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500-311 Portage Avenue
Winnipeg MB R3B 2B9

October 10, 2025

Project/File: 111220950/4635.10

Director: Manitoba Environment and Climate Change

Environmental Approvals Branch
Box 35, 14 Fultz Boulevard
Winnipeg, MB, R3Y 0L6

Agnes Wittman, Director

Reference: City of Portage la Prairie - Environment Act Proposal

In reference to the September 2, 2025 correspondence from Manitoba Environment and Climate Change concerning the previously submitted Notice of Alteration request for the City of Portage la Prairie Water Treatment Plant Upgrade, in which MECC directed the City to resubmit the request as an Environment Act Proposal (EAP) application for a Class 3 development, the following documents are attached:

- A signed EAP Form.
- One (1) digital copy (copy sent via e-mail) of the EAP and supporting documents.

As indicated in the NOA response, the remaining application fee of \$59,500 (\$60,000 for a Class 3 development, less the previously provided NOA application fee of \$500) payable to the Minister of Finance, will follow directly from the City of Portage la Prairie via a cheque (via courier).

We trust the attached information meets your requirements for this project. Should you have any questions, please do not hesitate to contact the undersigned.

Regards,

Stantec Consulting Ltd.



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Water/Wastewater Lead (Prairies/Territories)
Phone: (204) 488-5710
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Attachment: EAP application and supporting documents

c. K. Friesen, City of Portage la Prairie

City of Portage la Prairie Water Treatment Plant Upgrades

Environment Act Proposal

October 10, 2025

Prepared for:
Manitoba Water Services Board
and
City of Portage la Prairie

Prepared by:
Stantec Consulting Ltd.

Project/File:
111220950



Disclaimer

The conclusions in the Report titled Portage la Prairie Water Treatment Plant Upgrade/Expansion are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not consider any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Prepared by:

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Environment Act Proposal Form



Name of the development: Water Treatment Plant Upgrade/Expansion	
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Class 3 Water Development - Withdrawal of water of more than 10,000dam3 per year in	
Legal name of the applicant: City of Portage la Prairie	
Mailing address of the applicant: 97 Saskatchewan Avenue East	
Contact Person: Karly Friesen	
City: Portage la Prairie	Province: Manitoba
Postal Code: R1N 0L8	
Phone Number: (204) 981-2557	Fax: email: kfriesen@city-plap.com
Location of the development: Rural Municipality of Portage la Prairie	
Contact Person: Karly Friesen	
Street Address: 130 Yellowquill Trail	
Legal Description: RL-23	
City/Town: RM of Portage la Prairie	Province: Manitoba
Postal Code: R1N 0L8	
Phone Number: (204) 981-2557	Fax: email: kfriesen@city-plap.com
Name of proponent contact person for purposes of the environmental assessment: Saibal Basu, Ph.D., P.Eng., Stantec Consultanting Ltd.	
Phone: (204) 981-2557	Mailing address: 500-311 Portage Avenue, Winnipeg, Manitoba,
Fax:	R3B 2B9
Email address: saibal.basu@stantec.com	
Webpage address:	
Date: 2025-09-25	Signature of proponent, or corporate principal of corporate proponent: 
Printed name: Karly Friesen	

PRINT

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A complete **Environment Act Proposal (EAP)** consists of the following components:

- Cover letter**
- Environment Act Proposal Form**
- Reports/plans supporting the EAP** (see "Information Bulletin - Environment Act Proposal Report Guidelines" for required information)
- Application fee** (Cheque, payable to Minister of Finance, for the appropriate fee)

Per Environment Act Fees Regulation (Manitoba Regulation 168/96):	
Class 1 Developments	\$1,000
Class 2 Developments	\$7,500
Class 3 Developments:	
Transportation and Transmission Lines ..	\$10,000
Water Developments	\$60,000
Energy and Mining.....	\$120,000

Submit the complete EAP to:

Director
Environmental Approvals Branch
Environment and Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg MB R3Y 0L6
EABDirector@gov.mb.ca

For more information:

Toll-Free: 1-800-282-8069
Phone: 204-945-8321
Fax: 204-945-5229

https://www.gov.mb.ca/sd/permits_licenses_approvals/eal/licence/index.html

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\$1,000.....C1 B-02
\$7,500.....C2 B-02
\$10,000....TT B-02
\$60,000....WD B-02
\$120,000...EM B-02

Executive Summary

The City of Portage la Prairie (the City) operates a water treatment plant (WTP) southwest of the City of Portage la Prairie, Manitoba, located on land parcel RL-23. The WTP sources raw water from the Assiniboine River, drawing from an intake at the upstream face of the Assiniboine River Diversion Water Control Structure, approximately 400 metres southwest of the WTP. The existing WTP provides potable water not only to City residents, but also to key regional clients including:

- Southport Aerospace Centre Inc.
- Yellowhead Regional Water Cooperative (YRWC)
- Cartier Regional Water Cooperative (CRWC)
- McCain Foods
- Nutri-Pea
- Simplot
- Roquette

To address limitations with the capacity of the current intake structure, future City growth, and improve the quality of water supplied by the WTP (primarily related to trihalomethane control), the City is proposing upgrades/expansions to the currently operating WTP, licenced under Environment Act Licence (EAL) No. 3239). Proposed upgrades/expansions include:

- **New Raw Water Intake Structure at the Assiniboine River:** Construction of a new intake, wetwell, and pumphouse approximately 50 m downstream of the Assiniboine River Diversion Water Control Structure. This will become the primary intake for the WTP, capable of providing water for the City's future growth and other users of the system. The existing intake system will be retained as a backup for maintenance periods.
- **Newbury Riffle installation in the Assiniboine River:** Placement of a Newbury riffle downstream of the new intake structure to maintain adequate water depth for the intake while facilitating fish mobility and habitat.
- **Expansion of the Pre-Treatment Building at the WTP site:** The existing pre-treatment facility will be expanded to allow for the twinning of the current ballasted flocculation process (Actiflo®), providing both operational redundancy and greater flexibility in plant operations.



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- Membrane Treatment Addition at the WTP site: Construction of a new membrane building housing a two-stage membrane treatment system. The first stage will employ ultrafiltration (UF) membranes, followed by a second-stage low-energy reverse osmosis (RO) membrane system. Both treated streams will be blended with the existing lime softening system prior to entering the WTP's storage reservoir.
- Buried waterline infrastructure: Installation of new PVC, HDPE, and concrete pipelines for raw water intake, conveyance, and concentrate/backwash discharge, enabling efficient raw water delivery and residuals management.

The proposed WTP Expansion/Upgrade represents a forward-looking investment in critical infrastructure. By combining advanced treatment technologies, increased system redundancy, and environmental enhancements, the Project aims to secure high-quality potable water for current and future generations.

The City in association with the Manitoba Water Services Board (MWSB) retained Stantec to design the WTP upgrade/expansion (the Project). The proposed Project construction schedule is anticipated to be March 2026 to August 2028, subject to regulatory approvals and funding.

A Water Rights Licence (WRL) was obtained in July 2023, increasing the allowable maximum rate of withdrawal from 440 L/s (approximately 38 MLD) and an annual quantity of 8,948.94 cubic decameters in the 2003 WRL to 870 L/s (approximately 75 MLD) and an annual quantity of 18,761.34 cubic decameters. A department of Fisheries and Oceans Canada (DFO) request for review (RfR) application for the new intake structure was submitted on March 17, 2025, and is currently being reviewed by DFO.

The current WTP is a Class 2 Development and an application for Notice of Alteration (NOA) was submitted to Manitoba Environment and Climate Change (MECC). However, the proposed increase in water withdrawal for the proposed expansion will result in the WTP exceeding 10,000 dam³ per year with a flow rate greater than 250 l/s. This will increase the classification of the WTP to a Class 3 Development per *The Environment Act* Classes of Development Regulation, M.R. 164/88. Therefore, further to MECC's response to the NOA application, the City is submitting this Environment Act Proposal (EAP) application to secure an updated EAL for the WTP expansion/upgrade.

This EAP includes the assessment of project-specific environmental effects by focusing on valued components (VCs), which are environmental components of certain value or interest to regulators and other parties, and are identified based on the potentially affected biophysical and socio-economic elements. The assessment concluded that the following VCs would have potential project interactions:



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- Air quality/greenhouse gas emissions
- Surface water
- Groundwater
- Soils/terrain
- Vegetation
- Fish and fish habitat
- Wildlife and wildlife habitat
- Property and land use
- Infrastructure and services
- Heritage resources

Potential adverse environmental effects of the Project on the above VCs were found to be negligible to low in magnitude for construction and operation. Based on the desktop studies undertaken and information available to date as presented in this report, the Project is not expected to create significant adverse environmental effects.



Acronyms / Abbreviations

CCME	Canadian Council of Ministers of the Environment
CO _{2e}	carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRWC	Cartier Regional Water Cooperative
CWQG	Canadian Water Quality Guidelines
DFO	Department of Fisheries and Oceans Canada
EAL	Environment Act Licence
EAP	Environment Act Proposal
ECCC	Environment and Climate Change Canada
ERV	Energy Recovery Ventilator
GHG	greenhouse gasses
GoC	Government of Canada
GoM	Government of Manitoba
HADD	harmful alteration, disruption, or destruction
HRB	Historic Resources Branch
HRIA	Heritage Resource Impact Assessment
HRPP	Heritage Resource Protection Plan
ICIP	Investing in Canada Infrastructure Program
LAA	Local Assessment Area (1 km radius from PDA)
masl	metres above sea level
MB CDC	Manitoba Conservation Data Centre
mbgs	metres below ground surface
MCC	Manitoba Conservation and Climate (currently Manitoba Environment and Climate Change)
MECC	Manitoba Environment and Climate Change
MECP	Manitoba Environment, Climate, and Parks (currently Manitoba Environment and Climate Change)
MESEA	Manitoba <i>The Endangered Species and Ecosystems Act</i>
MLD	Megaliters per day



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Acronyms / Abbreviations

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MTI	Manitoba Transportation and Infrastructure
MWSB	Manitoba Water Services Board
NOA	Notice of Alteration
PDA	Project Development Area
PUB	Public Utilities Board
RAA	Regional Assessment area (10 km radius from PDA)
RfA	Request for Authorization
RfR	Request for Review
RM	rural municipality
RO	reverse osmosis
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
SOCC	Species of Conservation Concern
Stantec	Stantec Consulting Ltd.
the City	City of Portage la Prairie
THM	trihalomethane
UF	ultrafiltration
VOC	volatile organic compound
WRL	Water Rights Licence
WTP	water treatment plant
YRWC	Yellowhead Regional Water Cooperative



1 Introduction

1.1 Project Overview

The City of Portage la Prairie (the City) operates a water treatment plant (WTP) located at 130 Yellowquill Trail, in the Rural Municipality (RM) of Portage la Prairie, southwest of the City limits on RL-23 (Appendix A, Figures 1 and 2). Raw water is currently obtained from the Assiniboine River at the upstream face of the Assiniboine River Diversion Water Control Structure located approximately 400 m southwest of the WTP. The WTP provides potable supply water to residents of the City and regional customers, including the Southport Aerospace Centre Inc., the Yellowhead Regional Water Cooperative (YRWC), the Cartier Regional Water Cooperative (CRWC), McCain Foods, Nutri-Pea, Simplot, and Roquette.

To address future growth (both residential and industrial) and improve the overall water quality primarily related to trihalomethane (THM) control, the City in association with the Manitoba Water Services Board (MWSB) retained Stantec to design the WTP Expansion/Upgrade to meet current and future water demands and to reduce the organics and THM levels in the treated water supply (the Project).

Components of the Project include:

- A new raw water intake structure, wetwell, and pumphouse located approximately 50 m downstream of the Assiniboine River Diversion Water Control Structure. The Project will also include the construction of a Newbury riffle downstream of the new intake structure on the Assiniboine River bottom to maintain water depth at the new intake structure. The existing raw water intake system at the upstream face of the Assiniboine River Diversion Water Control Structure will be retained for use during maintenance and as backup.
- An expansion of the existing WTP pre-treatment building to accommodate the twinning of the existing ballasted flocculation treatment process (Actiflo®) to provide redundancy and operational flexibility.
- A new membrane building at the WTP for a two-stage membrane system consisting of a first stage ultrafiltration (UF) membrane followed by a second-stage low-energy reverse osmosis (RO) membrane. The membrane system will operate in parallel with the existing lime softening system and the two treated water streams will be blended prior to storage in the existing water distribution reservoir on the WTP site.
- New PVC, HDPE, and concrete buried lines for raw water intake, conveyance, and concentrate/backwash discharge.



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The intent of this Environment Act Proposal (EAP) application is to obtain an updated Environment Act Licence (EAL), considering the following developments associated with the Project, as defined in *The Environment Act* Classes of Development Regulation, M.R. 164/88:

- Alterations to stream channels which affect fish mobility and fish habitat (Newbury riffle)
- Withdrawal of water of more than 10,000 dam³ per year including non-consumptive closed systems where water is returned to its source and the flow rate is greater than 250 L/s (raw water intake structure)
- Discharge of treated wastewater into the environment (concentrate/backwash discharge)

This EAP has been prepared by Stantec, on behalf of the City, in general accordance with the Manitoba Environment and Climate (MEC, now Manitoba Environment and Climate Change [MECC]) Information Bulletin, "Environment Act Proposal Report Guidelines" (June 2023) and *The Environment Act* Licensing Procedures Regulation, M. R. 163/88. This report documents the potential environmental effects and planned mitigation measures associated with the proposed construction and operation of the Project. The EAP report is submitted as supporting information to the Environment Act Proposal Form for licensing consideration by MECC.

1.2 The Proponent

For the purposes of development licensing, the proponent is the City of Portage la Prairie. For further information regarding the development, please contact the following:

Mrs. Karly Friesen

Director of Utility

City of Portage la Prairie

97 Saskatchewan Avenue East

Portage la Prairie, MB R1N 0L8

Phone: (204) 239-8359

Email: kfriesen@city-plap.com

This Environment Act Proposal was prepared by Stantec Consulting Ltd. The local contact is:



Mr. Saibal K. Basu, Ph.D., P.Eng.

Senior Principal, Water/Wastewater – Team Lead (Prairies and Territories)

Stantec Consulting Ltd.

500-311 Portage Avenue, Winnipeg, MB R3B 2B9

Telephone: (204) 981-2557

Email: saibal.basu@stantec.com

1.3 Land Use, Ownership and Property Rights

The existing WTP Site is located at 130 Yellowquill Trail, in the RM of Portage la Prairie, southeast of the City of Portage la Prairie, Manitoba. The land parcels to be occupied by the proposed Project are under a mix of municipal and provincial government ownership (Appendix A, Figure 1). Land parcels include those already owned by the City at the WTP Site, the Portage Spillway Provincial Park land administered by the Manitoba Provincial Parks branch, and land designated as a Provincial waterway administered by Manitoba Transportation and Infrastructure (MTI). The proposed Project construction will take place on the southern portion of RL-23; where the existing WTP is located, and approximately 50 m northeast of the Assiniboine River Diversion Water Control Structure (Appendix A, Figure 1). Ownership of the mineral rights beneath the lands is expected to rest with the Crown (Province of Manitoba). Municipal development plan and zoning land use controls do not conflict with the proposed development in terms of permitted uses. However, the Project will need to consider the Provincial Park zoning (See section 4.2.3) and apply for Provincial Park permits (See section 1.5).

1.4 Previous Reports/Supporting Studies

The following relevant reports were accessed to support the development of this EAP:

- Engineering Assessment (Stantec 2024a)
 - This report contains information on the existing components of the WTP.
- Design Basis Memorandum (Stantec 2024b).
 - The primary objective of this report is to form the basis of design for the City of Portage la Prairie's WTP. This report also contains information regarding electrical servicing for the Project.
- Climate Resilience Assessment (Stantec 2021b).
 - This report outlines planned construction inputs for the proposed membrane building and the expansion to the existing pre-treatment building.



- Site Reconnaissance Summary (Stantec 2024d).
 - This report contains observational aquatic habitat information near the proposed new water intake structure location to support environmental applications and the development of a Department of Fisheries and Oceans (DFO) Request for Review (RfR) application.
- Geotechnical Report (Stantec 2021a).
 - This report outlines the existing geotechnical soil and groundwater conditions at the existing WTP. The report also describes evaluation of foundation loading conditions in support of the proposed WTP building additions and expansions.
- Raw Water Intake Memorandum (Stantec 2025).
 - This report outlines the hydraulic conditions, hydrology, and planned design of the intake structure.
- Preliminary Design Report (Stantec 2020).
 - This report describes the chemicals that the UF and RO processes will require.

1.5 Regulatory Framework

The proposed Project requires submission of an EAP application to MECC under *The Environment Act* (Manitoba). Other acts, regulations and guidance that may apply to the Project include the following:

- ***The Crown Lands Act***, c. C340 - for authorization of work on Crown land (bed of a body of water below the ordinary highwater mark and a strip of land 30 metres from the highwater mark).
- ***The Endangered Species and Ecosystems Act***, c. E111 – for the protection of endangered, threatened, and extirpated species.
- ***The Environment Act***, c. E125 Information Bulletin – Environment Act Proposal Report Guidelines – related to project development.
- ***The Heritage Resources Act***, c. H39.1 - in relation to the presence of heritage resources or human remains upon or within or beneath lands likely to be damaged or destroyed by any work, activity, development, or project.
- ***The Provincial Parks Act***, c. P20, Park Activities Regulation MR 141/96 – permit required for activities such as cutting trees and installing pump station, intake structure, and water lines. A site



plan permit will be required to construct any building, structure, or work, including waterlines, within a provincial park.

- **The Public Health Act**, c. P210, Water Works, Sewerage and Sewage Disposal Regulation MR 331/88 – in relation to potable water systems, including the construction, location, maintenance, operation, or purification of potable water systems and supplies, including the approval and protection of sources of water supply.
- **The Water Protection Act**, c. W65 and Manitoba Water Quality Standards, Objectives and Guidelines Regulation MR 196/2011 – for the protection of Manitoba surface and groundwater resources.
- **The Water Resources Administration Act** c. W70 – application to MTI for construction of works on, over, or across a designated provincial waterway (i.e., the Assiniboine River]).
- **The Water Rights Act** c. W80 – application for a licence to construct, establish, operate, or maintain structures and plants associated with diverting water.
- **The Canadian Navigable Waters Act** c. N-22 (federal) – as the new raw water intake structure and wastewater discharge lines will enter a scheduled waterway, an Application for Approval or Notification of Work on a Scheduled Waterway to Transport Canada, Navigation Protection Program may be required under the requirements of the Act.
- **The Fisheries Act** c. F-14 (federal) – for the protection of fish and fish habitat from harmful alteration, disruption, or destruction (HADD). The intake screen must abide by DFO's Freshwater End-of-Pipe Fish Screen Guidelines. Where standard protection measures cannot be followed an RfR and/or authorization under *The Fisheries Act* will be required.

The Project is not considered a physical activity under the federal Physical Activities Regulation SOR/2019-285 and does not trigger an environmental assessment decision from the Impact Assessment Agency of Canada under the *Impact Assessment Act*.

1.6 Engagement

Engagement for the proposed Project will include placement of this EAP request on the Public Registry by MECC for public review and comment. Additional engagement in the form of a public open house was conducted on February 6, 2025, to provide an update and gather input from residents on the proposed Project.



1.7 Funding

The City will be providing funding for the Project with planned support from the Province of Manitoba. An application has also been submitted under Canada Housing Infrastructure Fund. At the time of writing, no federal funding has been confirmed.



2 Project Description

2.1 Existing Development

Without considering the lack of redundancy in the ballasted flocculation process, the existing WTP has a firm design capacity of 18 MLD (if the largest solids contact clarifier was out of service,) and a total design capacity of 34 MLD (limited by the dual media filtration process).

The regional portion of the water system (Yellowhead Regional Water Co-op) has historically exceeded the regulated THM levels in the treated water due to moderately high levels of residual organic carbon in the distributed water and long retention times in the supply pipeline. The City has conducted a number of studies on treatment process optimizations and completed numerous phases of plant upgrades, but an overall reduction of organic carbon removal has not been achieved.

In 2022, the City forecasted new/additional industrial, commercial, and residential growth that was expected to increase the projected maximum day demands beyond the current WTP capacity (Stantec 2024b). The City obtained an updated Water Right's License (WRL) for the WTP in July 2023 increasing the allowable maximum rate of withdrawal from 440 L/s (approximately 38 MLD) and an annual quantity of 8,948.94 cubic decameters in the 2003 WRL to 870 L/s (approximately 75 MLD) and an annual quantity of 18,761.34 cubic decameters (see Appendix C).

Site plans showing the existing WTP infrastructure are presented in Appendix A, Figure 1.

The key unit processes currently employed at the City's existing WTP include:

- Raw water intake
- Ballasted flocculation (Actiflo® Process) for turbidity reduction
- Softening via Solids Contact Clarifiers
- Re-carbonation for pH adjustment
- Ozonation
- Dual media filtration
- Granular activated carbon (GAC) filtration
- Chlorination and Fluoridation ahead of contact time in the reservoir(s)



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Detailed descriptions of the existing WTP processes can be found in Stantec's engineering assessment of the City of Portage la Prairie public water system (Stantec 2024a). Brief descriptions of the existing processes that will be altered as part of the proposed Project are provided below:

Raw Water Intake

The current raw water intake structure consists of two (2) 600 mm pipes installed within the upstream face of the Assiniboine River Control Structure, an asset owned and operated by MTI. The estimated maximum capacity of each pipe is 900 L/s. However, capacity can be compromised due to plugging of the intake screen with heavy debris and ice blocks during the spring, and frazil ice during the fall (Stantec 2024a). The existing raw water intake structure will be retained for use as backup and to allow for required maintenance.

Ballasted Flocculation (Pre-treatment Building)

The ballasted flocculation process (Actiflo®) provides turbidity reduction to improve the operation of the downstream softening clarifiers prior to recarbonation and ozonation. The process consists of a coagulation tank, injection tank, maturation tank, and clarifier. From a pre-treatment perspective, the maximum flow rate is 39 Megalitres per day (MLD). Sludge from the Actiflo® process and lime sludge from the Solids Contact Clarifiers are discharged to the sludge lift station and pumped south across the Assiniboine River to the sludge drying beds. Historically, the Actiflo® process makes up approximately 80% of the sludge discharged. The supernatant from the sludge drying beds is decanted and discharged to the Assiniboine River, while the dried sludge is removed to the local landfill approximately every three years (Stantec 2024a).

Dual Media Filtration (Water Treatment Plant Building)

After ozonation and prior to filtration by granular activated carbon (GAC), the dual media filtration process involves four (4) dual-media gravity filters that provide filtration to achieve 3 log removal credits for indicator species *Giardia* and *Cryptosporidium* in accordance with the "ODW-AG-03: Filtration and Disinfection Log Reduction Credits" (GoM 2017). The provincial requirement for surface water is 3 log inactivation of *Giardia* and *Cryptosporidium*. The dual media filtration process and the chemical assisted conventional filtration process combine for a total capacity of 34 MLD (8.5 MLD per filter). Backwash from the dual media and GAC filters are discharged directly to the Assiniboine River southeast of the existing WTP.



