

To:	MD of Greenview/ WaterSMART	Date:	February 28, 2025
From:	Sean Nicoll, P.Eng./Lisa Fletcher, P.L.(Eng.), PMP	Reference/Project No.:	
Project:	Greenview Industrial Gateway	Page:	1 of 3
Subject:	Estimated Land Requirements for Raw Water Storage Ponds		

1 INTRODUCTION

The Municipal District of Greenview (Greenview) is undertaking the development of the Greenview Industrial Gateway (GIG). This industrial zone spans approximately 7,500-hectare (18,600-acre) and is designed to stimulate value-added industrial growth in the region.

This Technical Memorandum provides an overview of the anticipated area required for the development of the raw water storage ponds and associated infrastructure required to support the planned industrial development to inform Greenview's land purchase.

The area designated for the ponds is within the boundaries of the GIG but outside of the area designated for the proposed industrial development.

2 WATER CAPACITY AND ASSUMPTIONS

The raw water storage ponds will be sized to meet the annual water demands of the GIG development area. Based on direction from the MD, at ultimate build-out of the GIG development, the estimated water demand of the development area is 24,000,000 m³ annually or approximately 65,753 m³/day. As outlined in the Raw Water Storage Ponds Concept Report (Associated Engineering, August 2023), raw water withdrawal from the Smoky River will not be possible for up to 18 consecutive weeks per year due to low flow conditions in the river; therefore, the ponds will be sized to accommodate 18 weeks of storage. This amounts to approximately 8,285,000 m³ of raw water storage required at ultimate build-out.

The following outline the assumptions:

1. Evaporative losses from the pond or other system losses have not been considered within this assessment.
2. The preliminary pond sizing is based on flat topography.
3. A geotechnical investigation has not been conducted to inform the construction of the pond berms.

3 POND SIZING AND LAND AREA ESTIMATION

There are existing site constraints such as pipelines, lease areas, CN rail line, natural streams and topography that limits the development of one large pond. As such, the initial assumption is that several ponds will be constructed in stages to within the designated land constraints. Furthermore, constructing and operating several smaller ponds may likely be more manageable compared to one large pond and will allow the pond construction to be phased to match the phasing of the development. For the purposes of estimating the footprints of the raw water storage ponds and the anticipated land requirements, the following assumed parameters were used to establish this initial sizing :

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- Six equally sized ponds, will be constructed with the following characteristics:
 - External dimensions of approximately 350m by 350 m, constructed on flat ground.
 - The side slopes of the pond and pond berm should have a 3H:1V ratio.
 - A minimum berm top width of 4 m to allow for vehicle access along the top of the berm.
 - Maximum water depth of 10m with a minimum freeboard of 0.5 m.
 - A geosynthetic pond liner will be required to prevent water exfiltration from the pond.
 - A subdrain system will be incorporated below the pond liner to manage groundwater infiltration.
- An allowance of 20% has been added to the pond footprint calculations to account for supporting infrastructure which is expected to include access roads, pump stations, and piping.
- Based on the current development plan of the GIG, the raw water ponds are proposed to be located on the east side of CN rail line.

Other considerations for our assessment include set back distance to avoid potential conflicts and design concerns:

- The pond berms should be offset at least 50 m away from any existing water bodies to minimize environmental impacts and protect water quality.
- The pond berms should be at least 30 m away from any existing pipelines to minimize the potential hazards and risks associated with pipeline damage or rupture.
- The pond berms should be offset at least 25 m away from the CN Rail right-of-way to avoid impact to rail operations.
- The toe of the pond berms should maintain a minimum separation of 20 m to reduce the risks associated with berm failures and to provide sufficient space for infrastructure installation and maintenance.
- The ponds will be interconnected with a common fill header.
- The ponds will be connected to a raw water pump station, via a distribution header.
- The distribution header will feed into a raw water pump station which will pump raw water to a location west of the CN Rail Line.

Based on the above initial parameters outlined, an estimated land area totalling approximately 153 hectares is required to store the estimated 8,235,000 m³ of raw water. **Figure 1-1**, attached, outlines the initial areas for the proposed pond development required to accommodate the total 153 hectare. The locations will be confirmed upon site survey and completion of proposed geotechnical investigation. The pond design parameters will then be refined during detailed design stage. The actual pond size and shape will likely vary depending on existing site conditions, constraints, and limitations as well as the phasing of the development. Any changes to the water utilization needs, land areas, etc. will impact the design schedule and effort. Note that regulatory application and approvals are not currently part of this discussion.

Figure 1-1 outlines the estimated land area required for the construction of the storage ponds and supporting infrastructure.

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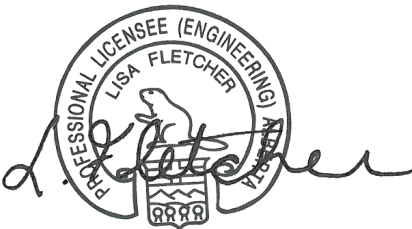
Recommendation

Figure 1-1 at the end of this memo outlines an approximate area of 386 ha which is recommended to be purchased to account for ponds , and supporting infrastructure.

CERTIFICATION

This memorandum presents our findings regarding the MD of Greenview/WaterSMART Greenview Industrial Gateway, Estimated Land Requirements for Raw Water Storage Ponds.

