

Wastewater Treatment Division 2025 Annual Report

Introduction

The City of Portage la Prairie Wastewater Treatment Division is comprised of the Class IV Water Pollution Control Facility (WPCF) and fourteen lift stations within the City and one lift station in the Poplar Bluff Industrial Park that convey the wastewater to the WPCF. The WPCF receives wastewater from three main sources - domestic wastewater from the City of Portage la Prairie and the surrounding areas in the RM of Portage la Prairie, and industrial wastewater from Poplar Bluff Industrial Park as well as the McMillan Industrial Park.

The industrial wastewater from McMillan Industrial Park and the Poplar Bluff Industrial Park is first treated in a Low-Rate Anaerobic Reactor (LRAR) for the removal of solids and organics. Once pretreated, the industrial water is combined with the domestic (residential/commercial wastewater) in a common lift station and is pumped into one of the four Sequencing Batch Reactors (SBRs). Through cycles of aeration, mix, and settle, the wastewater is treated through the activity of specialized bacteria that removes the organic waste in the water as well as ammonia. The treated water is then disinfected via Ultra-Violet exposure prior to being discharged in the Assiniboine River.

The biological activity required for treatment produces residual solids that accumulate in the SBRs. A calculated volume of these solids must be removed each day. These solids are thickened, and then anaerobically digested for stabilization. Stabilized solids are referred to as Biosolids. Biosolids are stored and then applied to farmland as fertilizer.

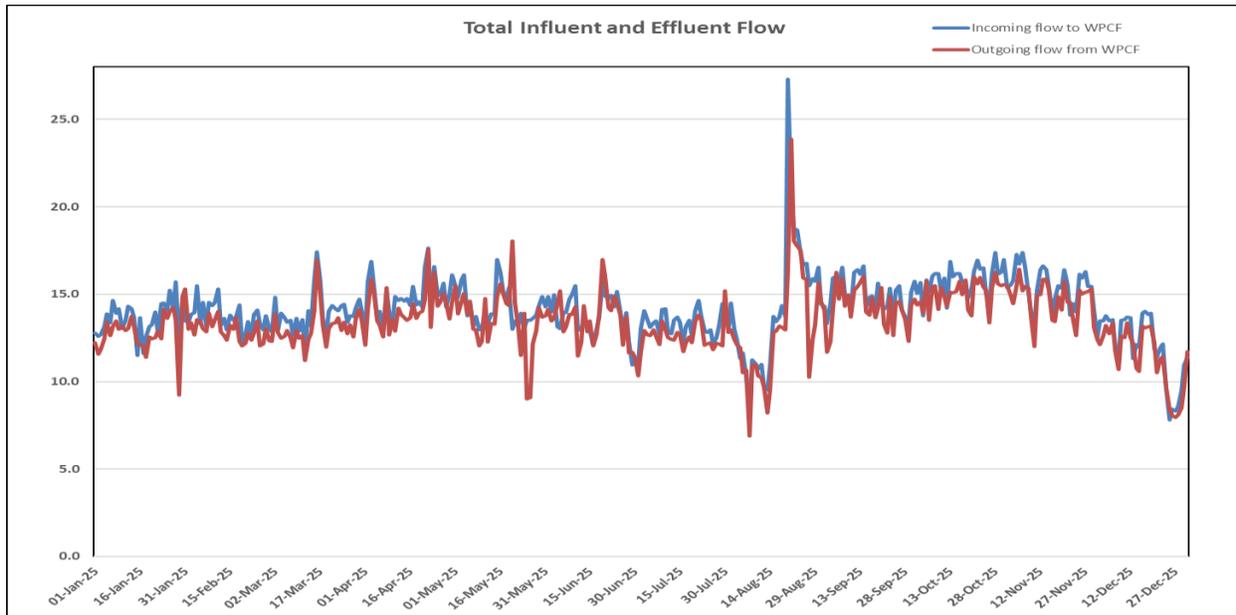
Facility Performance and License Compliance

In 2025, the WPCF received an average of 13,429,000 L of wastewater each day, for a total volume of 4.90 billion litres. This is a 4.9% decrease from the 4.90 BL received in 2024 and is primarily due to fluctuations in processing at the local industries.

The peak flow of 27,293,000 L was received on August 20, 2025, after the region was subjected to a major rainstorm event. The minimum flow of 7,824,000 L was observed on December 25, 2025. This is attributable to industrial shutdowns that occurred during the Christmas holiday. The incoming flow is 54% of domestic and commercial wastewater and 46% from industrial sources. The incoming loading of Total suspended solids, Chemical Oxygen Demand and Total Kjeldahl Nitrogen from the industries accounts for over 90% of what is treated.