2.2 Proposed Development

The proposed Project includes the design and construction of a new raw water intake structure, upgrades, and expansions to the existing WTP facility, a new 66 kV substation, and new raw water and concentrate/backwash discharge pipelines (Appendix A, Figure 1). With the proposed expansion and additions, the designed firm capacity will increase from 17 MLD to 55 MLD and the total design capacity will be increased from 34 MLD to 72 MLD. Details on the proposed development are listed below.

2.2.1 Raw Water Intake Structure

Spatial constraints within the Assiniboine River Diversion Water Control Structure preclude expansion of the existing raw water pumphouse for the Project. The existing intake requires significant maintenance to ensure operation and requires coordination of MTI and the City's operations staff. As a result, raw water will be supplied to the expanded WTP primarily via a new intake structure, conduction pipes, wetwell and pumphouse, and a newly constructed Newbury riffle (Appendix A, Figure 1). The new intake structure will be constructed for a maximum water withdrawal of 83 MLD (0.96 m³/s), with 75 MLD (0.87 m³/s) withdrawn as raw water for treatment in the WTP and the remaining 10% (8 MLD or 0.09 m³/s) being returned to the river as part of the fish return system. The existing raw water intake at the Assiniboine River Diversion Water Control Structure, and associated lines will be retained for use as backup and to allow for future maintenance.

The new intake structure will include a concrete or sheet pile wedge structure that will protrude from the north bank of the Assiniboine River, located approximately 50 m downstream of the existing water control structure. The wedge is anticipated to be approximately 10 m x 10 m and will contain two cast-in-place concrete chambers that will each draw water through 3.9 m wide, 1.5 m tall openings (11.7 m² total area). Trash racks will cover the openings, with louvers located behind the trash racks to exclude large-bodied fish at the intake (Stantec 2025). The raw water will be conveyed approximately 45 m from the intake structure to the new inland pumphouse wetwell via two 1000 mm diameter pipes.

The inland pumphouse will be an approximately 20 m x 16 m metal-clad steel building located over a new concrete wetwell (Stantec 2025). The pumphouse would include a pump room, an electrical room, and a mechanical room. The cast-in-place wetwell will be approximately 20 m x 15 m, containing two chambers connected with a slide gate, with each chamber including two vertical pumps. The wetwell will contain travelling screens to exclude fish from the WTP. The effective screen area of the Intake Structure will be 25 m² with a design approach velocity of 0.035 m/s to allow 97.5% of fish 25 mm or greater to escape (see Section 5.1.1.6). Design of the intake screens was based on DFO's Freshwater End-of-Pipe Fish



Screen Guidelines (DFO 1995) and the Interim Code of Practice for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater (DFO 2020). Fish return pumps placed on the fish-containing side of the chambers will move fish from the wetwell to a hopper that drains back into the Assiniboine River on the downstream face of the intake structure (Stantec 2025). A new genset will be installed immediately east of the pumphouse (Appendix A, Figure 1).

The Newbury rock riffle is a fish-traversable riffle design that is widely accepted to produce naturalized, fish-friendly backflow controls. The Newbury rock riffle will be constructed downstream of the intake structure to maintain approximately 2 m of depth in the river channel at the intake during periods of low flow. The proposed geometry of the riffle is a 20:1 H:V slope on its downstream face and will be approximately 94 m in length and approximately 102 m in width. The riffle will be designed to confine low flows and provide continuous low-velocity swim paths with minimal incremental increase to flood depths above the 1:10-year flood level. The riffle is estimated to increase water surface elevation by approximately 2.5 m during low flow, and by approximately 1 m during the 1:2-year flood level (Stantec 2025).

2.2.2 WTP Upgrades

Upgrades to the existing WTP include the construction of an expansion to the existing pre-treatment building and a new membrane process building. These structures will comprise steel-framed, metal clad insulated buildings founded upon concrete raft foundations.

Ballasted Flocculation (Pre-treatment Building)

The existing (Actiflo®) ballasted flocculation treatment process will be duplicated by constructing an extension to the existing pre-treatment building to provide redundancy and operational flexibility. The resulting peak instantaneous flow capacity of the ballasted flocculation process will be 75 MLD (when activated seasonally to serve as pre-treatment to the proposed membrane process). A new blower will be added immediately southwest of the existing pre-treatment building, and a new energy recovery ventilator (ERV) is proposed immediately southeast of the expanded pre-treatment building.

Dual Media Filtration (Membrane Process Building)

The proposed membrane system will have a maximum capacity of 38 MLD (0.44 m³/s) and will be housed in a new membrane process building integrated with the existing WTP facility. The process will include a new two-stage membrane system, consisting of a first stage UF process followed by a second-stage low-



energy RO process. The membrane system will operate in parallel with the existing lime softening system. The treated water from the membrane process building will be blended with the water from the lime softening process prior to storage in the water distribution reservoir. The concentrate/backwash from the membrane filtration process will be discharged via a buried line to the Assiniboine River. Discharge into the Assiniboine River will be continuous during the production of treated water.

Two (2) new transformers and one (1) new genset will be installed immediately north of the proposed membrane process building. A fence will be constructed on the east and north sides of the proposed membrane process building, which will connect with an existing fence to the north.

Raw Water Intake, Conveyance, and Concentrate/Backwash Discharge Piping

Raw water, conveyance, and concentrate/backwash piping will be installed 2.4 m below grade, with sizing ranging from approximately 150 mm to 1000 mm, and be made of PVC, HDPE, and concrete (Stantec 2021b). A combination of trenchless and open-cut excavations will be used for raw water and concentrate/backwash piping installation. Where open-cut excavation near water bodies/crossings is required for the new intake structure and pipe placement, the work area would be isolated and dewatered.

There are two (2) new locations where new raw water lines will be installed. Raw water line(s) will connect the proposed raw water intake structure to the existing raw water lines running between the existing water intake structure and the WTP. An additional raw water line(s) will branch off the existing raw water intake lines to feed the proposed membrane process building (Appendix A, Figure 1).

The backwash from the new first stage UF process and the concentrate from the new second-stage low-energy RO process will be combined and discharged via a common discharge line to the Assiniboine River (approximately 125 m south of the proposed membrane building).

2.3 Construction Inputs and Outputs

2.3.1 Construction Inputs

During the construction phase of the proposed Project, materials and equipment will be shipped to the Site. Expected construction input materials will include concrete, gravel, rebar, lumber, steel columns, steel framing, paints, adhesives, sealants, and pumps. Fuel (diesel, gasoline, propane) may be used on-site for construction vehicles (i.e., light trucks, excavators, bulldozers, dump trucks) and to heat site



trailers and workspaces, as necessary. Diesel fuel and gasoline will be dispensed to construction vehicles from slip tanks or other approved temporary fuel storage systems at least 100 m from the nearest water body. It is assumed that the contractor will arrange for a temporary electrical service, single phase, 120/208V to be used for lighting, power tools, and construction trailers during construction. No natural gas is expected to be used for construction.

2.3.2 Construction Outputs

Output during construction can include fugitive dust and emissions from vehicles and equipment (i.e., excavators, bulldozers, dump trucks), equipment delivery trucks, water from dewatering, spent packaging materials, etc. A peak workforce of 40 workers per day is estimated during construction of the Project. Waste materials generated from construction are expected to primarily comprise construction debris and packaging materials, including cardboard, paper and packaging, wood, concrete/concrete block, scrap metal, unpainted drywall, glass and plastics, and beverage containers. Construction debris and spent packaging materials will be regularly transported off-site and disposed of or recycled at approved facilities according to applicable regulations. Excess excavated material (i.e., topsoil, silty clay, etc.) will be appropriately disposed of off-site. Excess groundwater will be appropriately pumped off-site. Disturbed surface areas at the construction site will be restored to a finished grade. Hazardous waste will be disposed of at a licensed hazardous waste handling facility. Sodium hypochlorite will be used for disinfection of potable water infrastructure. Super chlorinated water will be dechlorinated with sodium bisulfite such that there is not a chlorine residual prior to discharge to the environment.

2.4 Operation Inputs and Outputs

The WTP will use river water from the new raw water intake structure. The intake structure is designed for a maximum water taking of 83 MLD (0.896 m³/s), with up to 75 MLD (0.87 m³/s) being taken into the WTP and the remaining 10% (8 MLD or 0.09 m³/s) returned to the river as part of the fish return system. The new proposed two-stage membrane system will have the capacity to produce a maximum potable water flow of 38 MLD (0.44 m³/s).

The blended/treated water will be dosed with chlorine for disinfection and sodium hydroxide for pH adjustment before being discharged to the existing WTP reservoir.

The Portage la Prairie WTP is currently powered by Manitoba Hydro's local 12 kV system, stepped down to the working voltage of 600V. The Project will be adding approximately 3.4 MVA of new load. Manitoba



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Hydro informed Stantec that the design will be based on power supply from their 66 kV system (Stantec 2024b).

The WTP will continue to use chemicals for cleaning, disinfection, and water quality adjustments including:

- Polyaluminum Chloride
- Nor-Floc (anionic polymer)
- Potassium Permanganate (powder)
- Cat-Floc (cationic polymer)
- Lime
- Sodium Hydroxide (50%)
- Carbon Dioxide
- Fluorosilicic Acid (40-47%)
- Chlorine (gas)
- Phosphoric Acid (75%)
- Calcium Thiosulphate
- Calcium Hypochlorite

(Stantec 2024a)

The addition of the UF and RO processes will require the following chemicals:

- Potassium Permanganate
- Coagulant (poly aluminum chloride)
- Carbon Dioxide
- Citric Acid
- Sodium Hypochlorite
- Sodium Bisulfite
- Sodium Hydroxide
- Antiscalant
- High pH Clean (Kleen MCT 405)
- Low pH Clean (Kleen MCT 103)



- Hydrochloric Acid
 (Stantec 2020)

A chemical room will be located at the north end of the proposed membrane building on the main level to house the chemicals required for pre-treatment and the membrane processes. Access to the chemical room will be via loading dock similar to the loading dock for the existing WTP building.

The WTP will generate and discharge additional concentrate/backwash flow to the Assiniboine River on a continual basis during the production of treated water. A summary of discharge flow characteristics can be found in **Table 2.1**. Discharge is expected to be continuous during operation except for maintenance interruptions.

Table 2.1 Maximum Waste Stream Discharge to the Assiniboine River

Waste Stream	Summary
UF Backwash Waste – Daily Cumulative	2.2 MLD at 95% recovery
UF CIP Waste – Per Event	Chemical Waste Volume: 73 m ³ Frequency: 1 time per train per day Flow Rate: 220 L/s
UF CIP Waste – Daily Cumulative	Chemical Waste: 435,500 L/day
RO Concentrate	27.5 L/s per Train 9.5 MLD Total Plant
Total concentrate/backwash volumes with a 95% backwash recovery rate	12,208 m ³ /day

2.5 Project Schedule

The proposed Project construction schedule is anticipated to be March 2026 to August 2028, subject to regulatory approvals and funding.



3 Scope of the Assessment

3.1 Spatial And Temporal Boundaries

The proposed Project is located within the Rural Municipality (RM) of Portage la Prairie, located on land parcel RL-23. For the purposes of this environmental assessment, the Project Development Area, Local Assessment Area, and Regional Assessment Area are defined in **Table 3.1**.

Table 3.1 Spatial and Temporal Boundaries

Spatial Boundaries	Temporal Boundaries
Project Development Area (PDA) – the physical footprint of the Project comprising the expanded Portage la Prairie WTP footprint, raw water intake structure, pumpstation, supply lines and concentrate/backwash discharge lines (see Appendix A, Figure 1).	Construction phase – period of approximately 29 months from March 2026 to August 2028.
Local Assessment Area (LAA) – area up to a 1 km buffer from the PDA (area over which direct effects of the Project are expected to occur), and including the PDA (see Appendix A, Figure 2).	Operation phase – the design period over which the WTP upgrades/expansion will be in operation is anticipated to be at least 25 years.
Regional Assessment Area (RAA) – area up to a 10 km radius from the center of the PDA comprising the affected municipal boundaries where the Project is located (area over which direct effects that act on the PDA are compared to determine significance of residual effects) (see Appendix A, Figure 3).	Decommissioning phase – there are currently no plans for the WTP to be decommissioned. Should decommissioning occur in the future, it would be anticipated to consist of abandonment and removal of the WTP infrastructure. Decommissioning would be conducted according to licence conditions and regulatory requirements at the time with anticipated effects similar to those of the construction phase.

3.2 Assessment Approach

This assessment was completed to meet the requirements of an Environmental Report supporting the EAP request and includes assessing project-specific environmental effects. The assessment focuses on valued components (VCs), which are environmental components of certain value or interest to regulators and other parties and are identified based on the potentially affected biophysical and socio-economic elements. Project-related effects on these VCs are assessed sequentially in the assessment. Residual effects are characterized using specific, predetermined criteria (i.e., direction, magnitude, geographical extent, duration, frequency, reversibility, and ecological/socio-economic context).



3.2.1 Selection of Project Interactions and Valued Components

Biophysical and socio-economic VCs that could be affected through interactions of the environment and the Project are identified to scope the assessment. The rationale for selecting each VC is explained and potential general interactions between the Project and VCs are identified in **Table 3.2**.

Table 3.2 Designation of Valued Components

Valued Component	Potential Project Interaction	Rationale for Exclusion or Inclusion and Project Potential Effect
Air quality/Greenhouse gas emissions	✓	Air emissions are anticipated from construction activities related to on-site vehicle and equipment use (e.g., particulate matter). During construction, construction equipment and vehicle exhaust are potential sources of GHG emissions (i.e., carbon dioxide, methane, nitrogen oxide, particulates), however these are not anticipated to be measurable beyond the LAA. No operational emissions are expected for the project except those generated by maintenance visits and periodic/maintenance operation of the backup generators (negligible vehicle exhaust and fugitive dust emissions).
Surface water	✓	During construction, surface water quality effects will be addressed by standard erosion and sediment control measures as well as adherence to site-specific isolation and mitigation measures to protect fish and fish habitat (per DFO request for review). During operation, water withdrawal may affect fish habitat and discharge of concentrate/backwash water has the potential to affect surface water quality.
Groundwater	✓	Changes to groundwater during construction are possible through dewatering for installation of the intake structure, pumphouse, WTP building foundations, and discharge lines (i.e., if dewatering is required). Operationally, no changes to groundwater are expected to occur.
Soils/terrain	✓	Excavation for the proposed WTP upgrade/expansion is proposed as part of construction and could result in mixing of soils. Operationally, no additional soil/terrain effects are anticipated.
Vegetation	✓	Physical changes will occur as a result of construction of the Project in the form of clearing. The proposed development will occur in existing disturbed and riparian forested land. Some vegetation clearing will be required for installation of the pipelines, construction of the new pump house, and expansion of some buildings at the WTP. Operationally, vegetation maintenance will be conducted consistent with current practices at the Project site in newly developed areas.



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Valued Component	Potential Project Interaction	Rationale for Exclusion or Inclusion and Project Potential Effect
Fish and fish habitat	✓	<p>The construction of the raw water intake structure, weir installation, and concentrate/backwash discharge line(s) are expected to potentially affect fish and fish habitat in the Assiniboine River. Adherence to site-specific mitigation measures to protect fish and fish habitat (per DFO request for review/authorization, if required) will address effects to fish and fish habitat.</p> <p>Operationally, fish and fish habitat (water quality) effects are possible from concentrate/backwash discharge and fish recovery/return at the intake structure.</p>
Wildlife and wildlife habitat	✓	<p>Physical changes will occur as a result of construction of the Project, in the form of clearing and earthworks, that may generate disturbance to local wildlife and birds. Operationally, no substantial adverse effects to wildlife and habitat are expected.</p>
Property and land use	✓	<p>Construction activities will occur in the Portage Spillway Provincial Park and areas at, and adjacent to, the existing WTP and Assiniboine River. Temporary detours may be required, and some areas of the current park may be temporarily unavailable to members of the public to accommodate construction of the Project.</p> <p>The land to be occupied by the Project is either provincial park, crown land, or part of the existing WTP Site (Appendix A, Figure 1) Operationally, the PDA zoning is anticipated to be compatible with the existing and proposed land use. However, the Project will need to consider the Provincial Park zoning (See section 4.2.3) and apply for Provincial Park permits (See section 1.5).</p>
Infrastructure and services	✓	<p>The proposed WTP upgrade/expansion improves services that accommodate efficient treatment of water in a manner beneficial to users. The Project will help to meet the forecasted demand increase for treated water by the various consumers served by the WTP.</p> <p>Most existing services (external roads, sewer, water) are of sufficient capacity to accommodate the proposed Project construction and operation. However, additional electricity will be required to power the Project.</p>
Employment and economy	x	<p>Direct benefits related to employment, tax generation from construction and continued operation will be positive but negligible.</p>
Heritage resources	✓	<p>The PDA includes lands with potential heritage concerns that will require mitigation prior to and during construction (see Appendix D). Operationally no additional effects to heritage resources are anticipated.</p>



Valued Component	Potential Project Interaction	Rationale for Exclusion or Inclusion and Project Potential Effect
Aesthetics and Noise	✓	<p>The PDA includes existing agricultural and rural residential area; there will be a change to LAA visual aesthetics along the Assiniboine River and at the provincial park (intake structure and pump station construction). Visual aesthetics will also be affected to some extent at the existing WTP Site with the new structures and some tree clearing (along the perimeter of the Site and potentially limited areas near the Assiniboine River).</p> <p>During construction, outdoor noise disruption may affect nearby residential receptors and users of the provincial park.</p> <p>Operational noise effects are not expected to be of concern to nearby residents.</p>
Health and Safety	x	<p>The Project is not anticipated to adversely affect public health and safety. Potential increase in road vehicle accidents due to increased traffic during construction is not expected to be a concern following implementation of typical traffic mitigation measures and controls. Operationally, the facility's existing health and safety plans and emergency response plans will be updated to include the additional processes and infrastructure of the Project.</p>

Following the identification of valued components, an analytical framework is used to evaluate and characterize the potential project effects on those VCs identified as having a potential project interaction based on standardized criteria to facilitate quantitative (where possible) and qualitative assessment of residual environmental effects.

3.2.2 Residual Effects Description Criteria

Terms used to characterize the residual environmental effects are summarized in **Table 3.3**.



Table 3.3 Characterization of Residual Environmental Effects

Characterization	Description	Quantitative Measure or Definition of Qualitative Categories
Direction	The long-term trend of the residual effect	Positive— an improvement in the valued component compared with existing conditions and trends Adverse— a decline in the valued component compared with existing conditions and trends Neutral— no change in the valued component from existing conditions and trends
Magnitude	The amount of change in the VC relative to existing conditions	Negligible— no measurable change Low— a change that falls within the level of natural variability Moderate— a measurable change which is unlikely to affect the valued component High— a measurable change which is likely to affect the valued component
Geographic Extent	The geographic area in which an environmental effect occurs	PDA— residual effects are restricted to the Project footprint and Site LAA— residual effects extend into the LAA (up to a 1-km radius of the Project footprint and site), inclusive of the PDA RAA— residual effects extend to other adjacent areas to the route within the affected RM (up to 10 km buffer), inclusive of the LAA
Frequency	Identifies when the residual effect occurs and how often during the Project or in a specific phase	Single event— residual effect occurs once throughout the life of the Project Multiple irregular event— residual effect occurs sporadically and intermittently (no set schedule) throughout Multiple regular event— residual effect occurs repeatedly and regularly throughout Continuous— residual effect occurs continuously throughout the life of the Project
Duration	The period of time required until the VC returns to its existing condition, or the effect can no longer be measured or otherwise perceived	Short-term— residual effect restricted to the duration of construction (assumed to be 29 months) Medium-term— residual effect extends up to 10 years Long-term— residual effect extends beyond 10 years
Reversibility	Pertains to whether the VC can return to its existing condition after the Project activity ceases	Reversible— the effect is likely to be reversed after activity completion and decommissioning (including remediation as necessary) Irreversible— the effect is unlikely to be reversed even after decommissioning
Ecological and Socio-economic Context	Existing condition and trends in the area where environmental effects occur	Undisturbed— area is relatively undisturbed or not adversely affected by human activity Disturbed— area has been substantially previously disturbed by human development or human development is still present



4 Existing Conditions

4.1 Biophysical Environment

A desktop site assessment and aquatic site reconnaissance visit were undertaken by Stantec in September 2024 (see Appendix E) to document terrestrial and aquatic habitat in the Project area. Biophysical site conditions are described in the subsections below.

4.1.1 Atmosphere

The Project lies within the Grassland Transition Ecoclimatic Region in southern Manitoba. The climate is characteristic of short, warm summers and long, cold winters (Smith et al. 1998). Climate normals are available from Portage la Prairie, the closest weather station to the Project area. The daily average annual temperature (based on the period 1991 to 2020) is 3.5 degrees Celsius (°C). The average annual precipitation is 493 mm (GoC 2025). The mean length of the frost-free period is 128 days (Michalyna and Smith 1972). Monthly climate normals are provided in **Table 4.1**.

Table 4.1 Climate Normals for Portage la Prairie, Manitoba (1991-2020)

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr.
Temperature (°C)													
Daily Av.	-14.6	-12.6	-5.5	4.0	11.3	16.9	19.8	18.7	13.5	5.7	-3.9	-11.5	3.5
Daily Max.	-10.0	-7.7	-0.6	9.7	17.4	22.5	25.4	24.8	19.3	10.6	0.3	-7.3	8.7
Daily Min.	-19.1	-17.4	-10.2	-1.9	5.1	11.4	14.2	12.6	7.7	0.7	-8.1	-15.7	-1.7
Precipitation													
Total (mm)	17.5	17.0	30.3	36.8	65.1	80.4	61.5	50.8	47.7	40.9	24.9	20.2	493.0

Source: GoC 2025

The nearest air quality station operated by MECC (Manitoba Environment and Climate Change) is in the City of Winnipeg. Air quality concerns from pollutants tend to be localized in nature. Typical sources of airborne pollutants are expected to include transportation, residential heating, agricultural, and industrial activities (MCC 2020). Forest and wildfires within and outside the province also occasionally contribute to particulate matter concentrations in the Region (MCC 2020).



Existing GHG emissions are characterized by summarizing provincial and national inventory totals. The most recent available data (2023) for Manitoba and Canada from Canada’s National Inventory Report (ECCC 2023) were used. Manitoba’s GHG emissions total for 2023 was 21,600 kt of carbon dioxide equivalent (CO_{2e}) and Canada’s GHG emissions total was 708,000 kt CO_{2e}. Manitoba GHG emissions accounted for 3% of the national GHG emissions.