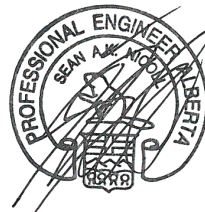
Prepared by:



2025-03-03
ID# 169561

Lisa Fletcher, P.L.(Eng.), PMP
Project Engineer

Reviewed by:

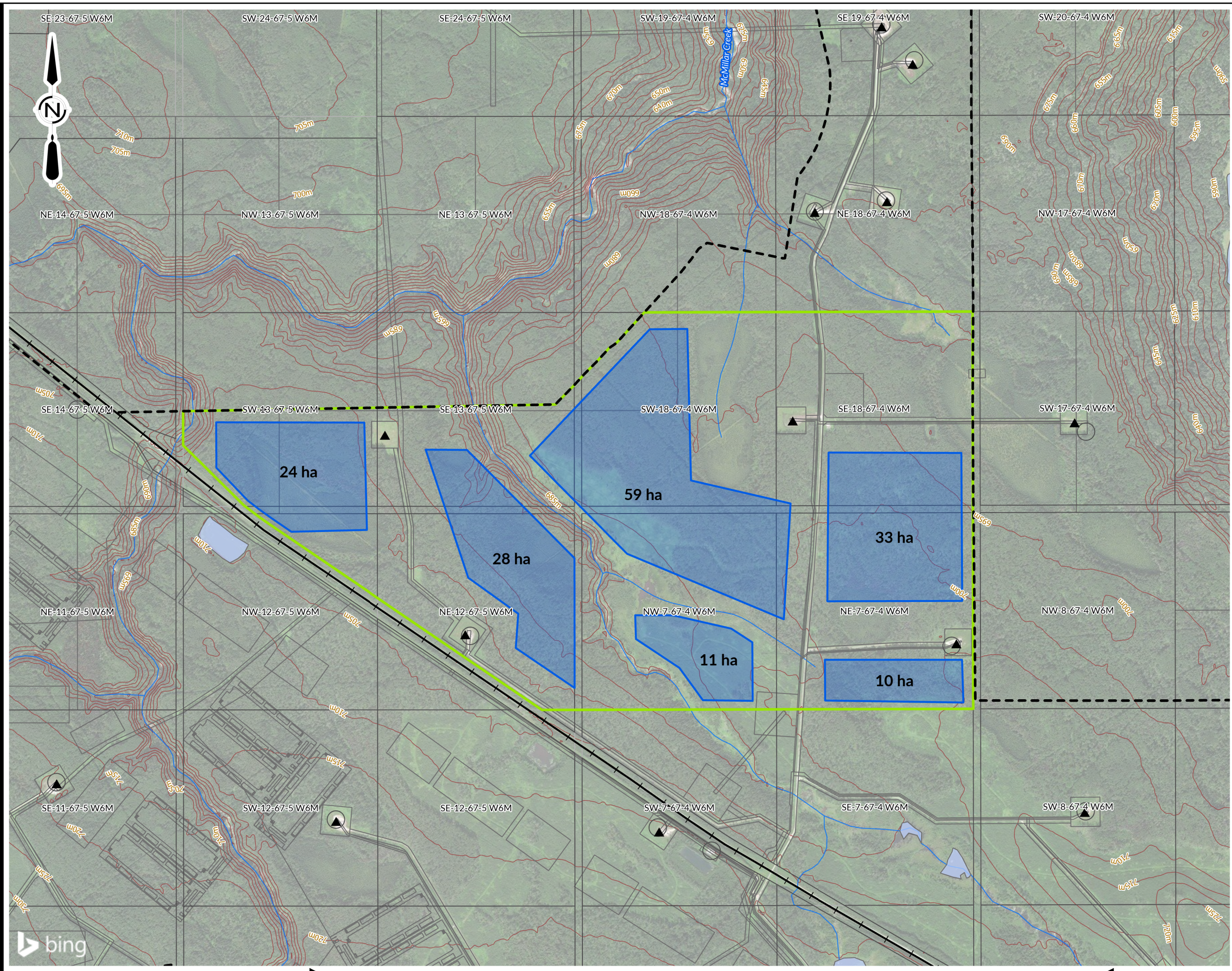


ID : 68062
Mar. 3 2025

Sean Nicoll, P.Eng.
Project Manager

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RM Signature	
Owen Mierke ID 93223	2025-Mar-04
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- LEGEND:**
- ▲ Existing Well Site
 - 5m Elevation Contour
 - Watercourse
 - + Railway
 - ▭ Proposed Land Request
 - ▭ Proposed Pond Development
 - ▭ Water Body
 - ▭ GIG Project Area
 - ▭ Cadastral

Pond Development Total Area = 164 ha
Proposed Land Request Total Area = 386 ha

FIGURE 1-1
MUNICIPAL DISTRICT OF GREENVIEW NO. 16
GREENVIEW INDUSTRIAL GATEWAY
DATA CENTER DEVELOPMENT
PROPOSED POND DEVELOPMENT

AE PROJECT No.	2022-3376-00
SCALE	1:15,000
PROJECTION	NAD 1983 CSRS UTM ZONE 11N
DATE	2025JAN10
REV	0
DRAWN BY	KJ
CHECKED BY	KR
DESCRIPTION	ISSUED FOR DRAFT

0 400 800 m