The WPCF operates under Environment Act License #2543 R as well as EAL#3338, which pertains to the Nutrient removal requirements. These are issued by the Province of Manitoba Department of Environment and Climate Change. In addition to outlining requirements for treatment processes, sampling, and reporting, it also provides maximum

limits on the total amount of Suspended Solids, Biological Oxygen Demand, and Ammonia that the facility can discharge in the treated wastewater each day and a monthly geometric mean for fecal bacteria. The facility is also required to assess for toxicity on a monthly and quarterly basis. Any exceedance is reported to Manitoba Environment and Climate Change within 24 hours of the limit being surpassed.



Graph 1- comparison of average daily incoming and outgoing flows from WPCF in ML/D

Total Suspended Solids

Total Suspended Solids (TSS) are the amount of particulate matter suspended in the water that is released from the WPCF. By license, this is to not exceed 30 mg/L per day. The average daily TSS discharged in 2025 was 15.7 mg/L. There were twelve occurrences where this limit was exceeded for 96.7% compliance. These exceedances occurred as follows.

March 3- 31.6 mg/L- Decant headers in Basin #2 were floating which allows solids to pass through. While the basin was taken offline during repairs, when it was returned to service to verify the adjustments, it also allows solids to pass through.

March 12- 31.25mg/L- EQ Basin was cleaned to remove excess solids that can accumulate from regular operations. The amount of material built up was more than typical due to decant header issue from March 3rd where excess solids had been released.

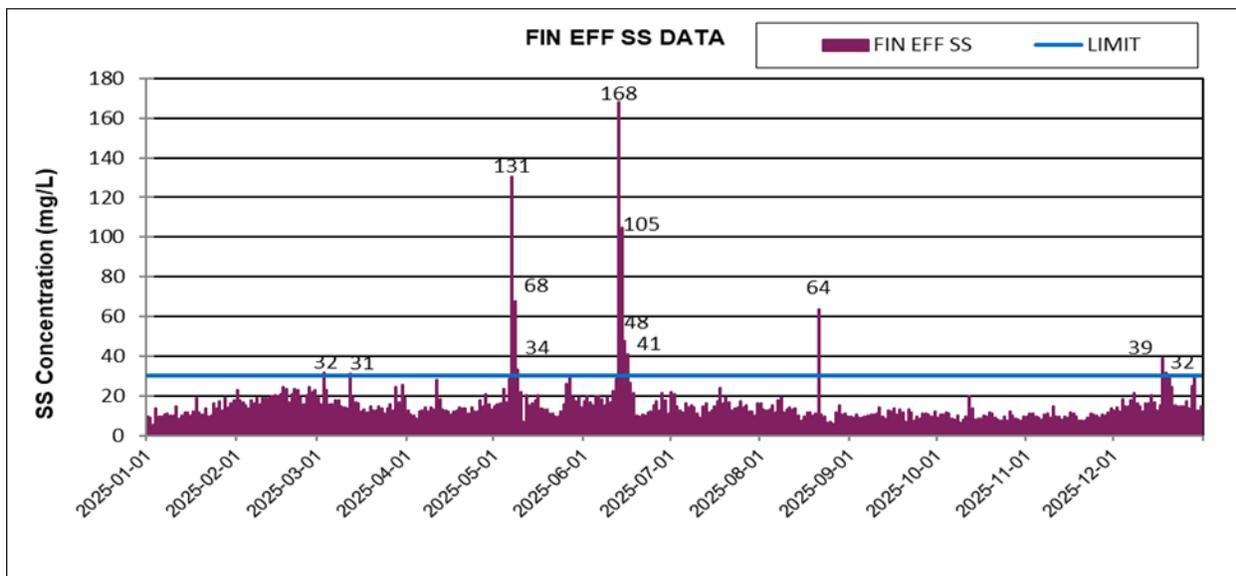
May 7-9- 130.5 mg/L, 68.0 mg/L, 33.5 mg/L- the decant headers on Basins two and three required the shafts on the valves to be replaced. One valve was not seating properly, allowing some solids to pass through. This was exacerbated with an issue with basin 3 during the transition from manual to automated control. Although only brief, it allowed solids to pass as well. From both of these incidents, the suspended solids accumulated in the EQ basin- and as the basin was pumping down, the solids were getting stirred up

and pumping out with the effluent. Both situations were resolved. On May 8, it was determined that one of the valves on the decant header in Basin 2 was not properly adjusted and was a ¼ turn open. This allowed the release of wastewater when the valve should have been closed.