4.1.2 Surface Water

There are 12 distinct waterbodies located within the RAA, including the Edwin Drain, Elm River, Garrioch’s Creek, Crescent Lake, and George Lake, which flow into the Assiniboine River, Flee Island Creek, East Outside Drain, East Blind Channel, Mount Pleasant Drain, and Arona Drain, which flow into Lake Manitoba, the Assiniboine River, and the Assiniboine River Portage Diversion Floodway (see Appendix A, Figure 3).

The Assiniboine River is the natural waterbody intersecting the PDA. The river is part of the Assiniboine River drainage division and part of the Nelson River drainage system (Smith et al. 1998).

Available raw water quality data for the Assiniboine River immediately downstream of the Assiniboine River Control Structure is summarized in Table 4.2.

Table 4.2 Summary of Assiniboine River Water Quality Data (2014-2024)

Parameter	Unit	Raw Water		
		Minimum Value	Median Value	Maximum Value
Calcium	mg/L	49.7	86.5	114.0
Total Hardness (as CaCO ₃) ¹	mg/L	175	429	582
Magnesium	mg/L	18.4	52	74.2
pH	pH units	7.8	8.4	8.7
Sodium	mg/L	6.4	59.9	114.0
Sulphate	mg/L	76	244	347
Total Dissolved Solids	mg/L	270	669	987
Total Suspended Solids	mg/L	11.9	63.6	1460
Turbidity	NTU	6.6	32.5	425.0

Source: GoM 2025b

Flows in the Assiniboine River have been recorded downstream of the RAA near Portage la Prairie at station 05MJ003 since 1923. Mean monthly flows at the station are summarized in **Table 4.3**.



Table 4.3 Mean Monthly Discharge (m³/s) for Assiniboine River near Portage la Prairie (05MJ003) (1923-2024)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
15.9	15.0	27.9	124	161	116	82.7	45.8	33.7	33.6	23.7	17.9	58.1

Source: GoC 2024a

4.1.3 Groundwater

There are approximately 239 wells within the RAA:

- 163 domestic wells
- 52 livestock wells
- 2 municipal wells
- 2 irrigation wells
- 2 air conditioning wells
- 2 industrial wells
- 2 commercial/industrial wells
- 1 earth energy well
- 1 dewatering well
- 11 wells with unknown purposes.

(Groundwater Information Network n.d.)

Static water level depths range from 2.14 m above ground to 39.62 m below ground (GWDRILL 2024). Several wells within the RAA are recorded to be flowing (Hempel and Iqbal 2016). The closest wells to the PDA with known well depths are an observation well, approximately 160 m southeast of the PDA with a well depth of 11.9 m and a production well approximately 950 m northwest of the PDA with a well depth of 11 m.

The Project is located over the limestone, sandstone, and shale Jurassic Formation bedrock aquifer (Department of Natural Resources 1987). The RM of Portage la Prairie is a part of 4 Watershed Districts: White Mud, Central Assiniboine, Redboine, and West Interlake Watershed Districts, with the PDA being located within the Central Assiniboine Watershed District (Redboine Watershed District 2024).



Within the LAA, there is approximately one (1) active observation well approximately 160 m southeast of the PDA with a well depth of 11.9 m. Two (2) wells with an unknown status, which may potentially be active, are approximately 650 m and 950 m northwest of the PDA. The well that is 950 m northwest of the PDA is a production well with a well depth of 11 m. The well that is 650 m northwest of the PDA is a test well with an unknown depth (GoM 2025a).

Groundwater conditions were recorded as part of the Geotechnical Investigation for the Project (Stantec 2021a). Eight (8) boreholes were drilled, with six (6) occurring in the vicinity of the existing WTP and two (2) occurring approximately 120 m west of the Assiniboine River Control Structure. All boreholes were drilled to a maximum depth of 12.2 m (Stantec 2021a). Minor seepage was recorded in six of the eight boreholes drilled. Groundwater depths upon completion of drilling ranged from 5.8 m to 9.3 m below ground.

4.1.4 Soils and Terrain

The Portage Ecodistrict (containing the RAA) has an average elevation of 259 masl (metres above sea level) with level to very gently sloping alluvial and glaciolacustrine plains. Slopes are smooth and long, ranging from level to less than 2 percent. Relief change along the Assiniboine River is approximately 3 m to 10 m, and 0.5 m to 1.0 m along former Assiniboine River oxbows and blind channels (Smith et al. 1998). The Portage la Prairie WTP lies within the Red River Valley Plain ecoregion, an area with alluvial and lacustrine sediments of varying texture groups. The dominant soils in the Portage la Prairie area are Chernozemic with occurrence of Regosolic and Gleysolic soil types (Michalyna and Smith 1972). The Portage la Prairie WTP is built on alluvial Riverdale Association soil, which is weakly developed on moderately to slightly calcareous alluvium consisting of fine sandy loam to silty clay (Manitoba Soil Survey 1958). Topography of Riverdale soils is irregularly level to very gently sloping, as the alluvial plain in which the soil resides contains meandering river channels. Soil drainage is good, with internal percolation and surface run-off moderately rapid (Ehrlich et al. 1957).

The Portage la Prairie area has excellent crop yields compared to the rest of the province. The majority of soils in the Portage la Prairie area range from Land Capability Class I (no soil limitations for growing crops) to III (moderately severe limitations for growing crops). The PDA lies in an area with soils of Land Capability Class I (Michalyna and Smith 1972).

Surficial geology in the PDA consists of distal glaciofluvial sediments, which includes fine sand, minor gravel, thin silt, and clay interbeds ranging from 1 – 75 m in thickness. Distal glaciofluvial sediments also include subaqueous outwash fans deposited in glacial Lake Agassiz by meltwater turbidity currents



(Matile and Keller 2004). Underlying bedrock includes the Amaranth formation, composed of red shales, sandstone, white gypsum beds, and gypsiferous dolomite (Michalyna and Smith 1972).

Stantec conducted geotechnical investigations for the Project by drilling eight (8) boreholes. Six (6) boreholes were drilled in the vicinity of the existing WTP and two (2) were drilled approximately 120 m west of the Assiniboine River Control Structure. Soil stratigraphy encountered in the boreholes drilled consisted of a surficial layer of fill (ranging from 1.1 m to 4.6 m in depth), overlying clayey silt or silt (ranging from 3.0 m to 5.5 m in depth), overlying sand (ranging from 4.6 m to 11.3 m in depth), and/or fat clay (ranging from 4.6 m to 7.9 m in depth) (Stantec 2021a).

4.1.5 Vegetation

The Project is located in the Portage Ecodistrict of the Lake Manitoba Plain Ecoregion, (Smith et al. 1998). Natural vegetation has primarily disappeared due to cultivation and development of drainage ditch networks. Trees are confined to floodplains and along rivers, and are predominantly white elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*), Manitoba maple (*Acer negundo*), basswood (*Tilia americana*), and bur oak (*Quercus macrocarpa*) (Smith et al. 1998).

For the purposes of this report, species of conservation concern (SOCC) are species listed as Endangered, Threatened, or Special Concern on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or with Conservation Status Rankings of S1, S2, or S3. Species at Risk (SAR) are species listed as Endangered, Threatened, or Special Concern on Schedule 1 of the *Species at Risk Act* and species listed as Endangered, Threatened, or Special Concern on Manitoba's *The Endangered Species and Ecosystems Act* (MESEA).

The Manitoba Endangered Species and Ecosystems Act Threatened, Endangered, and Extirpated Species Regulation was examined to determine the potential regional presence of species of conservation concern. The species listed were cross-referenced with the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed species and Schedule 1 species under the Federal Species at Risk Act (SARA) to determine provincially or federally listed species of conservation concern. This list of species was combined with a list of SOCC observed within a 1 km, 5 km, and 10 km radius of the Project site from the Manitoba Conservation Data Center (MB CDC). Species distribution maps were also consulted where possible to determine listed species that may occur in the Project area based on preferred habitat characteristics.



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A total of six vegetation SOCC have the potential to occur within the RAA based on conservation status rankings from the Manitoba Conservation Data Centre reported by NatureServe Canada. **Table 4.4** lists the vegetation SOCC with potential to occur within the RAA.

Preferred habitat of American bugseed (*Corispermum americanum*) includes sandy habitat with sparse vegetation (Prairie Wildflowers of Illinois n.d.). Schweinitz's flatsedge (*Cyperus schweinitzii*) prefers dry, sandy soils (Minnesota Wildflowers n.d.). Based on the habitat within the PDA, these vegetation SOCC are unlikely to occur on the Project Site.

False heather (*Hudsonia tomentosa*) prefers habitat on grassland and the shores of rivers and lakes (Go Botany n.d.), hairy bugseed (*Corispermum villosum*) prefers habitat along shores and roadsides (Sask. Herbarium 2006), alternate-leaf dogwood (*Cornus alternifolia*) prefers well-drained soils on forest edges, and along streams (Tree Canada n.d.), and quill sedge (*Carex echinodes*) prefers habitat on the margins of rivers (Minnesota Wildflowers n.d.). Based on the habitat within the PDA, these vegetation SOCC have the potential to occur within the PDA.

Table 4.4 Vegetation SOCC with Potential to Occur within the RAA

Common Name	Scientific Name	Federal Status		Provincial Status	
		SARA ¹	COSEWIC ²	MESEA ³	MB CDC ⁴
Plants					
Alternate-leaved dogwood	<i>Cornus alternifolia</i>	-	-	-	S3
American bugseed	<i>Corispermum americanum</i> <i>var. americanum</i>	-	-	-	S3
False heather	<i>Hudsonia tomentosa</i>	-	-	-	S3
Hairy bugseed	<i>Corispermum villosum</i>	-	-	-	S1S2
Quill sedge	<i>Carex echinodes</i>	-	-	-	S3
Schweinitz's Flatsedge	<i>Cyperus schweinitzii</i>	-	-	-	S2

Notes:

- No ranking available

¹ *Species at Risk Act* Public Registry (GoC 2024c)

² Committee on the Status of Endangered Wildlife in Canada (GoC 2024d)

³ Manitoba's Species and Ecosystem at Risk (GoM 2023a)

⁴ NatureServe Conservation Status Assessment (NatureServe n.d.); ranks are:

S = Province-wide status

1 = Critically Imperiled: At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.



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- 2 = Imperiled: At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- 3 = Vulnerable: At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
- 4 = Apparently Secure: At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern because of local recent declines, threats, or other factors.
- 5 = Secure: At very low risk of extinction or collapse due to an extensive range, abundant populations, or occurrences, and little to no concern from declines, threats, or other factors.

Vegetation within the LAA consists of localized areas of mixed coniferous and deciduous wood stands, floodplain, and manicured grass. Treed sites consist of small (<5 ha) to mid sized (5-10 ha) stands of mixed wood, and trees planted in and around residential, farmyard, and commercial/industrial properties. Two larger (>10ha) tree stands exist along both banks of the Assiniboine River downstream of the Assiniboine River Control Structure.

The PDA is located within a large stand of river bottom forest located along the north bank of the Assiniboine River. The WTP property and the Portage Spillway Provincial Park include trees and shrubs interspersed with areas of manicured grass. Vegetation along the northern bank of the Assiniboine River includes a mix of disturbed and undisturbed deciduous trees, shrubs, and herbaceous vegetation. Vegetation immediately adjacent to the river is more disturbed due to fluctuating water levels. Vegetation that is located approximately 5 m – 20 m from the river's edge is less disturbed as it is above the high-water level. Recent clearing of vegetation has occurred between the existing WTP and approximately 80 m north of the northern riverbank due to construction of a Manitoba Hydro transmission line, which will run east-west approximately 20 m south of the existing WTP (Appendix A, Figure 1).

Vegetation found within the provincial park is mostly composed of short, manicured lawns, shrubs, and small pockets of deciduous trees. Photographs showing vegetation within the PDA can be found in Stantec's Site Reconnaissance Summary Report (Appendix E). Appendix A, Figure 1 shows the PDA and where construction works will be located.

4.1.6 Fish and Fish Habitat

There are twelve (12) waterbodies within the RAA as described in Section 4.1.2: The Assiniboine River, the Assiniboine River Portage Diversion Floodway, Crescent Lake, East Blind Channel, East Outside Drain, Elm River, Mount Pleasant Drain, Garrioch's Creek, Arona Drain, Edwin Ditch, George Lake, and Flee Island Creek (see Appendix A, Figure 3). Milani (2013) classifies The Assiniboine River in the RAA as Class A stream habitat. Class A stream habitat is defined by the Manitoba Drain Maintenance Committee as habitat that provides direct, complex fish habitat with indicator fish species present. Direct



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habitat includes watercourses where fish can complete any of their life states (spawning, rearing, foraging, migrating, overwintering). Complex habitat includes any habitat that is not simple habitat, which is defined as linear channels with trapezoidal cross-sections, with fine uniform substrate and grassed banks or dikes. Indicator fish species include large-bodied fish species with sport, commercial, or domestic value, and any fish listed in Schedule 1 of the *Species at Risk Act*.

Observations collected during an aquatic site reconnaissance visit (Appendix E) indicated that the Assiniboine River in the PDA provides good quality habitat with the potential to suit the life history requirements of many fish species known to occur in the Assiniboine River. Local fisherman encountered at the time of the visit also confirmed the presence of walleye (*Sander vitreus*), northern pike (*Esox lucius*), and freshwater drum (*Aplodinotus grunniens*) (Stantec 2024d).

For the purposes of this report, aquatic species of conservation concern (SOCC) are species listed as Endangered, Threatened, or Special Concern on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or with Conservation Status Rankings of S1, S2, or S3. Species at Risk (SAR) are species listed as Endangered, Threatened, or Special Concern on Schedule 1 of the *Species at Risk Act* and species listed as Endangered, Threatened, or Special Concern on Manitoba’s *The Endangered Species and Ecosystems Act* (MESEA).

Table 4.5 lists fish species with known occurrence in the Assiniboine River watershed as well as aquatic SOCC and SAR. Four (4) aquatic SOCC with known occurrence within the Assiniboine River watershed are banded killifish (*Fundulus diaphanus*), lake sturgeon (*Acipenser fulvescens*), wabash pigtoe (*Fusconaia flava*), and white heelsplitter (*Lasmigona complanata*). Two (2) SAR with known occurrence within the Assiniboine River watershed are bigmouth buffalo (*Ictiobus cyprinellus*) and mapleleaf mussel (*Quadrula quadrula*).

Table 4.5 Fish Species Identified in the Assiniboine River Watershed

Common Name ¹	Scientific Name ¹	Federal Status		Provincial Status	
		SARA ²	COSEWIC ³	MESEA ⁴	MB CDC ⁵
Fish					
Banded killifish	<i>Fundulus diaphanus</i>	No status	Not assessed	Not listed	S2
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	Special Concern ⁶	Special Concern ⁶	Not listed	S5
Bigmouth shiner	<i>Ericymba dorsalis</i>	No status	Not assessed	Not listed	S4
Black bullhead	<i>Ameiurus melas</i>	No status	Not assessed	Not listed	S5
Blackside darter	<i>Percina macuata</i>	No status	Not assessed	Not listed	S5



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Common Name ¹	Scientific Name ¹	Federal Status		Provincial Status	
		SARA ²	COSEWIC ³	MESEA ⁴	MB CDC ⁵
Blackchin shiner	<i>Miniellus heterodon</i>	No status	Not assessed	Not listed	S4
Blacknose shiner	<i>Notropis heterolepis</i>	No status	Not assessed	Not listed	S5
Blackside darter	<i>Percina maculata</i>	No status	Not assessed	Not listed	S5
Brook stickleback	<i>Culaea inconstans</i>	No status	Not assessed	Not listed	S5
Brown bullhead	<i>Ameiurus nebulosus</i>	No status	Not assessed	Not listed	S5
Burbot	<i>Lota lota</i>	No status	Not assessed	Not listed	S5
Central mudminnow	<i>Umbra limi</i>	No status	Not assessed	Not listed	S5
Channel catfish	<i>Ictalurus punctatus</i>	No status	Not assessed	Not listed	S5
Chestnut lamprey	<i>Ichthyomyzon castaneus</i>	No status	Data Deficient	Not listed	SU
Common carp	<i>Cyprinus carpio</i>	No status	Not assessed	Not listed	SNA
Common shiner	<i>Luxilus cornutus</i>	No status	Not assessed	Not listed	S5
Creek chub	<i>Semotilus atromaculatus</i>	No status	Not assessed	Not listed	S5
Emerald shiner	<i>Notropis atherinoides</i>	No status	Not assessed	Not listed	S5
Fathead minnow	<i>Pimephales promelas</i>	No status	Not assessed	Not listed	S5
Finescale dace	<i>Chrosomus neogaeus</i>	No status	Not assessed	Not listed	S5
Flathead chub	<i>Platygobio gracilis</i>	No status	Not assessed	Not listed	S5
Freshwater drum	<i>Aplodinotus grunniens</i>	No status	Not assessed	Not listed	S5
Goldeye	<i>Hiodon alosoides</i>	No status	Not assessed	Not listed	S5
Goldfish	<i>Carassius auratus</i>	No status	Not assessed	Not listed	SNA
Golden rehorse	<i>Moxostoma erythrurum</i>	No status	Not assessed	Not listed	S4
Golden shiner	<i>Notemigonus crysoleucas</i>	No status	Not assessed	Not listed	S5
Iowa darter	<i>Etheostoma exile</i>	No status	Not assessed	Not listed	S5
Johnny darter	<i>Etheostoma nigrum</i>	No status	Not assessed	Not listed	S5
Lake chub	<i>Couesius plumbeus</i>	No status	Not assessed	Not listed	S5
Lake sturgeon	<i>Acipenser fulvescens</i>	No status	Endangered	Not listed	S2
Longnose dace	<i>Rhinichthys cataractae</i>	No status	Not assessed	Not listed	S5
Mooneye	<i>Hiodon tergisus</i>	No status	Not assessed	Not listed	S5
Ninespine stickleback	<i>Pungitius pungitius</i>	No status	Not assessed	Not listed	S5
Northern pearl dace	<i>Margariscus nachtriebi</i>	No status	Not assessed	Not listed	S5
Northern pike	<i>Esox lucius</i>	No status	Not assessed	Not listed	S5



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Common Name ¹	Scientific Name ¹	Federal Status		Provincial Status	
		SARA ²	COSEWIC ³	MESEA ⁴	MB CDC ⁵
Northern redbelly dace	<i>Chrosomus eos</i>	No status	Not assessed	Not listed	S5
Quillback	<i>Carpiodes cyprinus</i>	No status	Not assessed	Not listed	S5
River darter	<i>Percina shumardi</i>	No status	Not assessed	Not listed	S5
River shiner	<i>Alburnops blennius</i>	No status	Not assessed	Not listed	S5
Rock bass	<i>Ambloplites rupestris</i>	No status	Not assessed	Not listed	S5
Sand shiner	<i>Miniellus stramineus</i>	No status	Not assessed	Not listed	S5
Sauger	<i>Sander canadensis</i>	No status	Not assessed	Not listed	S5
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	No status	Not assessed	Not listed	S5
Silver chub	<i>Macrhybopsis storeriana</i>	No status	Not assessed	Not listed	S5
Silver redhorse	<i>Moxostoma anisurum</i>	No status	Not assessed	Not listed	S5
Smallmouth bass	<i>Micropterus dolomieu</i>	No status	Not assessed	Not listed	SNA
Spotfin shiner	<i>Cyprinella spiloptera</i>	No status	Not assessed	Not listed	S4
Spottail shiner	<i>Hudsonius hudsonius</i>	No status	Not assessed	Not listed	S5
Stonecat	<i>Noturus flavus</i>	No status	Not assessed	Not listed	S5
Tadpole madtom	<i>Noturus gyrinus</i>	No status	Not assessed	Not listed	S5
Trout-perch	<i>Percopsis omiscomaycus</i>	No status	Not assessed	Not listed	S5
Walleye	<i>Sander vitreus</i>	No status	Not assessed	Not listed	S5
Western blacknose dace	<i>Rhinichthys obtusus</i>	No status	Not assessed	Not listed	S5
White sucker	<i>Catostomus commersoni</i>	No status	Not assessed	Not listed	S5
Yellow perch	<i>Perca flavescens</i>	No status	Not assessed	Not listed	S5
Mussels					
Mapleleaf	<i>Quadrula quadrula</i>	Threatened	Threatened	Endangered	S1
Wabash pigtoe	<i>Fusconaia flava</i>	No status	Not assessed	Not listed	S3
White heelsplitter	<i>Lasmigona complanata</i>	No status	Not assessed-	Not listed	S3

Notes:

- ¹ Species information from Stewart and Watkinson (2004) and Page et al. (2023)
- ² *Species at Risk Act* Public Registry (GoC 2024c)
- ³ Committee on the Status of Endangered Wildlife in Canada (GoC 2024d)
- ⁴ Manitoba's *The Endangered Species and Ecosystems Act* SAR listing (GoM 2023a)
- ⁵ NatureServe Conservation Status Assessment (NatureServe n.d.); ranks are:



S = Province-wide status

1 = At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

2 = At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

3 = At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

4 = At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

5 = At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.

U = No status rank

⁶ Saskatchewan – Nelson River populations of lake sturgeon and bigmouth buffalo (GoC 2024d)

4.1.7 Terrestrial Wildlife

Typical terrestrial wildlife of the Lake Manitoba Plain Ecoregion includes coyote (*Canis latrans*), ground squirrels (*Marmotini*), rabbits (*Oryctolagus cuniculus*), waterfowl (*Anseriformes*), and white-tailed deer (*Odocoileus virginianus*) (Smith et al. 1998).

The PDA is located within the South-Central Geographic Region 10 km x 10 km Survey Square 14NA43 according to the Atlas of the Breeding Birds of Manitoba (Artuso et al 2010-2014). Within Survey Square 14NA43, there are 31 confirmed, 30 probable, and 27 possible breeding bird species. Confirmed species within the survey square include mallard (*Anas platyrhynchos*), barn swallow (*Hirundo rustica*), and mourning dove (*Zenaid macroura*). The primary nesting period for migratory birds in the RAA is April 18th to August 28th (Nesting Zone B4; GoC 2024e).

One (1) terrestrial wildlife SOCC and 22 SAR have the potential to occur in the RAA. **Table 4.6** lists the terrestrial wildlife SOCC with potential to occur within the RAA. For the purposes of this report, terrestrial species of conservation concern (SOCC) are species listed as Endangered, Threatened, or Special Concern on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or with Conservation Status Rankings of S1, S2, or S3. Species at Risk (SAR) are species listed as Endangered, Threatened, or Special Concern on Schedule 1 of the *Species at Risk Act* and species listed as Endangered, Threatened, or Special Concern on Manitoba's *The Endangered Species and Ecosystems Act* (MESEA).



