with commissioned Nutrient Removal Facilities	TBD	1 mg/L	

¹ Based on the 'NEWPCC Interim Phosphorous Removal and Detail Review and Bench Scale Testing Report, December 2020

² Phosphorous levels may increase as City growth consumes sludge processing capacity

³ Phosphorous levels may increase after January 2032 dependant on sludge loading levels (assuming maximum sludge generating scenario)

Monitored average total phosphorous concentrations at NEWPCC indicate the plant has been outperforming anticipated modelled data. Although the Stage 2 average has increased slightly from 2.5 mg/L since the last reporting period, the results have been trending downward with noticeably lower total phosphorous concentrations for Stage 2. The City is working on decreasing sludge loading to the existing digesters by removing grease, scum, and grit through various projects.

The modelled data is a conservative estimate of total phosphorous concentrations. The model was developed based on historical wastewater loadings and factored in the projected impacts of upgrades at SEWPCC. Actual results are dependent on many variables, such as:

- the overall health and performance of the treatment bacteria
- the performance of various processes
- wet weather flow

- changes in development
- industrial activity (especially high strength industry)
- ongoing capital improvements

With the commissioning of the Interim Phosphorous facility in Q2 2024, it is anticipated that total phosphorous will further decrease. Based on the better than expected results over the past several years, it is expected that the plant could be at or near licence limits for phosphorous for portions of the year through the use of chemical removal.

The City will continue to optimize phosphorous removal within existing digester capacity to the greatest extent possible with the various dosing points. Actual results will depend on full scale testing following commissioning of the Interim Phosphorous facility and the various factors described above.