June 13-16- 168.0 mg/L, 105.0 mg/L, 47.5 mg/L, 40.8mg/L- An error with the PLC automation programmer caused the release of partially treated wastewater. Basins #1 and #3 were left offline while working on the SBR system program and not put back into service after the work was completed. As Basin #2 was offline for annual cleaning, this left only basin 4 available to accept incoming wastewater. Basin #4 went into decant as normal, however, there was a period where there was incoming and outgoing wastewater occurring. Once the incoming flow was greater than the outgoing, a high-level alarm was triggered and staff responded within a few minutes of being notified, however, untreated wastewater had been being discharged. The TSS remained high as solids had accumulated in the EQ basin which washed out with each decant, as a method of dilution.

August 21- 64 mg/L- severe thunderstorm with high winds caused basins to be agitated and limit settleability.

December 18-19- 38.9mg/L, 31.5mg/L- severe winter storm with high winds caused basins to be agitated and limit settleability.

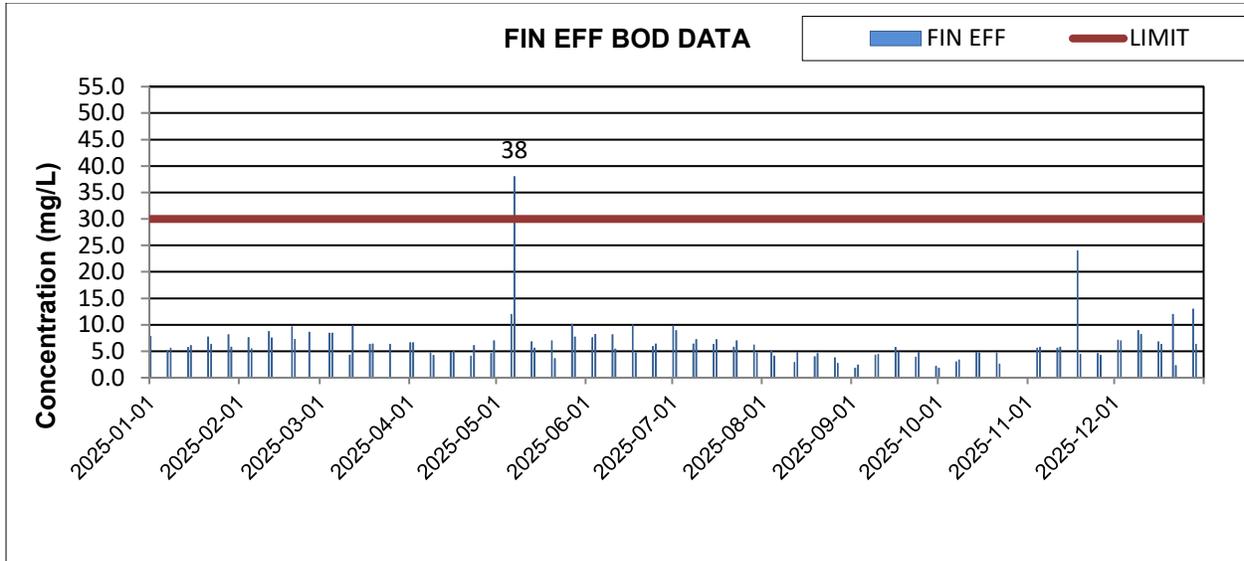


Graph 2- Daily Total Suspended Solids for Final Effluent in mg/L.

Biological Oxygen Demand

Biological Oxygen Demand (BOD) is an indicator of the amount of dissolved oxygen needed by the remaining biological organisms to break down organic matter once it reaches the river. The EAL permits a maximum daily discharge of 30 mg/L. There was one reported overage of this parameter for 99.3% compliance and the average daily discharge value was 6.6 mg/L.

May 7- 38 mg/L- the decant headers on Basins two and three required the shafts on the valves to be replaced. One valve was not seating properly, allowing some solids to pass through. This was exacerbated with an issue with basin 3 during the transition from manual to automated control.



Graph 3- Daily BOD for Final Effluent in mg/L.

Coliforms

Fecal Coliform is a measurement of the amount of fecal coliform organisms within 100 mL of effluent. There is not a daily discharge limit but a limit on the monthly geometric mean that must not exceed 200 CFU/100mL. Samples must be submitted three times per week and sampled on consecutive days. Although there were individual days where the results were reported above the limit, the monthly geometric mean limit was not exceeded for 100% compliance with the license. The annual geometric mean was 6.2 CFU/ 100mL.