Table 4.6 Terrestrial Wildlife SOCC with Potential to Occur within the RAA

Common Name	Scientific Name	Federal Status		Provincial Status	
		SARA ¹	COSEWIC ²	MESEA ³	MB CDC ⁴
Birds					
Bank swallow	<i>Riparia riparia</i>	Threatened	Threatened	-	S4
Barn swallow	<i>Hirundo rustica</i>	Threatened	Special Concern	-	S4B
Bobolink	<i>Dolichonyx oryzivorus</i>	Threatened	Special Concern	-	S3S4B
Canada warbler	<i>Cardellina canadensis</i>	Threatened	Special Concern	Threatened	S3
Chimney swift	<i>Chaetura pelagica</i>	Threatened	Threatened	Threatened	S2B
Common nighthawk	<i>Chordeiles minor</i>	Special Concern	Special Concern	Threatened	S2
Eastern wood-pewee	<i>Contopus virens</i>	Special Concern	Special Concern	-	S3B
Golden-winged warbler	<i>Vermivora chrysoptera</i>	Threatened	Threatened	Threatened	S3
Horned grebe	<i>Podiceps auritus</i>	Special Concern	-	-	S3
Least bittern	<i>Ixobrychus exilis</i>	Threatened	Threatened	Endangered	S2
Piping plover	<i>Charadrius melodus circumcinctus</i>	Endangered	Endangered	Endangered	S1
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Endangered	Endangered	Threatened	S3B
Sprague's pipit	<i>Anthus spragueii</i>	Threatened	Threatened	Threatened	S2
Western grebe	<i>Aechmophorus occidentalis</i>	Special Concern	Special Concern	-	S3B
Vertebrates					
American badger	<i>Taxidea taxus taxus</i>	Special Concern	Special Concern	-	S4
Little brown bat	<i>Myotis lucifugus</i>	Endangered	Endangered	Endangered	S2
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered	Endangered	Endangered	S2
Amphibians					
Northern leopard frog	<i>Lithobates pipiens</i>	Special Concern	Special Concern	-	S4
Western tiger salamander	<i>Ambystoma mavortium</i>	Special Concern	Special Concern	-	S4S5
Invertebrates					
Monarch	<i>Danaus plexippus</i>	Endangered	Endangered	-	S3S4B
Riverine clubtail	<i>Stylurus amnicola</i>	-	Special Concern	-	S3
Yellow-banded bumble bee	<i>Bombus terricola</i>	Special Concern	Special Concern	-	S3S5
Reptiles					



Common Name	Scientific Name	Federal Status		Provincial Status	
		SARA ¹	COSEWIC ²	MESEA ³	MB CDC ⁴
Prairie skink	<i>Plestiodon septentrionalis</i>	Special Concern	Special Concern	Endangered	S1

Notes:

- ¹ Species at Risk Act Public Registry (GoC 2024c)
- ² Committee on the Status of Endangered Wildlife in Canada (GoC 2024d)
- ³ Manitoba’s Species and Ecosystem at Risk (GoM 2023a)
- ⁴ NatureServe Conservation Status Assessment (NatureServe n.d.); ranks are:
 S = Province-wide status
 1 = Critically Imperiled: At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
 2 = Imperiled: At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
 3 = Vulnerable: At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
 4 = Apparently Secure: At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern because of local recent declines, threats, or other factors.
 5 = Secure: At very low risk of extinction or collapse due to an extensive range, abundant populations, or occurrences, and little to no concern from declines, threats, or other factors.
 B = Refers to the breeding population of the species.

4.2 Socio-Economic Environment

The RAA includes the LAA and PDA, the City of Portage la Prairie, and the communities of Southport and Skelding. Population of the City and RM of Portage la Prairie is 13,270 and 6,888 respectively (Statistics Canada 2023a, b) (Appendix A, Figure 3). The LAA includes the PDA and Dakota Tipi and Long Plain First Nation reserve lands, a portion of the City of Portage la Prairie, as well as rural farm/industrial and residential properties. The registered on-reserve population of Long Plain First Nation First Nation is 2,561 (GoC 2024f) and the registered on-reserve population of Dakota Tipi First Nation is 280 (GoC 2024g) (Appendix A, Figure 2). The PDA is located south of the City of Portage la Prairie and includes lands within the Portage Spillway Provincial Park, the Assiniboine River, and the existing WTP site, located at 130 Yellowquill Trail, Portage la Prairie (Appendix A, Figure 1).

4.2.1 Indigenous Nations

Indigenous nations within the LAA include the Manitoba Metis Federation, Dakota Tipi First Nation, and Long Plain First Nation. Beyond the RAA, approximately 32 km southwest of the City, the Dakota Plains Wahpeton First Nation also holds reserve lands.



Manitoba Metis Federation (MMF Local)

The Manitoba Metis Federation operates a Local Satellite Office in the City, providing services to Metis individuals as an extension of the Manitoba Metis Federation Southwest Regional Office.

Dakota Tipi First Nation (295)

In 1972, the Sioux Village Settlement near Portage la Prairie split into two First Nations; Dakota Tipi First Nation and Dakota Plains First Nation (Dakota Tipi First Nation 2012). The reserve land that falls within the LAA is Reserve Number 06443, approximately 670 m west of the PDA (Appendix A, Figure 2). The land is made up of 62 land parcels, including two buffer strip land parcels, one walkway land parcel, and one road land parcel, for a total area of approximately 36.7 ha of reserve land. Buildings located on the land include the Dakota Tipi Band Office, the Dakota Tipi Education authority, a gaming centre, tobacco shop, convenience store, and approximately 75 residential buildings. A baseball diamond, cemetery, outdoor rink, and park are also located within the reserve land. Dakota Tipi First Nation's total registered population is 480, with 280 people living on-reserve, 197 people living off-reserve, 2 people living on a different reserve, and 1 person living on no band crown land (GoC 2024f).

Long Plain First Nation (287)

Long Plain First Nation was created in 1876 after the signing of the adhesion to Treaty No. 1 of 1871. Prior to 1876, the people who located themselves at Long Plain First Nation were not an independent First Nation community, as fixed communities were not the style of living (Long Plain First Nation 2024). The reserve land that falls within the LAA is Keeshkeemaquah Reserve, approximately 780 m north of the PDA (Appendix A, Figure 2). The land is made up of six land parcels for a total of approximately 18.3 ha of reserve land. Buildings located on the land include a hotel, conference & gaming centre, health centre, the Long Plain First Nation Tribal Headquarters, and approximately 51 residential buildings. Band-owned business is managed by the Arrowhead Development Corporation (Arrowhead Development Corporation 2023). Long Plain First Nation's total registered population is 5,023, with 2,561 people living on-reserve, 2,403 people living off-reserve, and 59 people living on a different reserve (GoC 2024g).



4.2.2 Engagement

The City of Portage la Prairie hosted a public open house on February 6, 2025, between 3:00 PM and 7:00 PM. Advertisement of the open house occurred via the City's website and social media accounts, as well as paid advertisement in local news sources, including The Graphic Leader (Lilley 2025a) and PortageOnline (Blume 2025). Additional direct invitations to the public open house were sent to 42 individuals/organizations, representing the above-referenced First Nations and MMF, the province and various companies, municipalities, institutions. During the open house, a handout showing the water treatment plant upgrade's impact on water rates was provided to attendees. A total of 13 storyboards were presented to highlight the technical and financial information related to the Project (see Appendix F).

Coverage of the open house occurred via online websites and news sources, including The Graphic Leader (Lilley 2025b), PortageOnline (Baer 2025), and the City of Portage la Prairie website (2025). These sources showed mostly positive or neutral feedback on the Project, due to the need to increase the capacity of the WTP. One concern noted in PortageOnline (Baer 2025) was regarding the Project's impact on water bills. A response was provided by the City, indicating that a water rates study would be undertaken once the Project is complete, and that water rates would only be altered after project completion.

Following the open house, the City contacted Dakota Tipi First Nation, Dakota Plains Wahpeton Nation, Long Plain First Nation, and the Portage local Manitoba Metis Federation, by letter to advise them of the Project and invite direct feedback and consultation. No response to the letters has been received at the time of this report, however letters of support for the project have been provided by Dakota Tipi First Nation, Dakota Plains Wahpeton Nation, and Long Plain First Nation (copies included with the open house materials in Appendix F).

A review of the City of Portage la Prairie's council meeting minutes between February 12, 2024, and February 10, 2025, was conducted for public comments regarding the Project (City of Portage la Prairie n.d.). A formal letter of objection was submitted by a stakeholder, expressing concerns about the insufficient information provided to rate payers regarding the future rate increases to be used for partial funding of the Project.

On December 9, 2024, the City council passed a resolution approving the Utility Borrowing Authority By-Law by giving Borrowing By-Law 24-8772 a first reading. Prior to the first reading, letters of notice were issued to key stakeholders, including the RM of Portage la Prairie, MWSB, CRWC, and several companies within the RM of Portage la Prairie to inform them of the Borrowing By-Law first reading.



During the same public hearing, the City passed another resolution requesting approval in principle from the Public Utilities Board (PUB) to issue debenture debt to fund the Project.

On December 24, 2024, the City applied to the PUB for approval to borrow in principle; approval was received on February 14, 2025, for funding of debenture servicing costs through utility rate surcharges. The City also applied to the Municipal Relations Board for approval to borrow in principle. The Board approved the City's borrowing by-law No 24-8772 on June 25, 2025 (order no E-25-073).

On April 11, 2025, the City had a conference call with Manitoba Parks Branch regarding the planned location of the new intake and pumphouse in the Portage Spillway Provincial Park. During the conference call, no objections to the Project were made by Manitoba Parks Branch, who instructed the City to file a Site Plan Permit Application.

On April 15, 2025, the City had a conference call with MTI regarding the Project. Points of interest raised by MTI in the call included potential Project effects on nearby dykes and berms and disturbance to the stilling basin downstream of the Assiniboine River Control structure. MTI advised the City to file a Provincial Water Infrastructure Permit Application.

4.2.3 Property and Land Use

Land use development in the RM of Portage la Prairie within the RAA is covered by the Rural Municipality of Portage la Prairie Planning Zoning By-law No. 3182 (2021). In the RM of Portage la Prairie, zoning for the PDA is designated as "AL – Agricultural Limited" zoning (RM of Portage la Prairie 2024). After a review of the Rural Municipality of Portage la Prairie Planning Zoning By-law No. 3182, no wording was interpreted as to interfere with the construction, erection, and location of the distribution facilities of a public utility (i.e. public works compounds and associated buildings) (RM of Portage la Prairie 2021).

Planning priorities of the City and RM of Portage la Prairie include effective management of natural resources, preservation of natural and heritage resources, maintaining an appropriate development mix, cost-effective and timely delivery of infrastructure services, protection of surface water and groundwater, and sustainable economic and community growth (Portage la Prairie Planning District 2024). The proposed raw water intake structure and related pumphouse is proposed to be constructed along the north bank of the Assiniboine River within the Portage Spillway Provincial Park, which is classified as a recreational park. With an area of 3.76 ha, 100% of this land falls under the "RD - Recreational Development" land use category (GoM 2023b). According to the Park Activities Regulation M.R. 141/96 of *The Provincial Parks Act*, a permit is required for any activity that damages or alters the land or



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significantly interferes with the environment in a provincial park. Activities requiring a permit include but are not limited to cutting trees, excavating, blasting or drilling, and installing water lines.

Land ownership within the PDA includes land owned by the City at the WTP Site, a portion of the Portage Spillway Provincial Park land administered by the Manitoba Provincial Parks branch, and land designated as a Provincial waterway administered by MTI (Appendix A, Figure 1).

Land use within the LAA consists of farmland, municipal industrial properties (Portage la Prairie public works yard and the Portage la Prairie WTP sludge pond), First Nations band properties (band office, etc.), two hotels (Microtel Inn and Suites, Days Inn), residential properties within the RM of Portage la Prairie, Dakota Tipi First Nation, and Long Plain First Nation, a dog park, and two recreational parks (Portage Spillway Provincial Park and Yellow Quill Provincial Park).

Land use adjacent to the PDA, includes residential properties (north), one hotel (Days Inn by Wyndham) (east), and municipal property (northwest). The Assiniboine River lies immediately south of the PDA with farmland, forest, and the WTP lime sludge ponds located along the south side of the Assiniboine River. Recreational/tourism activities within the Portage Spillway Provincial Park include picnic tables for eating/gathering, a popular fishing spot along the Assiniboine River (Stantec 2024d), and the Portage Spillway Loop Hiking Trail (AllTrails 2024).

4.2.4 Infrastructure and Services

The WTP supplies treated potable water to the municipal system via buried watermain lines located along the Yellowquill Trail (Cochrane Engineering 2004). Residences along the Yellowquill Trail have municipal water service, treated by the WTP, with connections located along the Yellowquill Trail (Cochrane Engineering 2006). Manitoba Hydro provides electrical services to these properties via overhead powerlines along the Yellowquill Trail. Based on drawings showing utility lines along the Yellowquill Trail (Stantec 2024c), there is no municipal sewer system along the Yellowquill Trail. Properties along the Yellowquill Trail are assumed to have septic fields or holding tanks. Domestic wastewater generated at the WTP is discharged via connection to the nearby Poplar Bluff forcemain (Cochrane Engineering 2004).

Road access to the WTP is provided by the Yellowquill Trail approximately 390 m south of the Trans-Canada Highway. The proposed intake structure location is approximately 50 m downstream of the Assiniboine River Control Structure on the north bank of the Assiniboine River. An access road extends south from the Yellowquill trail, running approximately 375 m to an approximately 2,000 m² parking lot within the Portage Spillway Provincial Park. An overhead powerline runs northeast-southwest through the



park, with one triple pole structure occurring within the park. According to Stantec (2024c), an outhouse (assumed to be a pit latrine) is located within the Portage Spillway Provincial Park.

The Portage la Prairie WTP is currently powered by Manitoba Hydro's local 12 kV system, stepped down to the working voltage of 600V. The WTP is also connected to existing natural gas infrastructure via a gas line that runs along the Yellowquill Trail. An overhead powerline connects to the WTP, with a single pole structure occurring within the PDA approximately 18 m west of the existing treated water pumphouse (Appendix A, Figure 1). In addition to the proposed Project, a new Manitoba Hydro overhead transmission line running east-west is proposed to be constructed approximately 20 m south of the existing WTP, with one transmission tower planned to be constructed within the PDA approximately 25 m south of the proposed pre-treatment building location (Appendix A, Figure 1).

4.2.5 Heritage Resources

There are many heritage and historic sites within the RAA, including but not limited to school sites, former residential school sites, cemeteries, statues, memorials, grain elevators, historic churches, homes, museums, and other buildings (Manitoba Historical Society 2024).

The Project location is near numerous known archaeological sites. Based on current heritage resource data, development within the PDA has the potential to impact heritage resources. Accordingly, a general inquiry request was submitted to the Historic Resources Branch of Manitoba Sport, Culture, Heritage & Tourism for review of the planned Project under Section 12(2) of *The Heritage Resources Act*. The findings of the review (Appendix E) indicate that the Historic Resources Branch has reason to believe that heritage resources may be encountered by the Project and recommends conducting a heritage resources impact assessment (HRIA) under a heritage permit, prior to the onset of on-site construction.

4.2.6 Aesthetics and Noise

The Project will include construction and operation of the new intake structure and pumphouse within the Portage Spillway Provincial Park, where recreational fishing, boating, and picnicking occurs (Discover Portage la Prairie N.d.). Photos showing the park and the intake structure portion of the PDA can be found in Stantec's Site Reconnaissance Summary (Appendix E). Existing noise levels within the park include light traffic from nearby roads but are dominated by the sound of water flowing through the Assiniboine River Control Structure.



5 Environmental Effects and Mitigation

5.1 Assessment of Environmental Effects

5.1.1 Biophysical

5.1.1.1 Atmosphere

There is potential for atmospheric effects from construction-related Project emissions, including volatile organic carbons (VOCs), greenhouse gases (GHGs) and fugitive dust generation. Project construction activities such as excavation, road transportation, clearing and grubbing, and ground restoration will generate emissions at the construction sites from fuel combustion and dust from ground disturbances along the PDA. Small personal transportation vehicles and equipment such as excavators, trenchless drilling and open cut excavation equipment, and dump trucks are examples of vehicles and equipment expected on-site during construction. Project operation activities that will generate emissions include the usage of electricity, intermittent/rare usage of backup generators, and small vehicle traffic.

Vehicle and equipment exhaust emissions are expected to result in a minor potential decrease in PDA/immediate LAA air quality. Construction vehicles are to be well maintained, and idling minimized to the extent practical. Dust suppression methods (i.e., water spraying or approved dust suppressants) will be used at the construction sites if dry conditions create excessive dust through excavation and trenching activities and transport of materials that could become a nuisance to nearby residents.

During the construction phase, construction equipment, vehicle exhaust, and equipment used during ground excavation and directional drilling are anticipated sources of GHG emissions. These GHG emissions consist primarily of carbon dioxide (CO₂) and smaller amounts of methane and nitrogen dioxide (NO₂). The tiny amounts of GHGs released by Project equipment in the PDA/LAA will be a negligible contribution to annual provincial and national GHG emission totals, respectively. The same potential impact would be relevant for decommissioning activities when undertaken. Operational emissions are anticipated to occur as a result of small vehicle traffic and intermittent/rare usage of backup generators (in times of power interruption and maintenance).

The decrease in air quality will be of negligible to low magnitude, short-term duration, occurring on a multiple irregular/continuous basis during work hours of the construction phase on a local scale (PDA/LAA), and is reversible upon construction completion, occurring within a disturbed context.



Operational emissions (including GHGs) are expected to be negligible, occurring on a multiple irregular basis during working hours within the PDA, and occurring within a disturbed context.

5.1.1.2 Surface Water

The Project includes *several* components, in or near, the Assiniboine River that could result in construction and operation effects on surface water in terms of quality and flow conditions. Construction of the proposed raw water intake structure, intake lines, and associated pumphouse will involve temporary cofferdam installation in order to isolate the work area from the Assiniboine River. Isolation of the work area will allow the required excavation and concrete work to proceed along the bank and below the high-water mark. Installation of the proposed rock weir will be conducted directly into the Assiniboine River below the high-water mark immediately downstream of the intake structure while installation of new concentrate/backwash discharge line(s) from the WTP to the Assiniboine River will require a new discharge structure(s) below the water in the Assiniboine River, downstream of the Newbury riffle. In addition, construction works for expansion of the WTP site have the potential to result in surface water effects through discharge of sediment-laden runoff to river-bound drains from the disturbed areas of the site during construction. Operationally, surface water effects can result from storm runoff and discharge of the concentrate/backwash from the treatment processes. All of these effects will require mitigation to protect aquatic habitat and aquatic life during construction and operation.

General mitigation measures for the Project's potential effects on surface water are outlined below and are based on the proposed design, however, the forthcoming review process with DFO is expected to detail more specific design mitigation measures for the protection of fish and fish habitat that will also relate directly to surface water.

Mitigation for in-water construction works - cofferdam installation/removal, riffle installation and discharge line installation for concentrate/backwash

A sheet pile cofferdam will be installed to isolate the construction area for the new water intake structure along the northern bank of the Assiniboine River. The isolation measures will ensure that sufficient flow is maintained in the remaining width of the Assiniboine River to sustain fish passage. Measures will be taken to reduce surface water effects of the installation (and removal) of the cofferdam including installation of the dam during appropriate timing windows to avoid spawning, turbidity monitoring, using turbidity curtains to prevent fish from entering the installation area and to reduce the potential for sediment dispersion to downstream fish habitat. Deployment of the turbidity curtain will also limit



sedimentation during dam installation. Any additional monitoring and fish salvage will be conducted from within the isolated area as necessary prior to/as part of dewatering.

The installation of the riffle structure will proceed during the appropriate timing windows with isolation measures installed. The riffle will be constructed utilizing clean rock fill. Turbidity monitoring will be conducted during installation so that activities can be modified if necessary to limit downstream turbidity increases. A sandbag wall will be built perpendicularly from the Assiniboine River Control Structure until the edge of where the Newbury riffle will be constructed. Half-river isolation will occur for construction of the Newbury riffle. During isolation of the northern half of the river, a sandbag wall will be installed from the edge of the perpendicular sandbag wall previously placed in the river to the bank of the northern shore. The northern gate of the Assiniboine River Control Structure will be closed, with the southern gate left open to maintain sufficient flow to sustain fish passage. The sheet pile cofferdam around the new water intake structure will potentially remain to let the concrete set, if necessary. Once the northern half of the Newbury riffle is constructed, the isolation of the southern half of the Assiniboine River will occur. The sandbag wall between the northern bank and the sandbag wall in the middle of the Assiniboine River will be moved so that it is placed between the sandbag wall in the middle of the Assiniboine River and the southern shore. The northern gate of the Assiniboine River Control Structure will be reopened, and the southern gate will be closed. Once the southern portion of the Newbury riffle is constructed, all sandbag walls will be removed from the Assiniboine River.

The inland portion of the concentrate/backwash pipeline(s) will be placed below the frost line (approximately 2.4 m below grade) by a combination of trenchless and open-cut excavation. Works associated with directional drilling and open-cut line installation near the Assiniboine River will include a plan for protection of surface water quality that will be provided as part of DFO's Review process for Projects Near Water and/or adherence to applicable Standards and Codes of Practice.

Construction-phase mitigation measures will include appropriate permits, advice, authorizations, and approvals obtained for the work from Transport Canada, Fisheries and Oceans Canada, and Manitoba Fisheries with monitoring and associated reporting conducted as required. Site isolation methods deemed appropriate for in-water work required by the Project will be implemented. With the implementation of erosion controls and additional site-specific mitigation measures for work adjacent to the Assiniboine River (as per DFO's Measures to Protect Fish and Fish Habitat).



Mitigation for on-site (out of water) construction works – erosion/sedimentation from disturbed areas of the construction site(s)

An erosion and sediment control plan will be developed for the construction of the Project to mitigate off-site migration of disturbed soils. During construction, surface drainage will be directed away from the excavations to minimize water accumulation on-site. Standard erosion/sedimentation controls will be implemented to mitigate off-site transport of sediments (i.e., silt fences and erosion control measures).

Mitigation for in-water operational works – concentrate/backwash discharge effect on water quality

The lowest mean monthly flow in the Assiniboine River (Near Portage la Prairie) is 15.0 m³/s (1,296,000 m³/day) occurring in the month of February (Table 4.3) and the highest is 161 m³/s (13,910,400 m³/day) in the month of May. The annual mean monthly flow in the Assiniboine River is 58.1 m³/s (5,019,840 m³/day, Table 4.3). According to waste stream characteristics shown in Table 2.1, total concentrate/backwash volumes are estimated to be 12,208 m³/day with a 95% backwash recovery rate. Typical operation at the WTP will involve a 95% backwash recovery rate, however, there may be temporary occurrences where operating conditions result in a 90% recovery rate (15,035 m³/day). These total concentrate/backwash volumes are equivalent to less than 1% of the lowest mean monthly flow in the Assiniboine River.