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

Figure 1: Headworks Facilities – Site Plan

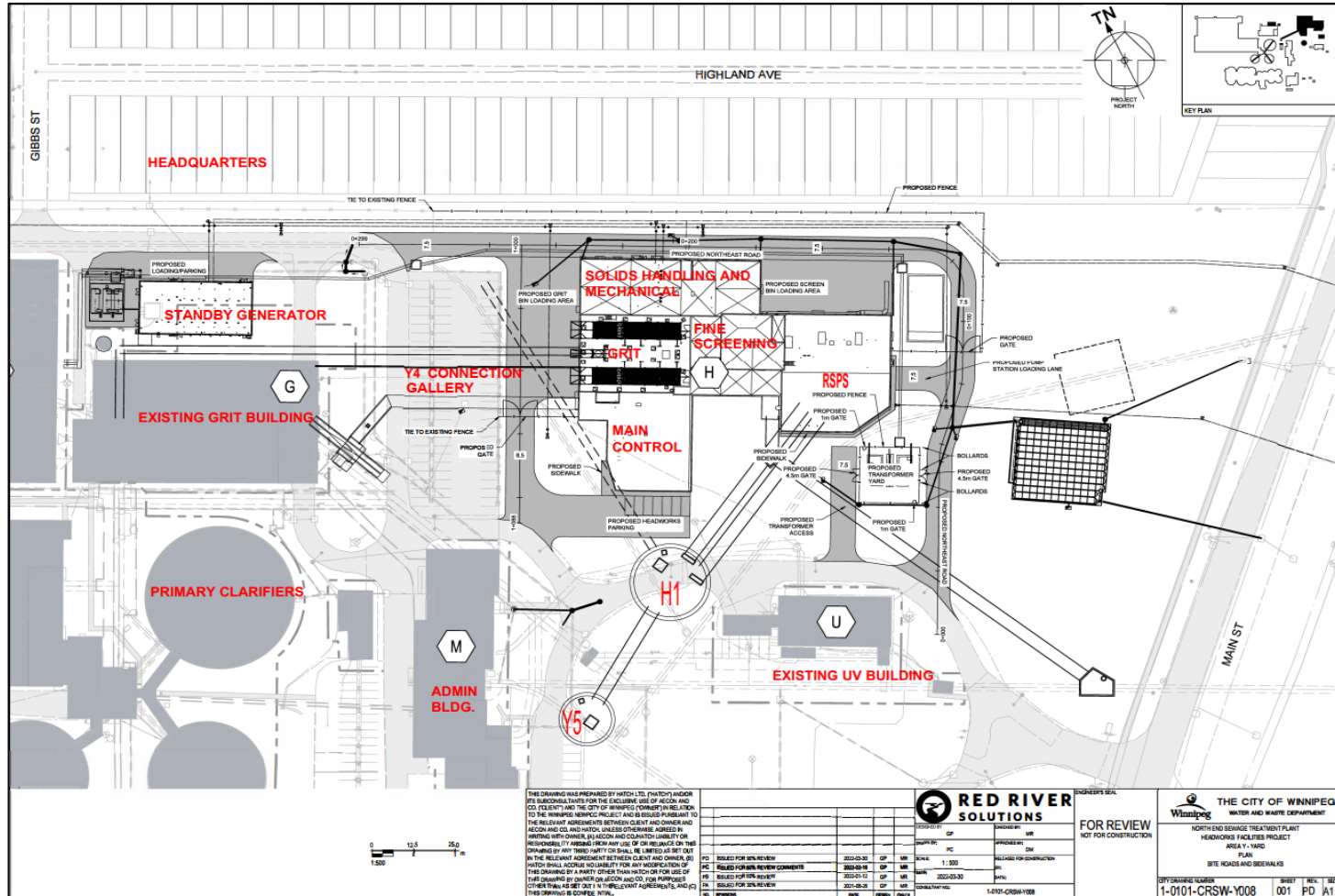


Table 3: Headworks Facilities – Project Milestones

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Procurement and Contract Award	100%			Jun 30, 2021		Jun 11, 2021
DB Mobilization Complete	100%			Dec 31, 2021		Dec 15, 2021
30% Design	100%			Dec 14, 2021		Dec 14, 2021
60% Design	99%	99%	99%	Sep 30, 2022	Jan 30, 2024 Apr 30, 2024	
90% Design	65%	70%	75%	Jan 23, 2023	Mar 4, 2024 Aug 30, 2024	
IFC Design	50%	55%	60%	Apr 17, 2023	Apr 15, 2024 Oct 30, 2024	
Driven Piles (All Areas)	100%			Aug 19, 2022		Mar 14, 2023
Secant Piles (H2, H1, Y5)	100%			Sep 29, 2022		Jan 13, 2023
Microtunneling (H1 to H2 and H1 to Y5)	65%	65%	65%	Dec 20, 2022	Aug 9, 2024	
Generator Building, Structural and External Finishes	88%	88%	88%	Mar 14, 2023	Aug 30, 2024	
Standby Generators, Install	100%			Aug 3, 2023		Oct 30, 2022
Raw Sewage Pumping Station (H2), Concrete	25%	25%	35%	Aug 7, 2023	Jun 10, 2024	
H1 Chamber	18%	18%	18%	Sep 5, 2023	May 22, 2025	

Table 3: Headworks Facilities – Project Milestones continued...

Task Description	% Complete**			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Standby Generator Facility and Fuel Storage System	50%	55%	55%	Sep 15, 2023	Feb 3, 2025	
Grit Removal System, Install	20%	25%	30%	Sep 18, 2023	Jul 31, 2024	
Y5 Chamber	20%	22%	25%	Dec 7, 2023	Dec 5, 2024	
Raw Sewage Pumps, Install	0%	0%	0%	Jan 23, 2024	Nov 25, 2024	
Fine Screens, Install	0%	0%	0%	Mar 26, 2024	Dec 2, 2024	
Headworks Building, Structural and External Finishes	0%	0%	0%	Jun 7, 2024	Jan 22, 2025	
Odour Control System, Install	0%	0%	0%	Jul 8, 2024	Jan 6, 2025	
Civil Works and Landscaping	0%	0%	0%	Jul 26, 2024	Apr 11, 2025	
Headworks Building, Complete	0%	0%	0%	Nov 5, 2024	Feb 4, 2025	
Commissioning	0%	0%	0%	Mar 31, 2025	May 11, 2025	
Decommissioning – Original Equipment	0%	0%	0%	May 14, 2025	Jul 28, 2025	
Substantial Completion*	0%	0%	0%	Jun 30, 2025	Mar 31, 2026	

*This is the only milestone that is contractual and cannot slide without penalty

**Data source: Red River Solution's Monthly Report

Note: Once the Contractor re-baselines schedule, other interim milestone dates will be updated

Table 4: Biosolids Facilities – Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Updated Preliminary Design and Procurement Strategy	100%			Dec 31, 2021	Apr 1, 2022	Apr 14, 2022 Council Approved Jul 21, 2022
Post RFP Step 1 (Following Council Approval for a PDB procurement strategy)	100%			Jul 13, 2023		Jul 14, 2023
Shortlist Proponents	100%			Sep 30, 2023	Dec 4, 2023	Dec 1, 2023
Post RFP Step 2	100%			Oct 31, 2023	Dec 4, 2023	Dec 11, 2023
Contract Award of Development Phase Agreement	0%	0%	0%	Jun 30, 2024	August 30, 2024	
Contract Award of Design Build Agreement	0%	0%	0%	TBD		
Substantial Completion				TBD following DBA – by Dec 31, 2030		

Table 5: Nutrient Removal Facilities – Project Milestones

Task Description	% Complete			Original Targeted Completion Date	Revised Targeted Completion Date	Actual Completion Dates
	Jan	Feb	Mar			
Nutrient Removal Technology Selection	100%			Oct 19, 2023		Oct 12, 2023
Updated EPD	30%	45%	60%	Jun 30, 2024		
Revised Class 3 Cost Estimate	0%	10%	12%	Sep 30, 2024		
Procurement and Contract Award	0%	0%	0%	TBD		
Substantial Completion				TBD		