Fin Eff Coliform Data (FEC)		
	Monthly Geometric mean	Total samples analyzed
January	1.1	13
February	3.4	14
March	1.9	13
April	1.6	14
May	1.4	12
June	1.3	13
July	1.5	14
August	2.1	12
September	1.9	14
October	1.9	13
November	3.0	12
December	53	15

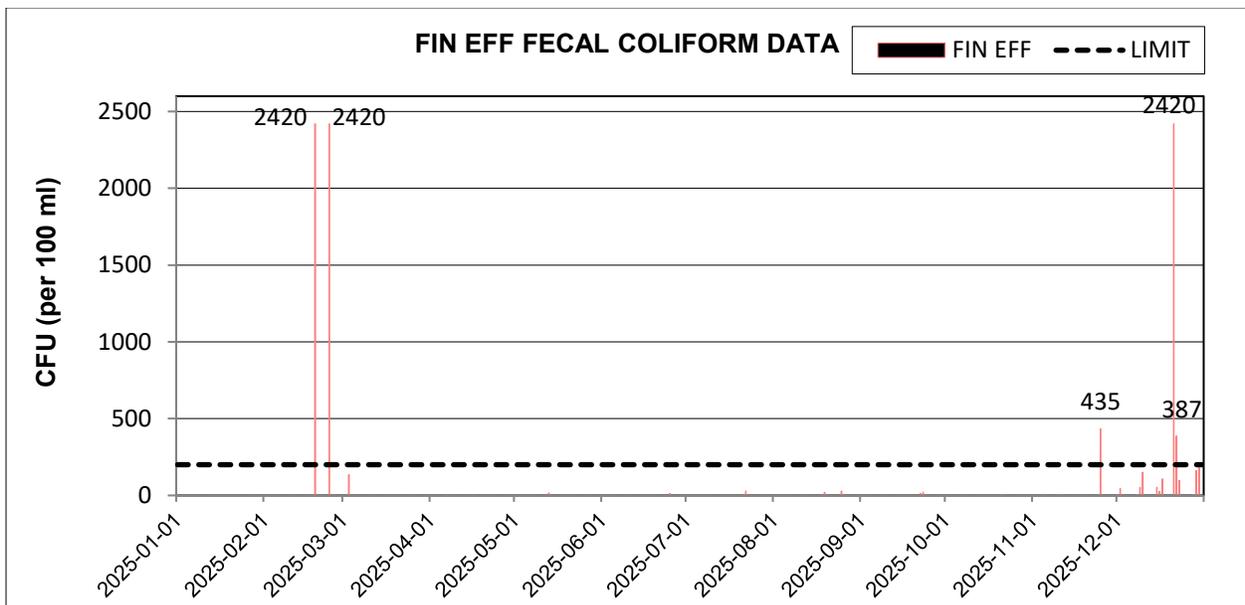
Table 1- Fecal coliform Geometric Mean by month for Final Effluent

February 19- 2420 CFU- Possible sampling or testing error. The day immediately before and after were less than 10 CFU, no other results were out of normal range and there was no known process issue.

February 25- 2420 CFU- Possible sampling or testing error. The two days immediately after were less than 10 CFU, no other results were out of normal range and there was no known process issue.

November 25- 435 CFU- Possible sampling or testing error. The day immediately before and after were less than 10 CFU, no other results were out of normal range and there was no known process issue.

December 21-22- 2420 CFU, 387 CFU- possibly due to higher TSS washout from winter storm impacting UV Transmittance.