The Cartier Regional Water Cooperative Headingly WTP (Stantec 2014) also uses the Assiniboine River as a raw water source and employs treatment processes similar to those of the proposed Project. Accordingly, the UF backwash waste and RO concentrate characteristics are expected to be representative of those proposed for the Project. **Table 5.1** summarizes the anticipated backwash and concentrate water quality, CCME Canadian Water Quality Guidelines (CWQG) for the protection of freshwater aquatic life, and existing Assiniboine River water quality.



Table 5.1 Comparison of RO Concentrate and UF Backwash Effluent Quality Data to Historic Ranges and Guidelines

Parameter	Units	Estimated Backwash Waste Characteristics ¹	Estimated Reverse Osmosis Concentrate Characteristics ¹	Historic Maximum Assiniboine Raw Water Characteristics ²	Historic Median Assiniboine River Raw Water Characteristics ²	CCME CWQG Freshwater Aquatic Life	Manitoba Water Quality Standards, Objectives, and Guidelines
Calcium	mg/L	-	460	49.7 - 114	86.5	-	1,000 (livestock watering)
Total Hardness (as CaCO ₃) ₁	mg/L	619	2,450	175 - 582	429	-	-
Magnesium	mg/L	69.6	315	18.4 – 74.2	52	-	-
pH	pH units	8.4		7.8 – 8.7	8.4	6.5-9.0	6.5-9.0 (from CCME)
Sodium	mg/L	62.4	630	6.4 – 114.0	59.9	-	≤200 (drinking water)
Sulphate	mg/L	303	1,600	76 - 347	244	-	≤500 (drinking water) or 1,000 (Livestock)
Total Dissolved Solids	mg/L	391	5,360	270 - 987	669	-	≤500 (drinking water) or 3,000 (livestock)
Total Suspended Solids	mg/L	660	-	11.9 - 1460	63.6	Maximum increase of 5 mg/L when background levels are less than 25 mg/L, 25 mg/L when background levels are between 25 and 250 mg/L, 10% if background levels are ≥ 250 mg/L	Maximum increase of 5 mg/L when background levels are less than 25 mg/L, 25 mg/L when background levels are between 25 and 250 mg/L, 10% if background levels are ≥ 250 mg/L, 10% if background



Parameter	Units	Estimated Backwash Waste Characteristics ¹	Estimated Reverse Osmosis Concentrate Characteristics ¹	Historic Minimum - Maximum Assiniboine River Raw Water Characteristics ²	Historic Median Assiniboine River Raw Water Characteristics ²	CCME CWQG Freshwater Aquatic Life	Manitoba Water Quality Standards, Objectives, and Guidelines
Turbidity	NTU	-	-	6.6 – 425.0	32.5	Maximum increase of 10% of background levels	levels are ≥ 250 mg/L (from CCME) Equivalent induced levels of change as calculated from site-specific or regional-specific correlation between total suspended sediment and turbidity (from CCME).

Notes:

¹ Stantec 2014

² From Table 4.2

CWQG = Canadian Water Quality Guidelines

Sources: CCME 1987a,b,c,d,e, 1997, 2002, 2011a,b, 2019, MWSP 2023, GoM 2011



The following calculation was used to provide estimates of water quality at the end of the concentrate/backwash discharge mixing zone in the Assiniboine River:

$$C = [Q_e C_e + ff(Q_s C_s)] / [Q_e + ff(Q_s)]$$

Where:

- Q_e = flow rate of concentrate/backwash effluent discharge
- Q_s = flow rate of receiving stream available for mixing
- C_e = concentration of substance in the concentrate/backwash effluent
- C_s = upstream concentration of a substance
- C = resultant instream concentration of a substance after mixing
- ff = fraction of flow (10% assumed for chronic guidelines)

Mixing zone concentrations (C) for the parameters of interest from Table 5.1 were calculated. Assuming that:

- The concentrate/backwash effluent (C_e) will be allowed to mix with at most 10% of the Assiniboine River flow (ff=10%)
- The lowest mean monthly flow (1,296,000 m³/day) was used as Q_s.
- The median values of the Assiniboine River historic raw water characteristics were used to represent C_s.
- A 90% backwash recovery rate (15,035.5 m³/day) was assumed to provide a conservative (larger) Q_e.

The fully mixed concentrations of the effluent parameters with CCME CWQG Freshwater Aquatic Life and Manitoba Water Quality Standards, Objectives, and Guidelines criteria were found to be:

- pH: 8.4
- Total Suspended Solids: 82.2 mg/L

The fully mixed concentrations of the effluent parameters with only Manitoba Water Quality Standards, Objectives, and Guidelines criteria were found to be:

- Calcium: 107.7 mg/L
- Sodium: 97.4 mg/L
- Sulphate: 335.3 mg/L
- Total Dissolved Solids: 966.5 mg/L

All fully mixed concentrations of the effluent parameters with applicable criteria fall below the referenced CCME-CWQG for Freshwater Aquatic Life and the Manitoba Water Quality Standards, Objectives, and



Guidelines and Manitoba Water Quality Standards, Objectives, and Guidelines, with the exception of turbidity and total dissolved solids.

There is no estimated concentrate/backwash effluent quality data for turbidity. However, as turbidity is closely related to total suspended solids (which fall within CCME-CWQG for Freshwater Aquatic Life), it is assumed that turbidity will also fall within CCME-CWQG for Freshwater Aquatic Life once the Project is operational.

Although the fully mixed concentration of total dissolved solids exceeds the Manitoba Water Quality Standards, Objectives, and Guidelines, it does fall within the historic Assiniboine River raw water range. Thus, discharging concentrate/backwash into the Assiniboine River would not increase the concentration of total dissolved solids beyond levels that have been previously found in the River.

The components of the concentrate/backwash effluent comprise those compounds already present within the Assiniboine River that are excluded from the raw water supply by the UF and RO treatment processes as well as residual compounds related to maintenance of the processes (as described in Table 5.1). The effluent quality and parameter concentrations are not anticipated to substantially change water quality in the Assiniboine River.

Potential adverse residual effects of the Project on Surface Water during construction (sedimentation in runoff and fish habitat effects of work in the river) are expected to be negligible, short-term in duration, limited to the PDA, multiple irregular in frequency, reversible, and occurring within a disturbed context. Residual operational effects on surface water quality (concentrate/backwash effluent discharge) are expected to be negligible to low, short-term in duration, limited to the LAA, continuous, reversible upon decommissioning, and occurring within a disturbed context.

5.1.1.3 Groundwater

During geotechnical investigations conducted for the Project, moderate groundwater seepage was encountered at depths of approximately 6.1 m and 7.9 m below ground surface (mbgs) (Stantec 2021a). During construction, excavation activities are expected to encounter groundwater as a result of the installation of the new raw water intake structure, the new wetwell/pumphouse, expansion of the pretreatment building, the new membrane building, and the related buried lines. Excavation dewatering will likely be required for the removal of collected precipitation and groundwater seepage. Groundwater seepage will be collected and pumped from the excavation. An engineered plan to dewater the excavations during construction will be developed by the contractor to allow construction to proceed, as part of the contract.



The closest wells to the PDA with known well depths are an observation well, approximately 160 m southeast of the PDA with a well depth of 11.9 m and a production well approximately 950 m northwest of the PDA with a well depth of 11 m (GoM 2025a)

Temporary dewatering of construction excavations will be conducted using pumps to control groundwater accumulation in the excavation and direct groundwater away from the excavation using the existing surface drainage network. Erosion and sedimentation control measures (e.g., use of filter bags, directing to vegetated areas) will be implemented to reduce erosion and off-site sediment transport. Pressure testing of the new underground concentrate/backwash discharge lines will be conducted prior to operation.

The effect on local groundwater users from project excavation and groundwater dewatering is anticipated to involve temporary changes in groundwater elevation in the PDA and the immediate surrounding LAA for construction-phase dewatering when/where excavation is required below local groundwater levels. With the deepest excavation work required for the Project occurring 10 m to 12 m below ground level (Stantec 2021a), nearby wells with a similar depth may be affected by the construction dewatering. Should this occur, temporary potable water supplies will be provided to affected water well users, as necessary. Based on proximity of the production well to the PDA (approximately 950 m), there is a low likelihood that the Project will have a functional effect on the production well. The observation well is considerably closer to the PDA than the production well (approximately 160 m). However, as the well is an observation well, it is assumed that the well will seldom be used. Therefore, there is a low likelihood that the Project will have a considerable effect on the well.

Potential residual effects from construction activities on groundwater are expected to be negligible, limited to the LAA, short-term in duration, being a single event, reversible upon decommissioning, and occurring within a disturbed context. During operation, no residual effects on groundwater are anticipated.

5.1.1.4 Soils and Terrain

Disturbance of soils within the PDA will occur due to excavation work resulting in potential soil mixing and compaction by construction equipment. Terrain will be minimally affected as the ground surface will be restored, where necessary, within the PDA. Topsoil will be stripped and stockpiled on-site for future use during restoration upon completion of construction works.

Excavation for the water and concentrate/backwash piping to approximately 2.4 m below grade may encounter silt, fill, sand, and clay. The water and concentrate/backwash piping will be installed by open-cut excavation and trenchless drilling. Excavation depth for the pumphouse is anticipated to be 10-12 m,



and may also encounter silt, fill, sand, and clay (Stantec 2021a). Effects to soil and terrain should be reduced by limiting off-road travel and excavation activities within the PDA to the Project footprint, to the extent practical, and through the implementation of erosion and sedimentation control measures. The surface of all excavated areas will be restored using stockpiled topsoil, where possible, and reseeded. In areas of fish habitat and along disturbed areas of the banks additional measures may be required as determined through the DFO review process. Excess material will be removed from the site. Pipe trenches will be backfilled and compacted, and topsoil and seed will be placed to re-establish growth.

Potential residual effects from construction activities on soils and terrain are expected to be negligible to low, limited to the PDA, short-term in duration, being a single event, reversible upon decommissioning, and occurring within a disturbed context. During operation, no residual effects on soils and terrain are anticipated.

5.1.1.5 Vegetation

Vegetation within the PDA mostly comprises disturbed habitat in a relatively small Project footprint of approximately 5 ha. Ground disturbance activities, such as clearing, stripping, and excavating will disturb the existing vegetation (including deciduous trees, shrubs, and herbaceous vegetation) during construction. Effects on vegetation include habitat loss, with approximately 0.7 ha of land expected to be cleared for construction of the intake structure and Newbury riffle, and approximately 1.2 ha of land expected to be cleared for construction of the new membrane building and concentrate/backwash discharge pipeline. A total additional area of approximately 1.9 ha will be cleared for the Project (Appendix A, Figure 1).

As described in Section 4.1.5, four (4) vegetation SOCC have the potential to occur within the PDA based on their preferred habitat and may be affected by project activities. Other vegetation species not designated as SOCC (as defined in this report) with preferred habitat that occurs within the PDA may also be affected by project activities. However, due the small footprint of the PDA (approximately 5 ha), the amount of area to be cleared (approximately 1.9 ha), and the disturbed nature of the PDA, it is unlikely that construction activities at the Project site will result in loss of vegetation SOCC within the RAA. As the approximately 1.9 ha of land being cleared for the Project is small in comparison to the amount of land within the RAA (approximately 31,400 ha), it is unlikely that there will be a loss of species within the RAA that have preferred habitat similar to that within the PDA. Prior to construction, seasonally appropriate site-specific surveys to identify vegetation SOCC will be conducted to confirm the presence and absence of SOCC; additional mitigation measures will be developed as necessary if vegetation SOCC are



identified (setback distances, transplanting etc.). During operation, activities affecting vegetation on the Project site will include mowing and vegetation maintenance consistent with existing on-site practices.

Potential residual effects from construction activities on vegetation are expected to be low, limited to the PDA, medium-term in duration, being a single event, reversible upon decommissioning, and occurring within a disturbed context. During operation, residual effects from maintenance activities (mowing) are expected to be negligible, limited to the PDA, short-term in duration, being a multiple regular event, reversible upon decommissioning, and occurring within a disturbed context.

5.1.1.6 Fish and Fish Habitat

The Project will transfer water on a continuous basis from a new raw water intake structure to the WTP via buried water piping. Potential construction effects on fish and fish habitat include direct fish mortality due to placement of materials and structures for in-water works (intake structure sheet pile installation, bank excavation, and placement of riffle structure), habitat removal and disruption by in-water works (construction of the intake, riffle, and temporary isolation measures over existing habitat), and water quality and substrate effects of erosion and deposition of sediments from construction activities (excavation and earthwork activities, equipment/vehicle movement, stockpiling of materials, exposed surface run-off, in-water works) into surface water bodies utilized by fish. Potential operational effects on fish and fish habitat include mortality caused by entrainment in the intake, barrier to fish passage from the proposed riffle, and water quality effects from concentrate/backwash water discharge. The effects on fish and fish habitat will be detailed in the Request for Review and subsequent approvals (including Request for Authorization [RfA] if necessary) to be obtained from DFO prior to proceeding with in-water/near-shore works.

Mitigation measures proposed for surface water quality effects were described in Section 5.1.1.2. Additional mitigation measures relevant to fish and fish habitat are described below.

Construction Mitigation Measures

A review(s) and/or authorization(s) under the *Fisheries Act* will be obtained prior to proceeding with in-water work. Site-specific mitigation measures to avoid the harmful alteration, disruption, or death (HADD) of fish and fish habitat will be implemented for construction within the Assiniboine River as determined through the DFO RfR, and subsequent approvals processes, based on the final Project design.

Project-related disturbance activities to fish and fish habitat can be partially mitigated by avoiding in-water construction work during the spawning window for fish species in southern Manitoba – April 1 to June 30



(spring and summer spawners (DFO 2013). In-water or near-water work will be described in the RfR and include measures such as those described in DFO's Measures to Protect Fish and Fish and Standards and Codes of Practice (DFO 2024). Site isolation methods and fish exclusion/recovery methods, appropriate for the construction of the in-water works, will also mitigate fish and fish habitat effects during construction. A live fish handling permit will be obtained for fish recovery work as applicable. The duration of in-water works will be limited to portions for the 29-month construction period.

Habitat removal from the installation of the water intake structure and the riffle structure as well as the temporary isolation measures is expected to result in a need for authorization from DFO and likely require mitigation in the form of offsetting or other compensation measures. Specifics of the mitigation measures will be determined in the course of obtaining approvals for the works from DFO (via RfR and RfA submission).

An erosion and sediment control plan will be developed for the construction of the Project to mitigate off-site migration of sediment from disturbed soils to surface water bodies as well as releases of sediment from isolated areas to downstream fish habitat. In addition, a monitoring plan will be developed for turbidity and visual signs of potential frac-out during trenchless drilling.

Operational Mitigation Measures

The Assiniboine River provides habitat and migration for many fish species (see Section 4.1.6). These species generally fall into four swim groups: Catfish and Sunfish (channel catfish, rock bass), Eel (burbot, lamprey), Pike (northern pike), and Salmon & Walleye (others) (Katopodis and Gervais 2016). Of these, the Eel swimming group includes the species with the lowest performance in both burst and sustained swimming. Design of the intake screens was based on DFO's Freshwater End-of-Pipe Fish Screen Guidelines (DFO 1995) and the Interim Code of Practice for End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater (DFO 2020). While the woven wire mesh openings in the intake structure will exclude most fish greater than 25 mm, those individuals (such as those in the Eel and Pike swim groups) that may be drawn into the wetwell will be separated by a screen and returned to the Assiniboine River via the fish return system.

According to Stantec's Raw Water Intake Memorandum (2025), geometry of the Newbury Riffle will have a V-shaped cross-section to allow higher proportions of flow to enter the higher-velocity centre of the riffle, with lower proportions of flow entering the lower-velocity sides of the rifle. The V-shaped riffle also allows for low-flows to provide adequate swimming depth for downstream migration, providing protection against fish stranding between the riffle and the upstream control structure. This riffle geometry is



anticipated to provide continuous paths for fish migration with depths of no less than 0.2 m and velocities of no greater than 0.5 m/s (Stantec 2025).

Based on calculated hydrodynamic conditions and minimum fish lengths, the Newbury riffle could inhibit upstream migration of the Eel swim group. However, hydraulic modelling conducted for the design of the Newbury riffle does not have the resolution to capture interstitial flow between cobble and boulder substrate, which slower fish (including those in the Eel swim group) would likely be able to migrate through. Additionally, upstream migration for all fish species is currently limited by the Assiniboine River Control Structure. Thus, species within the Eel swim group unable to traverse through interstitial flow between cobble and boulder substrate would only lose migration access to the approximately 100 m reach of the Assiniboine River channel between the Newbury riffle and the Assiniboine River Control Structure.

As described in Section 5.1.1.2, concentrate/backwash discharge effects on water quality are anticipated to be within the CCME criteria and the historic water quality range of the Assiniboine River, and therefore significant adverse effects on fish and fish habitat from changes in water quality are not expected.

Potential residual effects from construction activities on fish and fish habitat are expected to be negligible to low (mitigated as determined via DFO approval), limited to the LAA, short-term in duration, multiple irregular in frequency, reversible upon decommissioning, and occurring within a disturbed context. Potential residual operational effects on fish and fish habitat are expected to be negligible to low, limited to the LAA, continuous, short-term, reversible upon decommissioning, and occurring within a disturbed context.

5.1.1.7 Terrestrial Wildlife and Wildlife Habitat

The proposed Project will be located within a mostly disturbed habitat and treed area. Ground disturbance activities, such as clearing, stripping, and excavating will disturb or displace wildlife. During construction, potential effects to terrestrial wildlife and wildlife habitat include habitat loss and sensory disturbances, such as noise and vibration. Approximately 0.7 ha of land is expected to be cleared for construction of the intake structure and Newbury riffle, and approximately 1.2 ha of land is expected to be cleared for construction of the WTP new membrane building and concentrate/backwash discharge pipeline, with a total area of 1.9 ha cleared for the Project (Appendix A, Figure 1). Terrestrial wildlife species that use the LAA can be affected by increased collision potential caused by construction of the Project. During operation, additional effects on terrestrial wildlife and wildlife habitat are anticipated to be negligible. The RAA has the potential to support a variety of terrestrial wildlife species that are well adapted to an



agricultural environment, such as white-tailed deer, coyote, and wildlife SAR/SOCC including barn swallow, northern leopard frog, and bird species that prefer agricultural and modified habitat.

As the proposed Project is within a mostly disturbed setting and existing land use has marginalized much of the habitat for terrestrial wildlife, the Project is expected to have a minimal effect on native terrestrial wildlife habitat due to the mostly disturbed location and relatively small Project footprint. The 29-month construction period and the presence of a large area of similar habitat available for temporarily displaced wildlife serve to mitigate the effects on terrestrial wildlife and wildlife habitat. Noise effects will be partially mitigated by limiting vehicle idling during construction and by adhering to noise bylaws (see Section 5.1.2.4). The potential for increased effects on terrestrial wildlife mortality from traffic collisions is anticipated to be small. The Project vehicles/equipment are expected to be operated during daylight and make up a slight increase in overall traffic on the roads in the LAA.

Project construction is planned to occur over the period of March 2026 to August 2028. Project-related disturbance activities to avian wildlife can be reduced by conducting clearing activities outside of the sensitive breeding window for migratory bird wildlife species – April 18th to August 28th (GoC 2024e). A nest sweep of the area will be conducted prior to construction (if occurring during the applicable breeding window) to determine necessary measures to mitigate noise effects on wildlife such as setback distances and activity restrictions.

A search of the Manitoba Herps Atlas database (NatureNorth 2021) did not reveal the presence of amphibians or reptile species within the PDA; however, the absence of data from the database does not confirm the absence of listed species. Due to the proximity of the Assiniboine River, riparian habitat, and pond habitat, there is potential for amphibian and reptile species to occur in the PDA.

As the Site to be developed is currently mostly disturbed habitat with primarily municipal and recreational use, the potential effect on terrestrial wildlife and wildlife habitat from the Project during construction is anticipated to be low, limited to the LAA, short-term in duration, multiple irregular in frequency, reversible upon decommissioning, and occurring within a disturbed context. During operation, residual effects from maintenance activities due to noise (mowing, generator maintenance, etc.) are expected to be negligible to low, limited to the LAA, short-term in duration, being a multiple regular event, reversible upon decommissioning, and occurring within a disturbed context.



5.1.2 Socio-economic

5.1.2.1 Property and Land Use

Development of the proposed Project will result in land use alteration of the existing Portage Spillway Provincial Park. According to Section 8 of the Park Activities Regulation MR 141/96 of *The Provincial Parks Act*, c. P20, a permit will be required to undertake activities that alter the land or significantly interfere with the environment in a provincial park, including excavating, blasting, or drilling, cutting trees, installing water lines, constructing roads, and snow clearing on roads. During construction, access to the park may be restricted/hindered for construction safety and, until construction is completed, space for recreational fishing within the PDA will be decreased. However, the impact on property and land use is not anticipated to be significant, as there is suitable space for recreational fishing further downstream and across the Assiniboine River. Once construction is completed and operations begin, a minor additional use of the parking area is anticipated for a few vehicles involved in maintenance/servicing the pumphouse.

The potential effect of the Project on Property and Land Use during construction and operation is expected to be a continuous, adverse, low magnitude event, limited to the LAA and short-term in duration, reversible upon decommissioning, and occurring within a disturbed context.

5.1.2.2 Infrastructure and Services

During construction, there will be a negligible increase in Project-related traffic within the RAA, but a low increase within the LAA. Traffic flows will increase along Yellowquill Trail, the access road between Yellowquill Trail and Portage Spillway Provincial Park, and provincial highways leading to the PDA due to travel from construction workers, supply vehicles, intermittent materials delivery, and transport of construction debris and spent packaging materials offsite. A temporary detour at the Portage Spillway Provincial Park parking lot entrance may be required, and temporary road closures approaching the park (Yellowquill Trail) and within the park may be required. Existing utilities and other existing infrastructure are not anticipated to be disrupted. The operation of the upgraded WTP aids in the ability to provide water services for the City and regional customers. Construction of the proposed raw water line, fence, and reverse backwash/concentrate discharge piping will be constructed so as not to interfere with the proposed Manitoba Hydro overhead transmission line being constructed approximately 20 m south of the existing WTP.



During construction, potential adverse effects of the Project on infrastructure and services are expected to be low magnitude events of multiple irregular frequency (traffic disruptions from construction vehicles and park access limitations), limited to the LAA over the short-term. Operational effects will be negligible, of a multiple irregular frequency (increased traffic servicing the WTP) extending over the LAA, long-term in duration, reversible upon decommissioning, and occurring within a disturbed context.

5.1.2.3 Heritage Resources

During construction, potential effects to heritage resources include the accidental disruption of heritage resources. Correspondence with the government of Manitoba's Historic Resources Branch (HRB) indicates there is reason to believe that development within the PDA has the potential to impact heritage resources. To mitigate the potential impact on Heritage Resources, the proponent (the City) will conduct a pre-impact heritage resource assessment and an HRIA prior to the onset of Project construction, according to Section 12(2) of *The Heritage Resources Act*, with an obligation to report any damage to heritage resources (Appendix D). During Heritage Resources investigations, potential collaboration with Dakota Tipi First Nation, Long Plains First Nation, and Fort la Reine Museum curators will be explored to ensure heritage resources will be handled in accordance with procedures to be outlined in a Heritage Resource Protection Plan (HRPP).