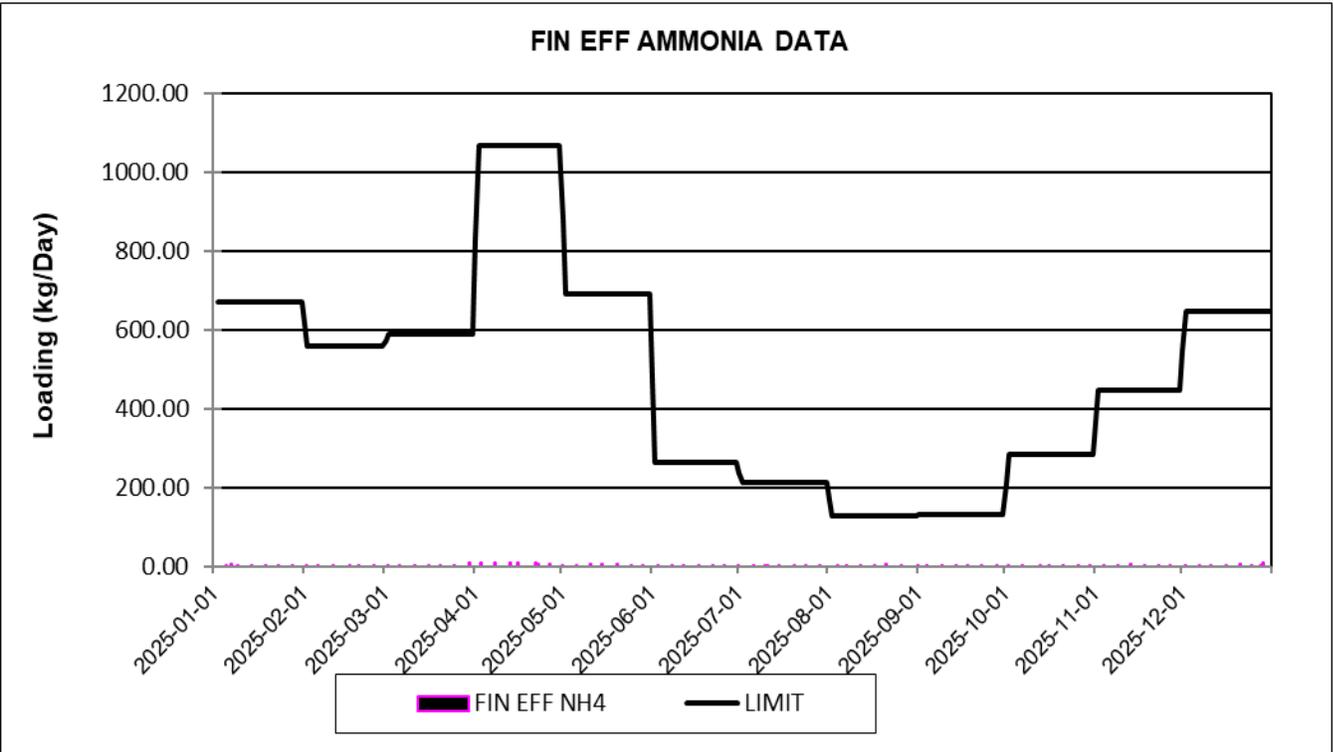
Graph 4- Fecal Coliform results for Final Effluent

Ammonia

Ammonia is a pollutant that may be toxic to aquatic life depending on the concentration. The allowable daily load of ammonia that can be discharged to the Assiniboine River changes each month. There were no incidents of ammonia exceedance, and the daily average is significantly less than the allowable limits, regardless of the monthly limit. The chart below indicates the discharge limit for each month compared to the average daily amount that was recorded. A compliance of 100% was achieved.

Month	Limit (kg/day)	Daily average (kg/day)
January	673	4.74
February	560.1	4.36
March	589.3	5.23
April	1068.2	10.12
May	691.8	5.26
June	264.6	4.43
July	213.2	3.88
August	19.6	4.22
September	134.4	4.50
October	286.4	4.67
November	448	5.67
December	646.4	5.26
Daily Average		5.21

Table 2- Monthly average of ammonia compared to monthly limit in kg/day



Graph 5- Ammonia results for Final Effluent in kg/day

Toxicity

In addition to ammonia testing for toxicity, samples are submitted for toxicity verification through lethality testing. Daphnia toxicity sampling occurs monthly, and trout toxicity is completed quarterly. These tests are reported as passing or failing. There were no failures reported for 100% compliance.

Month	Toxicity Test	Pass/Fail
<i>January</i>	Trout	Pass
<i>February</i>	Daphnia	Pass
<i>March</i>	Daphnia	Pass
<i>April</i>	Trout	Pass
<i>May</i>	Daphnia	Pass
<i>June</i>	Daphnia	Pass
<i>July</i>	Trout	Pass
<i>August</i>	Daphnia	Pass
<i>September</i>	Daphnia	Pass
<i>October</i>	Trout	Pass
<i>November</i>	Daphnia	Pass
<i>December</i>	Daphnia	Pass

Table 3- Monthly Toxicity results for Final Effluent in kg/day

Odour

The EAL speaks to the requirement to limit nuisance odours. Three written complaints, from three different sources must be received to be considered “non-compliant.” Staff monitor and adjust the chemical feed system but without significant upgrades to the automation system, there are times when the system is over or under-dosing. There were no complaints received regarding odour in 2025.

Biogas

Biogas is a form of gas that is produced from the biological activity of anaerobic bacteria. At WPCF, this is produced in the LRAR, the anaerobic digester and potentially in the BVF. The EAL requires biogas to be captured and reused, however, the City has permission to flare this gas until the facility is upgraded for Nutrient removal.

LRAR- On February 25, the flare was unable to stay lit. The biogas was vented to atmosphere for less than four hours while the system was repaired. December 14, the flame would not stay lit. The system was taken offline at 1:00pm and biogas was vented. The system was repaired and the flame relit on December 15th at 9:30 am.

BVF and Anaerobic Digester- The biogas from the anaerobic digester and a small amount produced in the Bulk Volume Fermenter (BVF) are piped to the BVF biogas flare system. With the construction of the LRAR and the BVF no longer in use, the current configuration will not allow the flare to operate safely from the anaerobic digester alone.

This vented biogas does contain odorous compounds and may contribute to the odour around the facility.

Anaerobic Digester Mixing- the anaerobic digester must have contents continuously mixed for license compliance. Typically, there are two mixers. Due to lack of redundancy, maintenance is difficult to manage. The singular mixer stopped working and staff intended to install an external mixing system. A Notice of Alteration was submitted in April and was approved in October. Due to cost and installation challenges, two new internal mixers

were purchased. One was installed in November and the other will be installed in the spring of 2026. This was communicated to the Province as well. The recirculation system also assists in providing continuous mixing.

Biosolids

The application of biosolids is permitted under a separate Environment Act License, 1907. The land application of biosolids is a beneficial reuse of nutrients and metals contained in the residual solids' material generated as part of the wastewater treatment process as fertilizer for local farmland. Excess Waste waste-activated sludge (WAS) is removed from the SBR basins daily to maintain a proper amount of WAS within each basin. WAS is thickened and anaerobically digested, then stored in the Biosolids Storage Tanks (BSTs) or the BVF until they can be applied to agricultural land. Solids are also retained within the LRAR that require land application. The land application typically occurs in the Fall, once crops are harvested and land is available. The application of biosolids is a highly regulated process with restrictions on the field types, location to nearby housing and waterways, and background metals concentrations all being part of the verification process before application.

In 2025, 920.6 dry tonnes of material were injected on land within the RM of Portage la Prairie. Parameters such as metals, solids, and phosphorus were within license limits. There were no spills or concerns with transportation to report. A more complete report on the 2025 Biosolids Land Application Program is available and was submitted to Manitoba Environment and Climate Change.

Capital and Maintenance Items

The entire automation system was replaced with new software, hardware and fiber optic communications. This allows all systems to communicate from any building, allowing more efficient and stable operations. This replaced old systems of different brands that could not communicate or were now obsolete. During this replacement, staff had to manual operate the facility which required onsite staffing 24 hours per day for almost two weeks.

Several planned capital purchases were completed including two new pumps for the Outfall and for SBR recirculation. A LRAR grinder was replaced, and the lab received a new nutrient analyzer, ashing oven, and COD reactor. Repairs were made to the drywall in the control room and new flooring was installed. New pumps for lift stations were purchased; HVAC systems were replaced where needed. An extensive job replacing the flex hose on the decant headers in Basin 4 was also completed with the assistance of outside contractors. Decant header valves that were causing many solids exceedance issues were also replaced.

Basin #2 was taken offline and cleaned out as part of routine maintenance. As anticipated, the piping clamps and stands required replacement, as this was observed in another basin the year before.

Pumping Stations

The City of Portage la Prairie operates and maintains fourteen pumping stations throughout the city. These stations collect and pump wastewater into the treatment facility.

The 2025 budget included several new pumps for various lift stations- some of which are interchangeable with several locations. A standby generator, purchased in 2024, was installed at Bridge Road Lift Station, bringing the total to four lift stations that have dedicated standby power.

Extensive electrical work also occurred at the McMillan Lift Station. The equipment in this station is exposed to extremely high concentrations of corrosive gas and high humidity. A new room was constructed outside of the station to house a new PLC, with new electrical connections being required. This will improve the reliability and lifespan of the station.

Reporting

Reporting is a major component of the Wastewater Treatment Division. All reports were filed as required.

Monthly- final effluent report and groundwater sampling results to Manitoba Environment and Climate; summary reports and exceedance letters to industrial partners; Nutrient Removal Upgrade update.