The potential effect of the Project on heritage resources during construction is expected to be a single, adverse, low magnitude event, limited to the PDA and long-term in duration, irreversible upon decommissioning, and occurring within a disturbed context. During operation, no residual effects on heritage resources are anticipated.

5.1.2.4 Aesthetics and Noise

Aesthetics of the Portage Spillway Provincial Park will be altered due to the construction of the intake structure and pumphouse. During construction, the removal of vegetation, construction staging and on-site equipment, and the presence of the concrete intake structure will have an effect on aesthetics. During operation, the visible portion of the concrete intake structure, pumphouse, and WTP expansion will have an effect on aesthetics.



There is potential for noise effects in the immediate area from the operation of construction equipment and vehicles. Noise effects could cause temporary disturbance to residents and wildlife within the LAA. During operation, an emergency back-up generator will be installed outside the pumphouse. The emergency generator will only be used during power outages and when testing is scheduled. Testing would occur approximately once per month, with the generator operating for less than an hour. Other noise producing equipment associated with the pumphouse and the WTP expansion will be contained within the on-site buildings and are not anticipated to have an effect on noise.

Mitigation measures associated with aesthetics include reseeding and restoring the cleared vegetation and designing the intake structure and WTP expansion to complement the visual aesthetic of the existing WTP buildings.

Adjacent landowners will be advised of the construction schedule and the potential for temporary traffic disruptions for vehicle movements or equipment deliveries and operations. Local municipal noise by-laws will be adhered to for construction activities. During construction, noise effects will be partially mitigated by limiting vehicle idling during construction.

The potential effect of the Project on Aesthetics and Noise is expected during construction to be a multiple irregular, adverse, low magnitude event, limited to the LAA and short-term in duration, reversible upon decommissioning, and occurring within a disturbed context. During operation, potential effects of the Project are expected to be continuous, adverse, low magnitude event, limited to the LAA and short-term in duration, reversible upon decommissioning, and occurring within a disturbed context.

5.1.3 Summary of Mitigation Measures

Proposed mitigation measures incorporated as part of this EAP include general mitigation measures that are typically applied during Project construction and operation. Additional mitigation measures specific to work near water and in-water works will be identified through DFO's review process through the RfR submission for the concentrate/backwash discharge outfall. Mitigation measures to be employed to prevent or mitigate adverse effects identified in the sections above include the following:

- Conduct seasonally appropriate site-specific surveys to identify SOCC and appropriate mitigation measures prior to construction proceeding
- Fuel for construction equipment will be supplied by fueling trucks regulated under *The Storage and Handling of Petroleum Products and Allied Products Regulation*.



- Records of fuel volumes and an emergency response plan including spill prevention, notification and response will be implemented as a part of the construction specifications and enforced at the construction sites.
- Contractor will implement an Emergency Response Plan in the event of a major reportable spill to MECC.
- Maintain all vehicles and equipment in good operating condition.
- Reduce unnecessary idling of vehicles and equipment on-site.
- Limit vehicle/equipment movement to the Project Site.
- Limit vehicle access to existing access roads and rights-of-way.
- Utilize an approved dust suppressant and limit construction activities during high winds.
- Surface drainage will be directed away from the excavations to minimize water accumulation on-site.
- Collect and properly dispose of concrete and concrete wash water off-site away from surface water bodies or implement proper surface infiltration measures.
- Implement best management erosion control measures (e.g., silt fences) to manage surface water runoff as required during work activities.
- Groundwater management, such as dewatering, may be required during excavation works. Dewatering would be pumped to an adjacent surface water drainage ditch system.
- Maintain a 100 m setback from watercourses for all fueling and servicing activities.
- Maintain proper storage of all waste materials, including hazardous waste materials, for proper disposal at a licensed waste disposal site.
- Pressure test underground pipelines prior to operation.
- In-water work should occur outside of the restricted activity timing windows developed by DFO for the protection of fish and fish habitat. Restricted activity timing windows applicable to the Project are September 15 – June 30 for spring and summer spawning species.
- In-water or near-water work should adhere to DFO's Measures to Protect Fish and Fish Habitat and DFO Standards and Codes of Practice.
- Additional mitigation measures identified through DFO RfR and RfA process will be incorporated and applied to the Project.
- Limit the height of material stockpiles and cover to reduce the area of exposed soil.



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- Separate topsoil and organic soils for reuse and ground restoration.
- Surface disturbance will be limited to the Project site to the extent possible.
- Limit any clearing, stripping, and excavating to the construction area.
- Efforts should be made during construction to limit riparian vegetation removal along watercourses in the Project area.
- Direct damage to vegetation outside of the work area will be avoided.
- Contractor will band trees adjacent to the work site to prevent damage from construction activities.
- Riparian areas and disturbed natural vegetation should be re-vegetated and restored to their natural state using native species well-adapted to the growing conditions at the sites.
- Vegetation removal activities will be avoided during the migratory bird nesting period (April 18 to August 28). If activities must be undertaken during this period, a qualified biologist will conduct a preclearing nest sweep to identify site-specific mitigation measures.
- Workers should be aware of the potential for amphibian and reptile species to be present at the site and apply best management practices to prevent accidental mortality during construction.
- Construction activities will be limited to daylight hours only.
- Noise disturbance will be limited using appropriately muffled vehicles and equipment.
- Notify adjacent property owners of construction start and potential road closures for large vehicle movement or equipment deliveries.
- Identify equipment and material delivery routes and limit on-road parking by providing off-road parking areas for construction workers, as practical.
- Adhere to local speed limits and safe driving practices.
- Limit damage to municipal roads from increased construction traffic.
- All excavation works will comply with the Province of Manitoba's *The Workplace Safety and Health Act* and the Guide for Excavation Work (Safe Work Manitoba 2021).
- An HRIA will be conducted by a qualified archaeological consultant under a heritage permit, as recommended by the HRB.
- Contractor will implement a HRPP on-site as recommended by the HRB. If heritage resources, objects or human remains, are exposed during construction, work at that location on-site will cease and the HRB or RCMP notified for a determination for further mitigation.



5.2 Summary of Residual Effects Characterization

A summary of residual environmental effects characterization is found in **Table 5.2**. Residual effects related to valued components are characterized.



Table 5.2 Summary of Residual Environmental Effects

Valued Component	Project Phase	Residual Environmental Effects Characterization						
		Direction	Magnitude	Geographical Extent	Duration	Frequency	Reversibility	Ecological and Socio-economic Context
Atmosphere	C/O	A	N-L/N	PDA-LAA/ PDA	ST	MI-C/MI	R	D
Surface Water	C/O	A	N/N-L	PDA/LAA	ST	MI/C	R	D
Groundwater	C	A	N	LAA	ST	S	R	D
Soils and Terrain	C	A	N-L	PDA	ST	S	R	D
Vegetation	C/O	A	L/N	PDA	MT/ST	S/MI	R	D
Fish and Fish Habitat	C/O	A	N-L	LAA	ST	MI/C	R	D
Terrestrial Wildlife and Wildlife habitat	C/O	A	L/N-L	LAA	ST	MI	R	D
Property and Land Use	C/O	A	L	LAA	ST	C	R	D
Infrastructure and Services	C/O	A	L/N	LAA	ST/LT	MI	R	D
Heritage Resources	C	A	L	PDA	LT	S	IR	D
Aesthetics and Noise	C/O	A	L	LAA	ST	MI/C	R	D

KEY

Project Phase

C Construction
 O Operation

Direction

P Positive
 A Adverse
 N Neutral

Magnitude

N Negligible
 L Low
 M Moderate
 H High

Geographical Extent

PDA Project Development Area
 LAA Local Assessment Area
 RAA Regional Assessment Area

Duration

ST Short-term
 MT Medium-term
 LT Long-term

Frequency

S Single event
 MI Multiple irregular event
 MR Multiple regular event
 C Continuous

Reversibility

R Reversible
 IR Irreversible

Ecological/Socio-Economic Context:

U Undisturbed
 D Disturbed

N/A Not applicable



5.3 Accidents and Malfunctions

The effects of accidents and malfunctions for the Project are primarily related to the potential for mechanical equipment failure, fuel or other chemical spills, and transportation accidents. During construction, there exists the potential for fires at the Project site involving mechanical equipment and fuels, potential for environmental effects due to fuel and chemical spills and/or leaks from equipment, and transportation accidents that can result in the release of vehicle fluids to the environment (i.e., diesel, gasoline, oils, etc.). Accidents and malfunctions can potentially result in harm to on-site personnel and damage to equipment. The release of contaminants and/or hazardous materials from equipment/vehicles and storage tanks due to leaks or improper storage and handling can potentially cause degradation of the environment and human health and safety.

The accidental release of drilling materials from trenchless drilling (i.e., frac-out) during construction has the potential to affect surface water. Accidental spills of contaminants including fuels and hazardous materials during construction have the potential to affect surface water. Groundwater quality has the potential to be affected by the accidental release of contaminants and improper storage and disposal of construction waste generated on-site.

Potential effects resulting from spills occurring in the construction phase are anticipated to be irregular and short-term in duration. Given the excavation depth of approximately 2.4 m below grade for the water and concentrate/backwash piping and the soil conditions within the Project area, the potential adverse effects from an accidental release during operation would be low, short-term, and limited to the PDA and surrounding LAA. Spills associated with the pumphouse will have a negligible effect on groundwater quality. Although the pumphouse will be excavated at a lower grade than the water and concentrate/backwash lines, the pumphouse will only contain raw water.

The potential for an increase in vehicle traffic along Yellowquill Trail, the access road between Yellowquill Trail and Portage Spillway Provincial Park, and provincial highways leading to the PDA over existing levels that could lead to transportation accidents is anticipated to be negligible. Measures to avoid adverse effects associated with fire/explosion, spills/releases and transportation accidents are as follows:

- Flammable waste and materials will be removed on a regular basis and disposed of at an appropriate licensed disposal facility.
- Appropriate fire extinguishers are available on-site during operations and are maintained to manufacturer's standards.



- Potentially hazardous materials are stored and managed at dedicated areas and labelled in accordance with applicable regulatory requirements.
- Hazardous materials are transported in accordance with the *Dangerous Goods Handling and Transportation Act* and used according to product-use instructions.
- Refueling of vehicles and equipment will adhere to proper procedures and will use designated refueling areas or will be refueled off-site.
- Emergency spill kits will be maintained on-site, and staff will be trained to properly deploy spill kit materials and cleanup spills.
- Inspections of hydraulic and fuel systems on equipment and machinery will be undertaken on a regular basis. Leaks detected will be repaired immediately by trained personnel.
- The pipelines will be regularly inspected and maintained to prevent leaks and failures.
- Existing traffic control measures (i.e., speed limits, signage) will be adhered to.
- The Contractor will maintain policies related to emergency preparedness, workplace hazardous materials information system (WHMIS) and spill response procedures.

Summary

To avoid accidents and malfunctions, the proposed facility alterations will be in accordance with regulatory requirements. The implementation of, and adherence to, measures outlined above to mitigate potential effects related to accidents and malfunctions will serve to reduce the likelihood of these events occurring.

5.4 Follow-Up and Reporting

The Project requires the general contractor and equipment suppliers to provide process guarantees, equipment, and construction related warranties which apply to the operation and performance of all structures, equipment, and process components related to the water and concentrate/backwash piping, water intake structure, and WTP upgrades. Following commissioning and acceptance testing, the contractor will report the results to the engineer. This is to confirm that the Project standards meet the requirements of the EAL. The contractor will also be responsible for ensuring vegetation regrowth occurs along areas disturbed by installation works after construction is complete. Monitoring will also be required for in-water works, as well as trenchless drilling and open-cut excavations close to the Assiniboine River.



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The WTP upgrades, water and concentrate/backwash piping, and raw water intake structure will be operated and maintained by certified operators by City staff.



6 Conclusions

The proposed Portage la Prairie WTP upgrades/expansion will treat water for the Project's design life. The potential for adverse environmental effects related to the proposed WTP upgrades/expansion for most environmental components were found to be negligible to low in magnitude for construction and operation. Once operational, the Project will result in long-term water treatment and supply for the City and regional customers.

Based on the desktop studies undertaken and information available to date as presented in this report, the Project is not expected to create significant adverse environmental effects.



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Appendices

Appendix A Figures

Appendix B

Certificates of Titles

STATUS OF TITLE

Title Number **1882317/3**
Title Status **Accepted**
Client File **WTP**



1. REGISTERED OWNERS, TENANCY AND LAND DESCRIPTION

THE CITY OF PORTAGE LA PRAIRIE

IS REGISTERED OWNER, SUBJECT TO SUCH ENTRIES RECORDED HEREON
IN THE FOLLOWING DESCRIBED LAND:

PARCEL B PLAN 40570 PLTO
IN RL 23 PARISH OF PORTAGE LA PRAIRIE AND
WL 371 AND 372 PARISH OF PORTAGE LA PRAIRIE
EXC ALL MINES, MINERALS AND OTHER RESERVATIONS
AS CONTAINED IN THE CROWN LANDS ACT

The land in this title is, unless the contrary is expressly declared, deemed to be subject to the reservations and restrictions set out in section 58 of *The Real Property Act*.

2. ACTIVE INSTRUMENTS

No active instruments

3. ADDRESSES FOR SERVICE

CITY OF PORTAGE LA PRAIRIE
97 SASKATCHEWAN AVE. E
PORTAGE LA PRAIRIE, MB.
R1N 0L8

4. TITLE NOTES

No title notes

5. LAND TITLES DISTRICT

Portage

6. DUPLICATE TITLE INFORMATION

Duplicate not produced

7. FROM TITLE NUMBERS

1680426/3 Part

8. REAL PROPERTY APPLICATION / CROWN GRANT NUMBERS

No real property application or grant information

9. ORIGINATING INSTRUMENTS

Instrument Type: **Transfer Of Land**
Registration Number: **1055924/3**

Registration Date: 2002-06-24
From/By: HER MAJESTY THE QUEEN IN RIGHT OF THE PROV. OF MANITOBA
To: THE CITY OF PORTAGE LA PRAIRIE
Consideration: \$2,000.00

10. LAND INDEX

Lot B Plan 40570
EXC RES

CERTIFIED TRUE EXTRACT PRODUCED FROM THE LAND TITLES DATA STORAGE
SYSTEM OF TITLE NUMBER 1882317/3

Appendix C Water Rights Licence

**Licence to Use Water for
Municipal
Purposes**



Issued in accordance with the provisions

The Water Rights Act and regulations made thereunder.

Project: Water Treatment Plant
Licence No.: **2023-073**
U.T.M.: 548086 E 5532900 N

Subject to the terms and conditions contained in this Licence, the Minister charged with administration of the Water Rights Act for the Province of Manitoba authorizes:

City of Portage la Prairie

in the Province of Manitoba (the "LICENSEE") to construct, operate, establish and maintain a project consisting of an intake, pump(s), transmittal pipeline(s) and other works specific to the type of use (the "WORKS") and to divert and use water from the **Assiniboine River** located on the following lands:

RL-23-PP

as more particularly located and shown on the attached Exhibit "A" for **Municipal** purposes on the following lands:

City of Portage la Prairie Service Area

This licence is issued upon the express condition that it shall be subject to the provisions of The Water Rights Act and Regulation and all amendments thereto and, without limiting the generality of the aforesaid, to the following terms and conditions, namely:

1. The water shall be used solely for **Municipal** purposes.
2. The WORKS shall be operated in accordance with the terms herein contained.
3. a) The maximum rate at which water may be diverted pursuant hereto shall not exceed **0.8700 cubic metres per second (30.72 cubic feet per second)**.
b) The total quantity of water diverted in any one year shall not exceed **18761.34 cubic decametres (15210.00 acre feet)**.
4. Upon notification to the LICENSEE by the Minister or the Minister's agents, the LICENSEE shall not divert water from the **Assiniboine River** during any period when the flow downstream of the pumping WORKS, is at or below a specified flow rate.
5. The LICENSEE does hereby remise, release and forever discharge His Majesty the King in Right of the Province of Manitoba, of and from all manner of action, causes of action, claims and demands whatsoever which against His Majesty the LICENSEE ever had, now has or may hereafter have, resulting from the use of water for **Municipal** purposes.
6. In the event that the rights of others are infringed upon and/or damage to the property of others is sustained as a result of the operation or maintenance of the WORKS and the rights herein granted, the LICENSEE shall be solely responsible and shall save harmless and fully indemnify His Majesty the King in Right of the Province of Manitoba, from and against any liability to which His Majesty may become liable by virtue of the issue of this Licence and anything done pursuant hereto.
7. This Licence is not assignable or transferable by the LICENSEE and when no longer required by the LICENSEE this Licence shall be returned to this department, for cancellation on behalf of the Minister.
8. Upon the execution of this Licence the LICENSEE hereby grants the Minister or the Minister's agents the right of ingress and egress to and from the lands on which the WORKS are located for the purpose of inspection of the WORKS and the LICENSEE shall at all times comply with such directions and/or orders that may be given by the Minister or the Minister's agents in writing from time to time with regard to the operation and maintenance of the WORKS.
9. This Licence may be amended, suspended or cancelled by the Minister in accordance with The Water Rights Act by letter addressed to the LICENSEE at **97 Saskatchewan Avenue East, Portage la Prairie, Manitoba, R1N 3G1, Canada** and thereafter this Licence shall be determined to be at an end.

10. Notwithstanding anything preceding in this Licence, the LICENSEE must have legal control, by ownership or by rental, lease, or other agreement, of the lands on which the WORKS shall be placed and the water shall be used.
11. The term of this Licence shall be **ten (10) years** and this Licence shall become effective only on the date of execution hereof by a person so authorized in the The Water Rights Act. The LICENSEE may apply for renewal of this Licence not more than 365 days and not less than 90 days prior to the expiry date.
12. This Licence expires automatically upon the loss of the legal control of any of the lands on which the WORKS are located or on which water is used, unless the Licence is transferred or amended by the Minister upon application for Licence transfer or amendment.
13. The LICENSEE shall keep records of daily and annual water use and shall provide a copy of such records to the Water Use Licensing Section not later than February 1st of the following year.
14. The LICENSEE shall install and maintain, on the pumping WORKS, a water measuring device acceptable to the Water Use Licensing Section, that will accurately measure the instantaneous water flow and the accumulated annual volume of water diverted from the water source.
15. The LICENSEE shall hold and maintain all other regulatory approvals that may be required and shall comply with all other regulatory requirements for the construction, operation, or maintenance of the WORKS or to divert or use water as provided by this Licence.

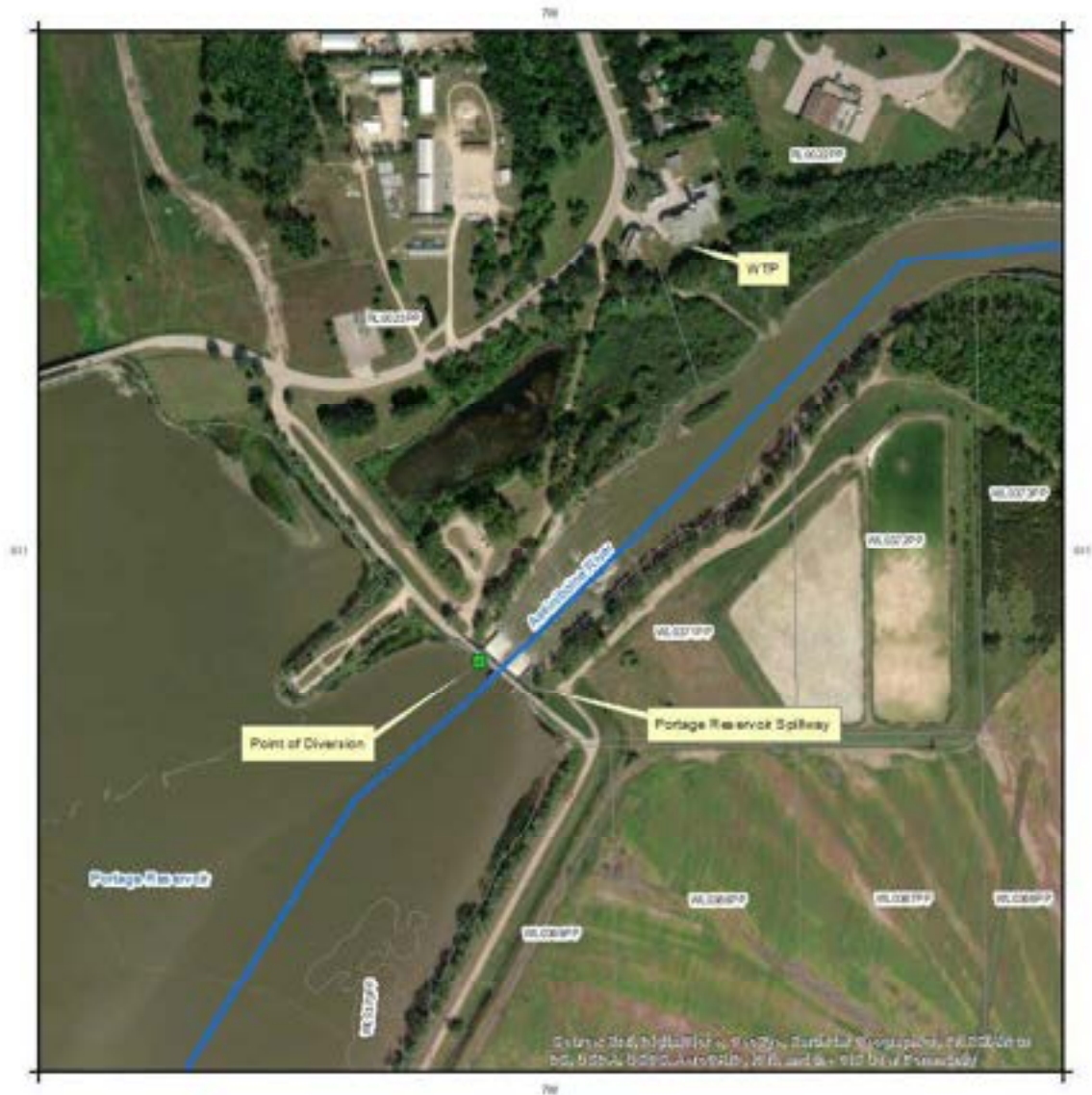
FOR OFFICE USE ONLY

Issued at the City of Winnipeg, in the Province of Manitoba, this _____ day of _____ A.D. 20__.

Print Name

Signature

Signed by the Minister charged with the administration of the Water Rights Act (or her/his designate)



LOCATION PLAN OF MUNICIPAL PROJECT
FOR
CITY OF PORTAGE LA PRAIRIE
ASSINIBOINE RIVER
RL-23-PP

0 105 210
Metres

EXHIBIT "A"

**THIS PLAN IS AN INTEGRAL PART OF
LICENCE NO. 2023-073
ISSUED UNDER THE WATER RIGHTS ACT**

Appendix D

Heritage Resource Branch Correspondence

DATE: 2024-10-01

TO: Thanh Tam Huynh
Senior Archaeologist
Stantec Consulting Ltd.

FROM: Archaeological Assessment Services Unit
Historic Resources Branch
Manitoba Sport, Culture, Heritage and Tourism
Main Floor – 213 Notre Dame Avenue
Winnipeg, MB
R3B 1N3

T: (204) 945-2118 F: (204) 948-2384
e: HRB.archaeology@gov.mb.ca

SUBJECT: City of Portage la Prairie Water Treatment Plant Upgrades
AAS File AAS-24-22532
River Lots 22 and 23, Parish of Portage la Prairie

Concerns

Further to your e-mail regarding the above noted application, the Manitoba Historic Resources Branch (HRB) has examined the locations in conjunction with Branch records for areas of potential concern. Notably, the development footprint is located along a major waterway corridor, the Assiniboine River, and near numerous known archaeological sites and sites of sensitive nature. These factors, although not exclusive to the analysis, indicate a reason to believe that any future planned ground disturbance, activity, and/or development within the area has the potential to impact heritage resources, therefore, the Historic Resources Branch has concerns.

Legislation

Under Section 12(2) of [The Heritage Resources Act](#) (the Act), if there is reason to believe that heritage resources or human remains upon or within or beneath lands are likely to be damaged or destroyed by any work, activity, development or project, then the Minister may require a proponent to apply for a heritage permit and conduct at his/her own expense, a heritage resource impact assessment (HRIA) and mitigation, prior to the project's start. As per sections 46 and 51 of the Act, there is an obligation to report any heritage resources and a prohibition on destruction, damage or alteration of said resources.

A Heritage Resource Impact Assessment (HRIA) is an assessment showing the impact that proposed work is likely to have upon heritage resources or human remains. HRIAs must be conducted by a qualified archaeological consultant under a heritage permit. Please find attached a flow chart outlining the general process of an HRIA.

HRIA Expectations

The Branch will work with the proponent/land owners and its consultant to draw up terms of reference for this project. Please allow for HRIA timelines in your planning as HRIAs are conducted in snow and frost-free conditions. Any exceptions require planning and consultation with the HRB.

Please find attached an archaeological consultants' list for reference. Due diligence should be conducted in order to assess quotes, services, and timelines.

If you have any questions, please contact as above for proper assignment and queuing.

*Historic Resources Branch
Archaeological Assessment Services Unit*

Appendix E Site Reconnaissance Summary Report

To: Stephen Biswanger
Winnipeg Portage Avenue

From: Sean Birkett
Winnipeg Portage Avenue

Project/File: 111220950

Date: February 19, 2025

Reference: Portage la Prairie Water Treatment Plant Aquatic Site Reconnaissance Fieldwork Summary

Introduction

Stantec Consulting Ltd (Stantec) is providing engineering services to upgrade/expand the water treatment plant (WTP) in Portage la Prairie, Manitoba (the Project), including the addition of a membrane process building and reverse osmosis concentrate piping, an expansion to the flocculation building, and a raw water intake structure. To support environmental applications, a reconnaissance-level Site visit was conducted for the purpose of assessing aquatic and riparian habitat to support the development of a Fisheries and Oceans Canada (DFO) *Request for Review* (RfR) application and to provide insight for the development of the Project's Notice of Alteration (NOA). This memo summarizes the findings of the reconnaissance-level Site visit. Figure 1 provides an overview of the Site Reconnaissance locations relative to the WTP and Portage Spillway.

Reference: Portage la Prairie Water Treatment Plant Site Recon Field Memo

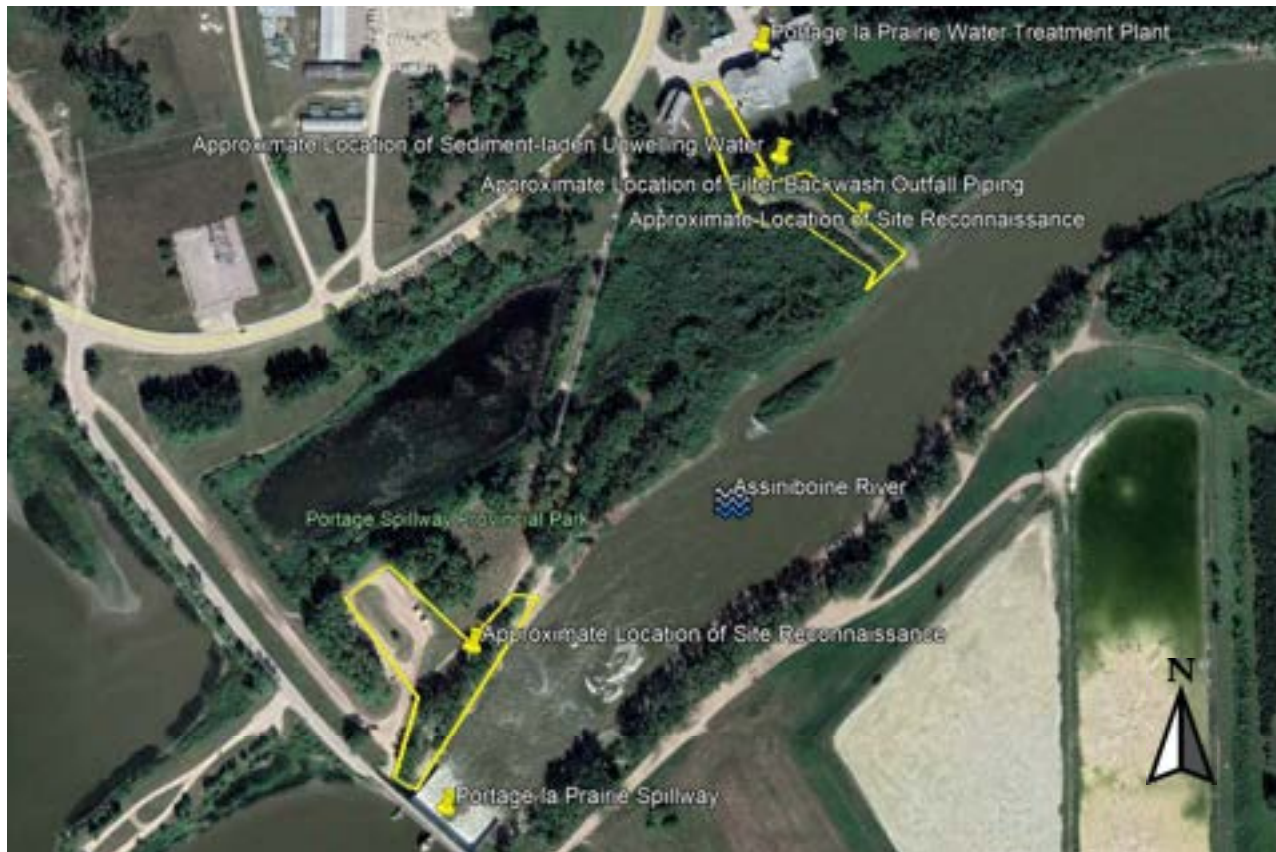


Figure 1 Overview of Site Reconnaissance Locations

Site Visit

A reconnaissance-level Site visit was conducted by a Stantec aquatic biologist (Eric Turenne) and environmental planner (Sean Birkett) on September 10, 2024, between approximately 1:30 PM and 3:30 PM. Before conducting the Site visit, Stantec's field team checked-in with Jared Smith, the Water Treatment Division Manager. The following observations summarize current conditions in the Project area.

Water Treatment Plant

South of the WTP is a drainage channel, approximately 110 m long, where the existing filter backwash flows from the WTP and drains into the Assiniboine River, approximately 125 m southwest of the WTP (Appendix A, Photo IDs 1, 2). Just east of this drainage channel, Stantec noted surface expression (upwelling) of sediment-laden water/liquid (Appendix A, Photo IDs 3, 4) that flowed into the same drainage channel where the existing filter backwash flows towards the Assiniboine River. Sedimentation was apparent where the upwelling water met the drainage channel (approximately 10 m from where the existing

Reference: Portage la Prairie Water Treatment Plant Site Recon Field Memo

process wastewater flows from the WTP). However, sedimentation appeared to be limited to approximately the first 40 m and did not appear to reach the river (Appendix A, Photo IDs 1, 2, 5). Stantec provided a memo to the City of Portage la Prairie noting the observation and recommended inspection and reporting to regulators. Where the drainage channel met the river, the banks of the river were moderately vegetated, with vegetation types consisting predominantly of shrubs, but with larger deciduous trees along the upper banks and bare ground closer to the water's edge, owing to the relatively low water level at the time of the Site visit. The river banks appeared mostly unstable, consisting of fine materials and showing clear signs of erosion and slumping (Appendix A, Photo IDs 2, 6), especially where vegetation cover was sparse. Some small and large woody debris was noted along the bank, and the river water appeared very turbid, as is typical of the Assiniboine River in this region (Appendix A, Photo ID 7). Bottom substrates in the nearshore area of the river were dominated by sand and fines (silt, clay), but some gravels, cobbles and small boulders were noted a short distance downstream of the drainage confluence. No aquatic vegetation was visible, but instream vegetation and cover could not be assessed in areas further from shore due depths unsafe for wading and poor water clarity (high turbidity).

Portage Spillway Provincial Park

The Portage Spillway Provincial Park is located approximately 350 m Southwest and upstream of the WTP is, where the proposed raw water intake structure is planned to be built. Banks and bottom substrates at this location consisted primarily of coarse substrates (boulders, cobbles), with finer substrates (e.g., sand, fines, small gravels) in the interstitial spaces. Riparian vegetation consisted of shrubs along the lower bank, and large deciduous trees along the upper bank. Large woody debris was also observed in the nearshore area. Aquatic habitat within the river at this location includes a variety of run, riffle and pool features that are suitable to meet the life history needs (e.g., spawning, rearing, foraging, overwintering) of most resident fish species known to occur in the Assiniboine River. Two local fishermen were present at the time of the Site visit, who confirmed the presence of walleye (*Sander vitreus*), northern pike (*Esox lucius*), and freshwater drum (*Aplodinotus grunniens*).

Closure

The preliminary observations of this reconnaissance-level Site visit suggest that the Project area of the Portage la Prairie WTP where upgrades and expansion are proposed provides good quality habitat with the potential to suit the life history requirements of many fish species known to occur in the Assiniboine River, including various sport and coarse fish that support sport, commercial or subsistence fisheries. Additional biophysical assessments (e.g., terrestrial wildlife, rare plants or other sensitive environmental features and species at risk) conducted by qualified biologists (e.g., wildlife biologist, vegetation ecologist) may also be required to meet the regulatory needs of the Project.

Regards,

STANTEC CONSULTING LTD.

February 19, 2025
Stephen Biswanger
Page 4 of 5

Reference: Portage la Prairie Water Treatment Plant Site Recon Field Memo

Sean Birkett
Environmental Planner
Phone: (204) 944-3797
sean.birkett@stantec.com


Attachment: [Attachment]



Reference: Portage la Prairie Water Treatment Plant Site Recon Field Memo

Appendix A Photolog

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 1	
Photo Location: Portage la Prairie WTP	
Direction: Southeast	
Survey Date: 9/10/2024	
Comments: Drainage channel between WTP and Assiniboine river.	

Photograph ID: 2	
Photo Location: Portage la Prairie WTP	
Direction: Northeast	
Survey Date: 9/10/2024	
Comments: Drainage channel entering the Assiniboine river.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant
Photograph ID: 3			
Photo Location: Portage la Prairie WTP			
Direction: Ground			
Survey Date: 9/10/2024			
Comments: Sediment-laden upwelling water.			
Photograph ID: 4			
Photo Location: Portage la Prairie WTP			
Direction: Ground			
Survey Date: 9/10/2024			
Comments: View of sediment-laden water from upwelling towards the drainage channel.			

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 5	
Photo Location: Portage la Prairie WTP	
Direction: South	
Survey Date: 9/10/2024	
Comments: Sediment-laden upwelling water flowing into the drainage channel.	


Photograph ID: 6	
Photo Location: Portage la Prairie WTP	
Direction: Upstream	
Survey Date: 9/10/2024	
Comments: Upstream view of the Assiniboine river from where the drainage channel enters the Assiniboine river.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 7	
Photo Location: Portage la Prairie WTP	
Direction: Downstream/in-stream	
Survey Date: 9/10/2024	
Comments: Left bank of the Assiniboine river from where the drainage channel enters the Assiniboine river.	


Photograph ID: 8	
Photo Location: Portage la Prairie WTP	
Direction: North	
Survey Date: 9/10/2024	
Comments: View of manicured lawn around the existing water treatment plant.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 9	
Photo Location: Portage la Prairie WTP	
Direction: Southeast	
Survey Date: 9/10/2024	
Comments: View of the existing water treatment plant.	

Photograph ID: 10	
Photo Location: Portage la Prairie WTP	
Direction: East	
Survey Date: 9/10/2024	
Comments: View of manicured lawn around the existing water treatment plant.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 11	
Photo Location: Portage la Prairie WTP	
Direction: South	
Survey Date: 9/10/2024	
Comments: View of manicured lawn around the existing water treatment plant.	

Photograph ID: 12	
Photo Location: Portage la Prairie WTP	
Direction: North	
Survey Date: 9/10/2024	
Comments: View of vegetation within the Portage Spillay Provincial Park	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 13	
Photo Location: Portage la Prairie WTP	
Direction: North	
Survey Date: 9/10/2024	
Comments: View of vegetation within the Portage Spillay Provincial Park	

Photograph ID: 14	
Photo Location: Portage la Prairie WTP	
Direction: Northeast	
Survey Date: 9/10/2024	
Comments: View of vegetation within the Portage Spillay Provincial Park and triple pole electrical structure.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 15	
Photo Location: Portage la Prairie WTP	
Direction: Northwest	
Survey Date: 9/10/2024	
Comments: View of vegetation to be cleared for the proposed pumphouse.	

Photograph ID: 16	
Photo Location: Portage la Prairie WTP	
Direction: South	
Survey Date: 9/10/2024	
Comments: View of vegetation along north bank of the River channel.	

Client:	City of Portage la Prairie	Project:	Portage la Prairie Water Treatment Plant Upgrade/Expansion
Site Name:	Portage la Prairie Water Treatment Plant	Site Location:	Portage la Prairie Water Treatment Plant

Photograph ID: 17	
Photo Location: Portage la Prairie WTP	
Direction: East	
Survey Date: 9/10/2024	
Comments: View of vegetation along the north bank of the River channel.	

Appendix F Engagement Materials

From: [Karly Friesen](#)
Subject: Invitation to Open House- City of Portage la Prairie Water Treatment Plant Expansion Project
Date: Tuesday, January 21, 2025 5:57:40 PM

Good afternoon,

On behalf of the Mayor and Council of the City of Portage la Prairie, I would like to invite you to our upcoming public open house regarding the **City of Portage la Prairie Water Treatment Plant Expansion Project**. This event provides a valuable opportunity to learn about the upcoming expansion, ask questions, and provide feedback on this important initiative that will enhance our community's water infrastructure for years to come.

Event Details

Date: Thursday, February 6, 2025

Time: 3:00 PM – 7:00 PM

Location: The Glesby Center/ Prairie Fusion Arts & Entertainment - Main Gallery (#11 2nd St. NE, Portage la Prairie)

Format: Come-and-go

The expansion of the Water Treatment Plant is a vital project that will ensure continued, high-quality water services for our growing population. At this open house, you will be able to:

- Review project plans and timelines
- Discuss the potential impacts and benefits
- Meet the project team and have your questions answered
- Learn about the next steps in the project's development

We encourage all community members to attend and get involved in this important discussion. Your input is valuable, and we look forward to hearing from you as we work together to improve our city's infrastructure. We would also appreciate it if you would please pass this invitation on to others within your organization or community that you feel would benefit from attending. We are also open to setting up additional meetings to discuss this project as it progresses.

For more information or if you are unable to attend and would like to provide feedback, please contact Jared Smith at jared.smith@city-plap.com.

We hope to see you there.

Sincerely,

Karly Friesen

Director of Utility

City of Portage la Prairie

204-239-8321

Caution: This email originated from outside of Stantec. Please take extra precaution.

Attention: Ce courriel provient de l'extérieur de Stantec. Veuillez prendre des

précautions supplémentaires.

Atención: Este correo electrónico proviene de fuera de Stantec. Por favor, tome precauciones adicionales.

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

PURPOSE OF OPEN HOUSE

Welcome and Introduction

The City of Portage la Prairie (City) welcomes you to this Open House to update you on the proposed construction of the existing Water Treatment Plant (WTP) upgrades, membrane treatment equipment, new intake, and associated works.

Representatives from the City and, Manitoba Water Services Board (MWSB) and Stantec Consulting are here today to address your questions and any concerns. Your feedback is important, and we would appreciate if you can fill out the comment sheet before you leave. We thank you for attending.

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

PROJECT BACKGROUND

- The City of Portage la Prairie (City) operates a water treatment plant (WTP) located on the Yellowquill Trail. Raw water is obtained from the Assiniboine River, immediately upstream of the spillway.
- The WTP provides potable supply water to the City residents, regional customers: Southport, Yellowhead Regional Water System (YRWC), Cartier Regional Water Cooperative (CRWC) and several industries in the area (McCain Foods, Nutri-Pea, Simplot, and Roquette).
- The existing treatment processes includes: Ballasted flocculation, lime softening, re-carbonation, ozonation, dual media filtration, granular activated carbon filtration and chlorine disinfection.



CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

NEED FOR THE PROJECT

- **Improve Water Quality:** The regional water supply system has historically exceeded the regulated trihalomethane (a suspected carcinogen) target of ≤ 0.1 mg/L due to moderately elevated levels of residual organic carbon and long retention times in the distribution system.
- **Improve Redundancy/Reliability:** The existing WTP only has a firm design capacity of **17 MLD** with the largest clarifier out of service and a total design capacity of **34 MLD** due to the limitation of the filtration process.
- **Support Regional Growth:** The WTP expansion will support City's population growth and enhance regional economic development.



CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

PROJECT BENEFITS

- An integrated membrane treatment process consisting of immersed ultrafiltration (UF) membranes followed by a second stage reverse osmosis (RO) is proposed to improve the WTP process **redundancy** and **reliability**.
- The proposed membrane treatment system will operate in parallel with the existing WTP process to meet future water demands and improve the **quality of the treated water supply**.
- Eliminate the current operational issues and maintenance challenges related to the existing intake infrastructure and significantly improve the **reliability** of WTP operations.



CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

UPGRADED RIVER INTAKE

- The existing intake ports are on the face of the Portage Diversion River Control Structure and are blinded with debris which also enters the wet well and results in pump plugging.
- The intake screen does not meet the Department of Fisheries and Oceans (DFO) requirements.
- The existing pumping capacity is insufficient to meet the projected demand and there is no room for expansion in the existing pumphouse.
- A new river intake structure, travelling screens and raw water pumping system will be constructed downstream of the spillway to address current operational challenges, meet DFO requirements and City's concerns for zebra mussels.



CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT WTP DESIGN BASIS

Design City Population: 15,763 for Year 2050

Projected Water Design Year Total Water Demands (2050)

Source/Location	ADD (MLD)	MDD (MLD)	PHD ² (L/s)
City of Portage	8	11	237
Regional Water Systems	4	5	79
Current and Future Industries	28	36	543
Total (rounded)	40	52	
City of PLP Distribution System	21	28	560
Poplar Bluff Industrial Park Distribution System	19	24	299

^a New reservoir at the PBIP will buffer peak hour demands for local industries and YRWC.