Quarterly- Wastewater Systems Effluent Report to the Government of Canada; Nutrient Reduction updates to Manitoba Environment and Climate

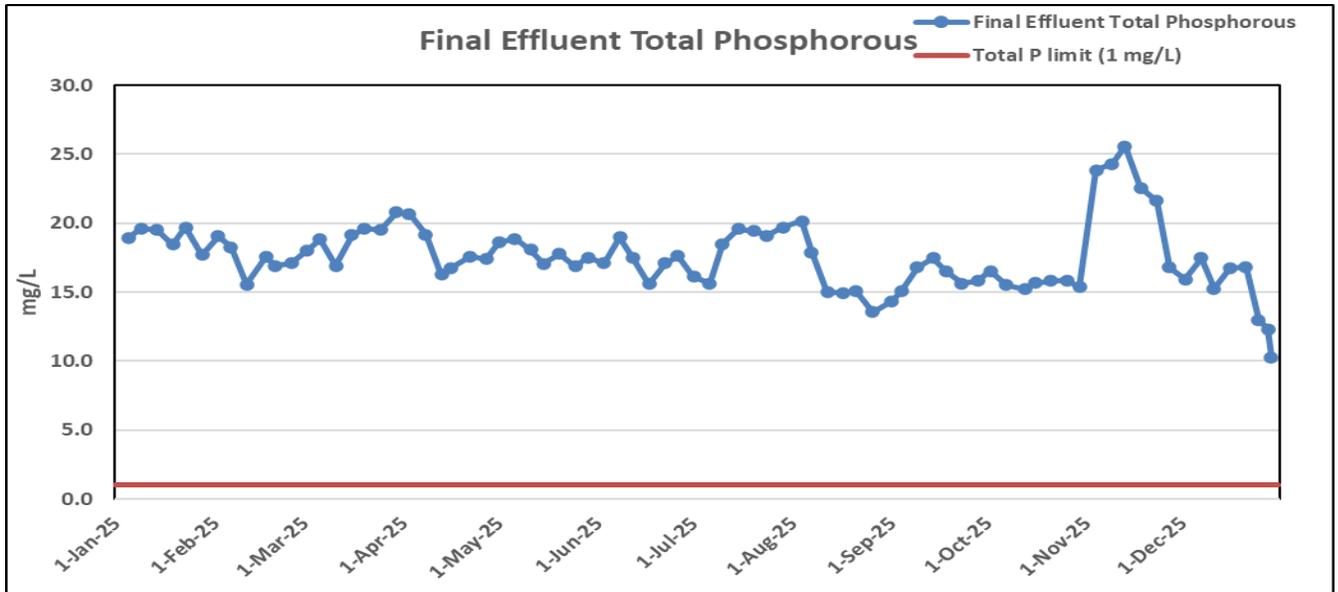
Annual- Annual WPCF Summary Report; Annual Biosolids Report; Total Phosphorous Discharge Summary; National Pollutant Release Inventory; Greenhouse Gas Emissions Summary.

Nutrient Removal Facility Upgrade/ P3 Project

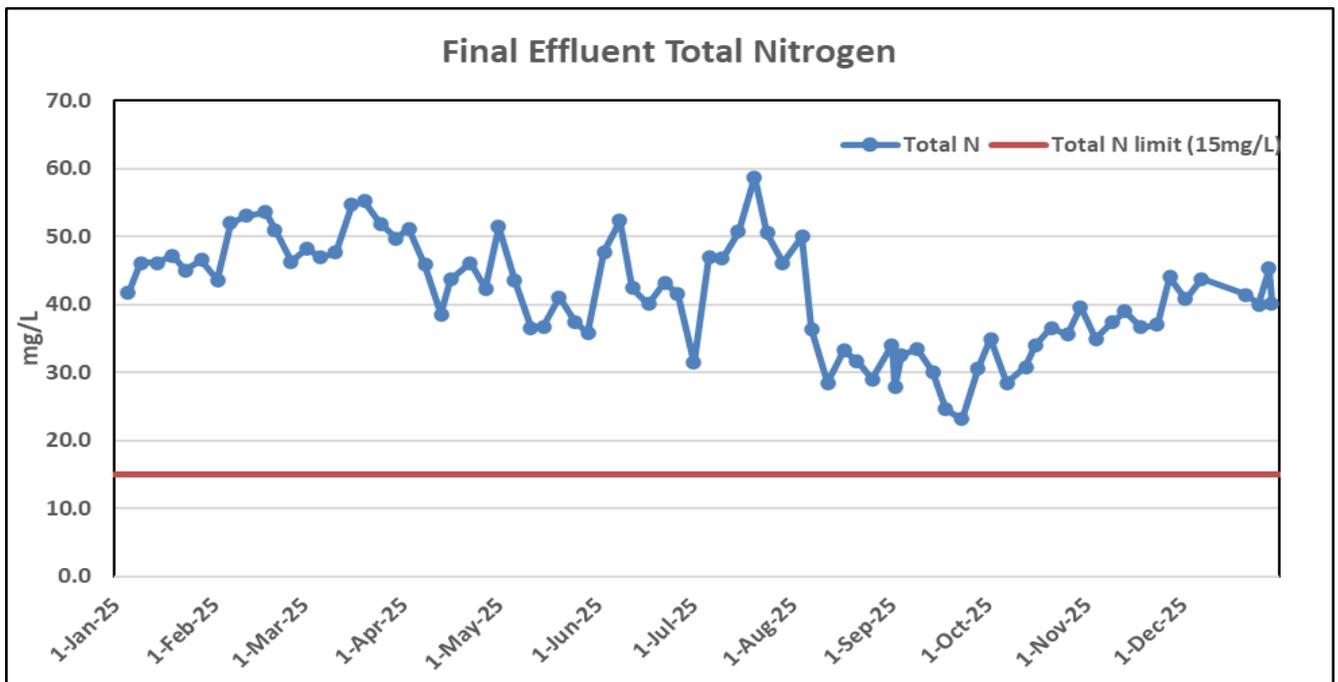
The Water Quality Standards, Objectives and Guidelines regulation states that any wastewater facility discharges into Lake Winnipeg to reduce nutrients from the effluent by January 1, 2016. The limits imposed were 1 mg/L of phosphorus and 15 mg/L of Nitrogen. The current facility was not designed to meet these limits and the quantities of each nutrient discharged daily are well above the regulatory requirement.

To address the regulatory change, the facility will require new treatment processes to be added as well as supplemental systems to be incorporated with the existing treatment stream. Several areas of the facility are deteriorating and are inefficient and other components have been identified that lack redundancy and therefore the ability to properly maintain. For this reason, upgrading of the entire PLC control system was advanced. The UV disinfection system will be upgraded in 2026.

There have been delays due primarily to the financial risk of this project as the City's main source of revenue is from three industrial companies. Various solutions to address this risk have been investigated, however, the RFP will not be released until this risk is resolved. Once the RFP is released, this will start a 9–12-month negotiation process before the final submission is received. The City will select the successful proponent based on their submission for design compliance with the technical requirements as well as operation and maintenance plan and overall net value. The City is working with the Province of Manitoba to find a mutually beneficial solution to move this project forward.



Graph 6- Total Phosphorous results for Final Effluent compared to regulatory limit in mg/L.



Graph 7- Total Nitrogen results for Final Effluent compared to regulatory limit in mg/L.

Staff Compliment

The Province of Manitoba requires operators and pumping station maintenance staff to be certified according to the classification of the facility. The Water Pollution Control Facility is deemed Class 4, and the collection system is classified as Class 2. All operators must continue to work toward obtaining the same level of certification as the facilities they operate, through ongoing education and examination as well as on-the-job experience. Staff must also continually participate in ongoing education to maintain their certification levels.

The WPCF Operations team was staffed throughout 2025 by the Manager/Director of Utility (WWT 4, WC 2), Operations Supervisor (WWT 3, WC2), four Operators (1- WWT 4, WC 2; 1- WWT 4, WC2; 1- WWT 3, WC 2; WWT 2), and a lab technician. One operator resigned in November, and the position is still vacant.

The Collection System was staffed by two lift station maintenance staff: both holding WWC 2. The Lift Station Maintenance Supervisor also holds a level 2 certificate in Collections. The facility maintenance department was staffed with four additional certified electricians and/or millwrights.

Summary

The Wastewater Treatment Division delivered strong operational performance throughout 2025, supported by the dedication, expertise and adaptability of the WPCF, Collection System and Maintenance teams. Despite a year marked by extreme weather events, complex automation upgrades and occasional equipment challenges, staff consistently maintained compliant treatment processes. Their commitment ensures that license parameters were consistently maintained and all exceedances were promptly investigated, corrected and transparently reported.

Over the course of the year, the facility successfully received, treated and safely discharged almost five billion litres of wastewater into the Assiniboine River. Overall, the accomplishments of 2025 reflect a highly skilled team committed to environmental protection, regulatory compliance, and the responsible operation of a complex treatment system that serves the community effectively and safely.