WTP Capacity :

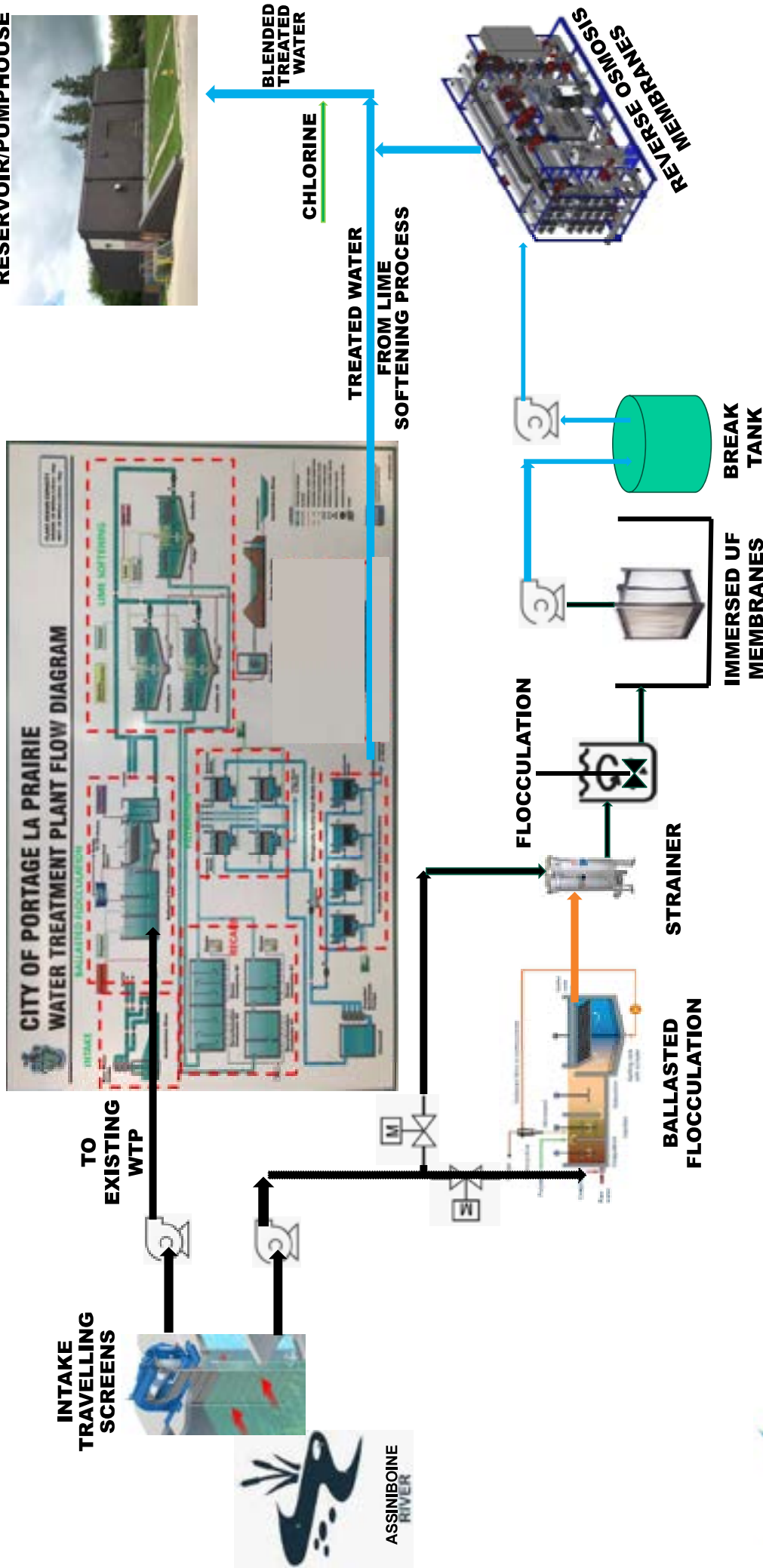
- Total Process Capacity: Meet Projected MDD of 52 MLD + Existing 3 MLD Process Waste = **55 MLD**
- Exist. Lime Softening Process: **17 MLD** (Firm Capacity)
- Proposed UF/RO Process: 55 MLD – 17 MLD = **38 MLD**

Proposed Treatment Process

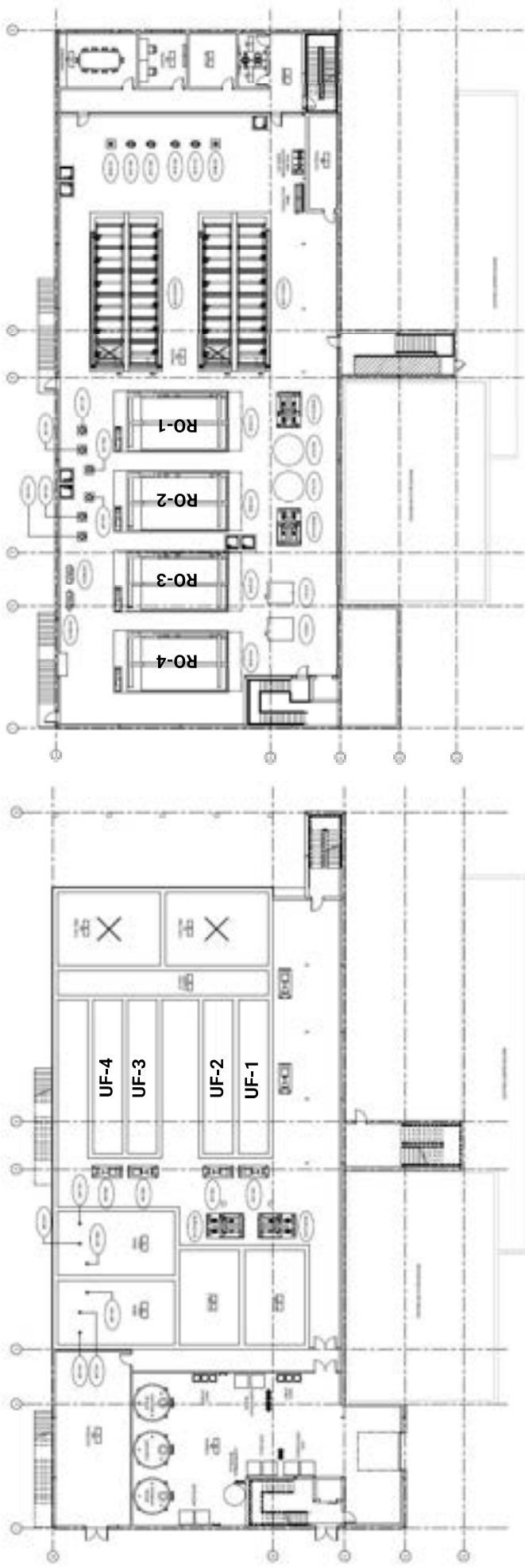
- The existing lime softening process will be operated parallel with the UF/RO membrane process.
- pH adjustment/stabilization of membrane treated water with Caustic Soda (NaOH) before blending.
- Chlorine disinfection prior to water distribution system.

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

SIMPLIFIED PROCESS FLOW DIAGRAM



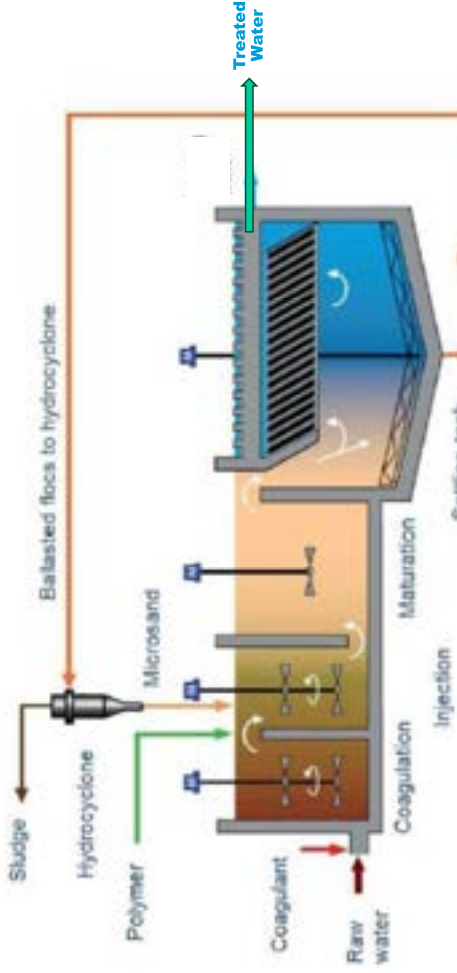
CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT MEMBRANE BUILDING FLOOR PLANS



Upper Level

Lower Level

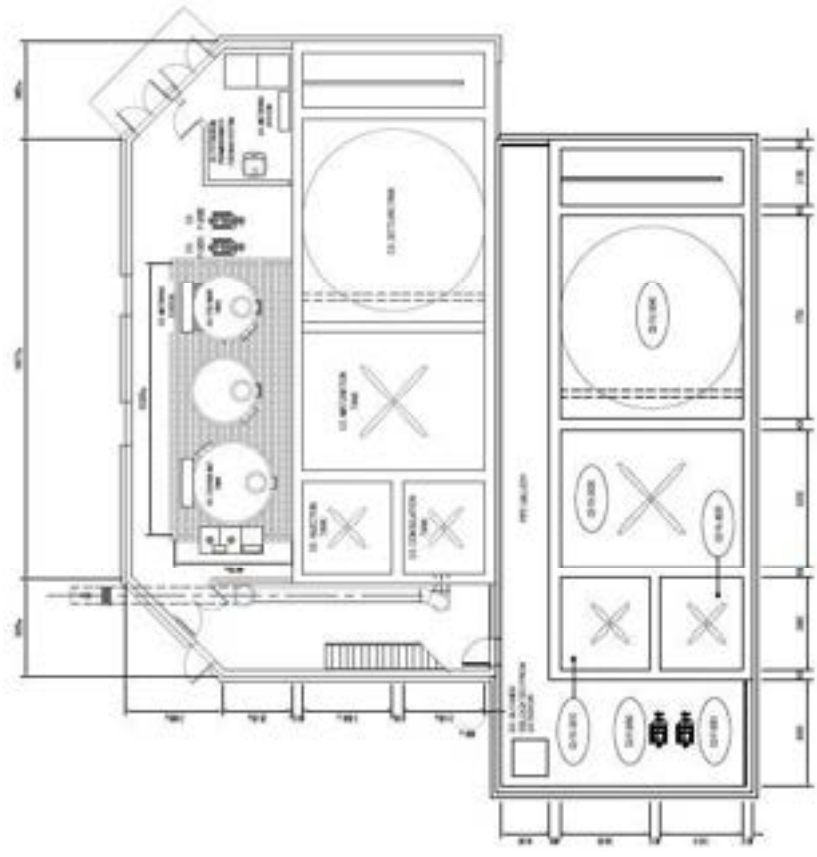
CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT PRE-TREATMENT BUILDING (BALLASTED FLOCCULATION)



Process Flow Diagram



EXT. PRE-TREATMENT BLDG.



Main Floor

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

OPINION OF PROBABLE CONSTRUCTION COSTS

<u>Description</u>	<u>Total Amount</u>
A. Intake and Raw Water Pumphouse	\$ 10,000,000
B. Pre-Treatment/Ballasted Flocculation Expansion	\$ 4,900,000
C. Membrane Treatment Process Building	\$ 44,600,000
D. Underground and Yard Piping	\$ 1,600,000
E. Existing WTP – General Code and Condition Upgrades	\$ 3,000,000
F. 66 kV Electrical Substation	\$ 4,400,000
G. General Conditions	<u>\$ 6,900,000</u>
H. Construction Sub-total (rounded)	\$ 75,400,000
I. Engineering (10%),	\$ 7,500,000
J. Contingency and Estimation Allowances (15%)	\$ 11,300,000
K. Inflation Allowance (3.2%)	<u>\$ 2,400,000</u>
L. Project Construction Costs (rounded)	\$ 96,600,000
M. Administration/Financing	<u>\$ 3,864,000</u>
N. TOTAL PROJECT COSTS (rounded)	\$ 100,464,000

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

PROJECT FUNDING BREAKDOWN

Project Costs:		Confirmed Grants and Funds
Project Construction Costs:	\$96,600,000	Provincial Funding: \$40,250,000
Project Admin./Financing:	<u>\$3,864,000</u>	Interest on Provincial Funding: \$3,260,000
Total Project Costs	\$100,464,000	City Utility Reserve: <u>\$1,750,000</u>
		Total Confirmed Funds
		\$45,260,000

City Debenture Debt **\$55,204,000**

Impact on Water Rates

Water Rate Steps	Volume/Quarter	2025 Rate/Cubic Meter	Rate Increase	Rate With WTP Upgrade
1 st Step	0 to 227	\$2.64	\$1.58	\$4.22
2 nd Step	228 to 2,273	\$2.19	\$1.31	\$3.50
3 rd Step	2,274 to 18,184	\$2.07	\$1.24	\$3.31
4 th Step	Over 18,184	\$0.89	\$0.53	\$1.42

Impact on Utility Bill

	Cubic Meter	Current 2025	WTP Upgrade	Increase
Minimum Bill	14	\$84.29	\$106.47	\$22.18
Average Bill	40	\$198.69	\$262.05	\$63.36

CITY OF PORTAGE LA PRAIRIE WATER TREATMENT PLANT UPGRADE/EXPANSION PROJECT

PRELIMINARY IMPLEMENTATION SCHEDULE/NEXT STEPS

- Conduct Open House: February 6, 2025
- Submit Environment Act Proposal: February 2025
- Membrane/Ballasted Flocculation Equipment Pre-selection: February 2025
- Detailed Design Development: February to October 2025
- Shortlist General Contractors: September to October 2025
- Project Tendering: October to November 2025
- Award Construction Contract: December 2025 to January 2026
- Project Construction Period: May 2026 to May 2028
- Project Commissioning: June to August 2028
- Substantial Completion: September 2028

Water Treatment Plant Upgrade Impact on Water Rates

The following calculation details the increase in water rates required to fund amortization and interest expense for the WTP Upgrade using the City's rate setting methodology:

Interest expense; \$55,204,000 debt @ 7%, year 1 interest:	\$3,864,280
Net Amortization expense; Total City Funding \$56,954,000; 30 years	<u>1,898,467</u>
1 st year cost increase for WTP Upgrade interest and amortization	\$5,762,747
Utility Rate Study 2024 forecast water total net costs:	\$8,874,717
Add: adjustment for reservoir and chemical costs:	<u>755,172</u>
Total water expenses current water rates are calculated on	<u>9,629,888</u>
% increase in water rates required to fund WTP Upgrade interest & amortization	<u>60%</u>

Impact on Water Rates:

Water Rate Steps	Volume per Quarter	2025 Rate per CM	Rate Increase	Rate with WTP Upgrade
1 st Step	0 to 227	\$2.64	\$1.58	\$4.22
2 nd Step	228 to 2,273	2.19	1.31	3.50
3 rd Step	2,274 to 18,184	2.07	1.24	3.31
4 th Step	Over 18,184	0.89	0.53	1.42

Impact on Utility Bill:

	CM	Current 2025	WTP Upgrade	Increase
Minimum Bill	14	\$84.29	\$106.47	\$22.18
Average Bill	40	198.69	262.05	63.36

February 19, 2025

Chief David Meeches
Long Plain First Nation
P.O. Box 430
Portage la Prairie, Mb R1N 3B7

RE: Upgrading and Expansion of the City of Portage la Prairie Water Treatment Plant

Dear Chief Meeches:

The City of Portage la Prairie has been working on a design to upgrade and expand the water treatment plant. I am writing to notify you of this project, not only to provide the relevant information, but also provide you with the opportunity to relay any comments or concerns that the Long Plain First Nation may have about this project.

The Portage water treatment plant provides potable water to the residents of Portage as well as a vast distribution area throughout the RM of Portage la Prairie including as far west as Austin, north toward Plumas, east to Cartier and south past Gainsborough.

There are several issues that this upgrade will address:

- Improve water quality by reducing organic matter and tri-halomethane production and reducing hardness.
- Significantly increase redundancy and reliability to meet current water demands.
- Increase capacity for future population and economic growth for the region.

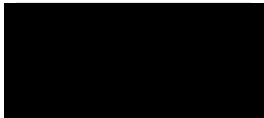
This project will involve the construction of a second pre-treatment system, the construction and implementation of a new immersed membrane/ RO treatment system, as well as the relocation of the raw water intake. A site plan of the proposed expansion is included. The City has engaged Stantec Engineering, along with the Manitoba Water Services Board, to complete the detailed design, with the intention to tender the project in the fall of 2025 and construction to start early 2026.

The City of Portage la Prairie prioritizes meaningful consultation, and we recognize the importance of engaging with the Long Plain First Nation and its members. As such, we would like to know if you have any questions or concerns regarding this project. We are also happy to further discuss the positive impacts this expansion will have for residents of the Portage la Prairie region.

Please contact me at 204-239-8321 or via email at kfriesen@city-plap.com. I would appreciate hearing back from you by March 31, 2025. If it is not possible to respond within this timeframe, would you kindly contact me to establish a mutually agreed upon timeframe.

Thank you in advance for your consideration to this request and I look forward to hearing back from you.

Sincerely,



Karly Friesen
Director of Utility

Enclosures

Water Treatment Plant Layout



Existing facility is shown in white with new buildings shaded in grey



Proposed new intake- downstream of Spillway and current intake. Current intake is imbedded in the dam structure.

February 19, 2025

Chief Don Smoke
Dakota Plains Wahpeton Nation
P.O. Box 100
Edwin, Mb R0H 0G0

RE: Upgrading and Expansion of the City of Portage la Prairie Water Treatment Plant

Dear Chief Smoke:

The City of Portage la Prairie has been working on a design to upgrade and expand the water treatment plant. I am writing to notify you of this project, not only to provide the relevant information, but also provide you with the opportunity to relay any comments or concerns that the Dakota Plains Wahpeton Nation may have about this project.

The Portage water treatment plant provides potable water to the residents of Portage as well as a vast distribution area throughout the RM of Portage la Prairie including as far west as Austin, north toward Plumas, east to Cartier and south past Gainsborough.

There are several issues that this upgrade will address:

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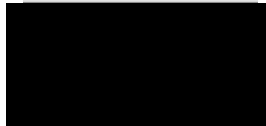
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The City of Portage la Prairie prioritizes meaningful consultation, and we recognize the importance of engaging with the Dakota Plains Wahpeton Nation and its members. As such, we would like to know if you have any questions or concerns regarding this project. We are also happy to further discuss the positive impacts this expansion will have for residents of the Portage la Prairie region.

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Sincerely,



Karly Friesen
Director of Utility

Enclosures

Water Treatment Plant Layout



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Proposed new intake- downstream of Spillway and current intake. Current intake is imbedded in the dam structure.

February 19, 2025

Chief Dennis Pashe
Dakota Tipi First Nation
2020 Dakota Drive
Dakota Tipi, Mb R1N 3X6

RE: Upgrading and Expansion of the City of Portage la Prairie Water Treatment Plant

Dear Chief Pashe:

The City of Portage la Prairie has been working on a design to upgrade and expand the water treatment plant. I am writing to notify you of this project, not only to provide the relevant information, but also provide you with the opportunity to relay any comments or concerns that the Dakota Tipi First Nation may have about this project.

The Portage water treatment plant provides potable water to the residents of Portage as well as a vast distribution area throughout the RM of Portage la Prairie including as far west as Austin, north toward Plumas, east to Cartier and south past Gainsborough.

There are several issues that this upgrade will address:

- Improve water quality by reducing organic matter and tri-halomethane production and reducing hardness.
- Significantly increase redundancy and reliability to meet current water demands.
- Increase capacity for future population and economic growth for the region.

This project will involve the construction of a second pre-treatment system, the construction and implementation of a new immersed membrane/ RO treatment system, as well as the relocation of the raw water intake. A site plan of the proposed expansion is included. The City has engaged Stantec Engineering, along with the Manitoba Water Services Board, to complete the detailed design, with the intention to tender the project in the fall of 2025 and construction to start early 2026.

The City of Portage la Prairie prioritizes meaningful consultation, and we recognize the importance of engaging with the Dakota Tipi First Nation and its members. As such, we would like to know if you have any questions or concerns regarding this project. We are also happy to further discuss the positive impacts this expansion will have for residents of the Portage la Prairie region.

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Thank you in advance for your consideration to this request and I look forward to hearing back from you.

Sincerely,



Karly Friesen
Director of Utility

Enclosures

Water Treatment Plant Layout



Existing facility is shown in white with new buildings shaded in grey



Proposed new intake- downstream of Spillway and current intake. Current intake is imbedded in the dam structure.

February 10, 2025

Wes Hannah
Manitoba Metis Federation Inc- Portage
107 Saskatchewan Ave. E.
Portage la Prairie, Mb R1N 0L7

RE: Upgrading and Expansion of the City of Portage la Prairie Water Treatment Plant

Dear Mr. Hannah:

The City of Portage la Prairie has been working on a design to upgrade and expand the water treatment plant. I am writing to notify you of this project, not only to provide the relevant information, but also provide you with the opportunity to relay any comments or concerns that the Manitoba Metis Federation may have about this project.

The Portage water treatment plant provides potable water to the residents of Portage as well as a vast distribution area throughout the RM of Portage la Prairie including as far west as Austin, north toward Plumas, east to Cartier and south past Gainsborough.

There are several issues that this upgrade will address:

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The City of Portage la Prairie prioritizes meaningful consultation, and we recognize the importance of engaging with the Manitoba Metis Federation and its members. As such, we would like to know if you have any questions or concerns regarding this project. We are also happy to further discuss the positive impacts this expansion will have for residents of the Portage la Prairie region.

Please contact me at 204-239-8321 or via email at kfriesen@city-plap.com. I would appreciate hearing back from you by March 31, 2025. If it is not possible to respond within this timeframe, would you kindly contact me to establish a mutually agreed upon timeframe.

Thank you in advance for your consideration to this request and I look forward to hearing back from you.

Sincerely,



Karly Friesen
Director of Utility

Enclosures

Water Treatment Plant Layout



Existing facility is shown in white with new buildings shaded in grey



Proposed new intake- downstream of Spillway and current intake. Current intake is imbedded in the dam structure.



DAKOTA TIPI FIRST NATION

WAHPETON

2020 Dakota Drive, Dakota Tipi, MB R1N 3X6
Telephone (204) 857-4381 *Fax (204) 857-9855



February 13, 2025

Karly Friesen
Director of Utility
City of Portage La Prairie
kfriesen@city-plap.com

SENT VIA EMAIL

Dear Ms. Friesen

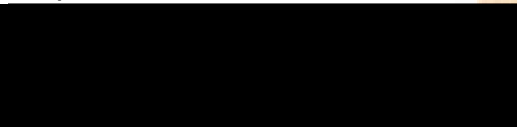
Please accept this letter of support as formal approval from Dakota Tipi First Nation in your efforts to secure funding for the Canadian Housing Infrastructure Grant in the amount of \$96.6 million.

Dakota Tipi First Nation and its community members enjoy a great relationship with the City of Portage La Prairie in accessing services through our professional services agreement including the Water Treatment Plant.

Dakota Tipi First Nation and its members continue to rely on the services from Portage La Prairie in a partnership that we are happy to have.

This critical infrastructure also will support our many community members who reside and work in Portage La Prairie and also seek home ownership opportunities off-reserve.

Wopida



Chief Dennis Pashe

OCETI SAKOWIN

Dakota Plains Wahpeton Nation

P.O. Box 100 Edwin, MB R0H 0G0

January 6th, 2025

Karly Friesen
Director of Utility
City of Portage la Prairie
kfriesen@city-play.com

Re: Canadian Housing Infrastructure Grant

On behalf of Dakota Plains Wahpeton Nation, I am pleased to provide this letter of support for the City of Portage la Prairie in their application to the Canadian Housing Infrastructure Grant.

As the Chief of Dakota Plains, I have the privilege of working closely with our neighbours, the City of Portage la Prairie. The expansion of their water plant is essential to not only the City of Portage, but to the surrounding First Nations and communities as well. With expansion, the city will increase the plants overall capacity, in turn expanding the area that they are able to distribute water to. This is necessary to support the housing development that is currently taking place in the region.

Drinking water in First Nations has always been an issue, with water itself being a very sacred element in our culture. Dakota Plains is currently working with the City of Portage la Prairie to begin receiving water directly from the City, enhancing the water quality and system reliability for our people. We are not a large First Nation, but the current administration has brought in over 30 houses in the last two years, with more to come.

We greatly appreciate your consideration of this application and are confident that the funding provided will not only enhance the water systems of the City, but will also act as a tool in Reconciliation as the City provides reliable, high quality water to its First Nations neighbours.

Should you require further information or have any questions, please do not hesitate to contact me.

Sincerely,



Chief Don Smoke
Dakota Plains Wahpeton Nation
chiefsmoke@dpwn.org



Re: Canadian Housing Infrastructure Grant

On behalf of Long Plain First Nation, and our associated Arrowhead Development Corporation, I am pleased to provide this letter of support for the City of Portage la Prairie in their application to the Canadian Housing Infrastructure Grant.

The expansion of their water plant is essential to not only the City of Portage, but to the surrounding First Nations and communities as well. With this upgrade, the City will increase the plant's overall capacity, in turn expanding the area that they are able to distribute water to. This is necessary to support the housing development that is currently taking place in the region as well as required for further economic development for all users of the system, including Long Plain First Nation. If the plant does not expand, there cannot be any further expansion in any of the communities that depend on this plant for water.

We greatly appreciate your consideration of this application and are confident that the funding provided will not only enhance the water systems of the City but in turn will support the further expansion of housing development which is much needed.

Thank you for your consideration of this application,

Chief David Meeches

Marvin Daniels
Council

Randy Merrick
Council

Liz Merrick
Council

Garnet Meeches
Council