

Greensville Drinking Water System

Municipal Class Environmental Assessment

City of Hamilton

Online Public Information Centre #1
October 11, 2023

Land Acknowledgement

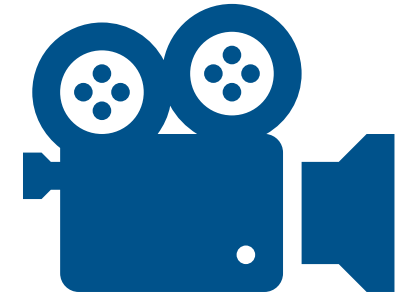


The City of Hamilton is situated upon the traditional territories of the Erie, Neutral, Huron-Wendat, Haudenosaunee and Mississaugas. This land is covered by the Dish With One Spoon Wampum Belt Covenant, which was an agreement between the Haudenosaunee and Anishinaabek to share and care for the resources around the Great Lakes.

Today, the City of Hamilton is home to many Indigenous people from across Turtle Island (North America) and we recognize that we must do more to learn about the rich history of this land so that we can better understand our roles as residents, neighbours, partners and caretakers.

Virtual Meeting Facilitation

Please take note:

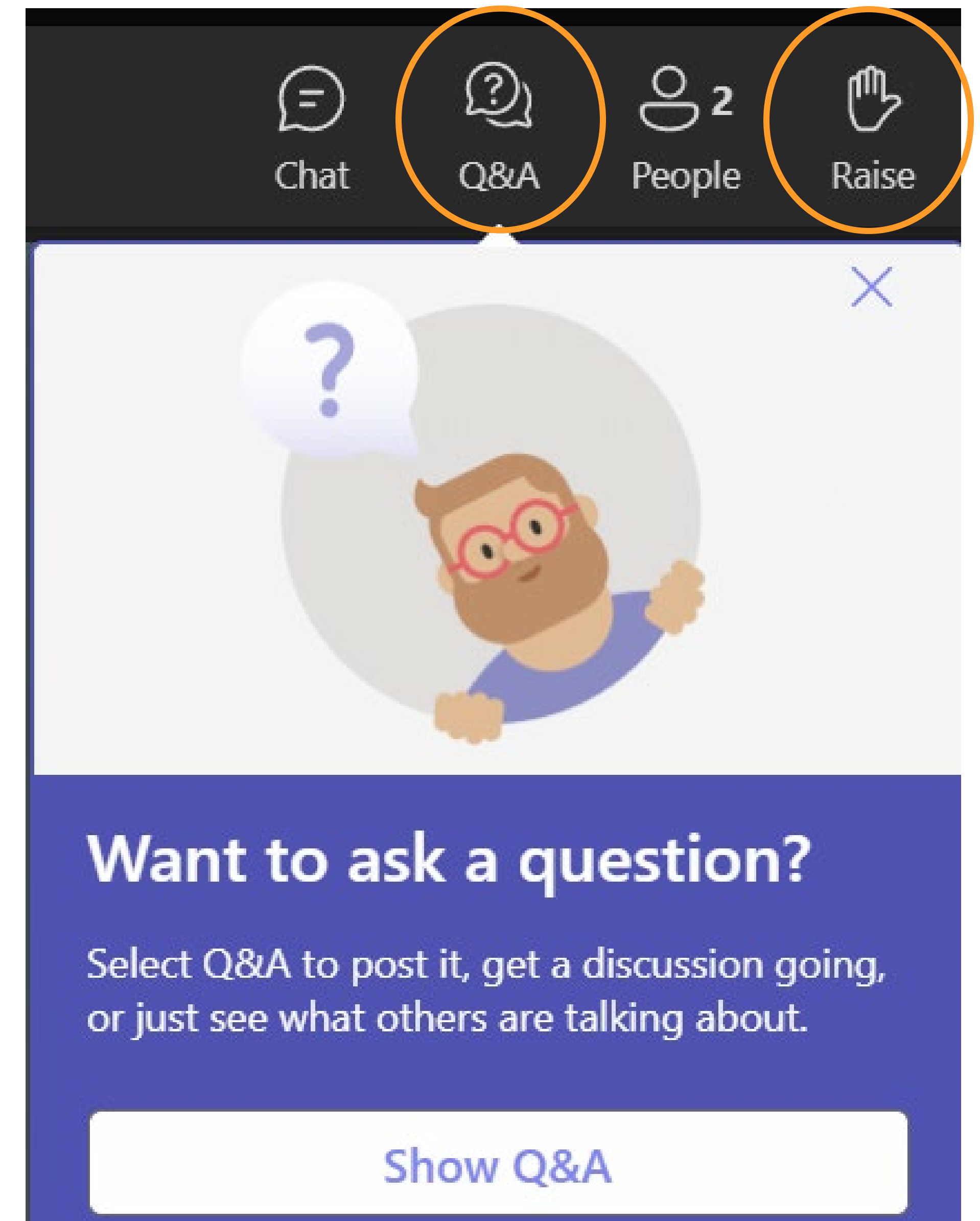


- This meeting is being recorded.
 - No personal information will be made available in the recording.



- Questions can be asked by:
 - Submitting questions to the “**Q&A**”
 - Or, “**Raise hand**” and “unmute” to ask question when called upon.

**Questions will be taken at the end of the presentation.
We look forward to your participation and feedback.**



Welcome!

The goals of this Public Information Centre (PIC) are to:



- Introduce the project and why it is being undertaken
- Provide an overview of the key steps that this study will follow
- Provide a summary of the problems and opportunities to address
- Present existing conditions within the study area
- Present alternative solutions and evaluation criteria
- Present the recommended alternative solution
- Answer questions you may have and provide an opportunity to get involved in the project

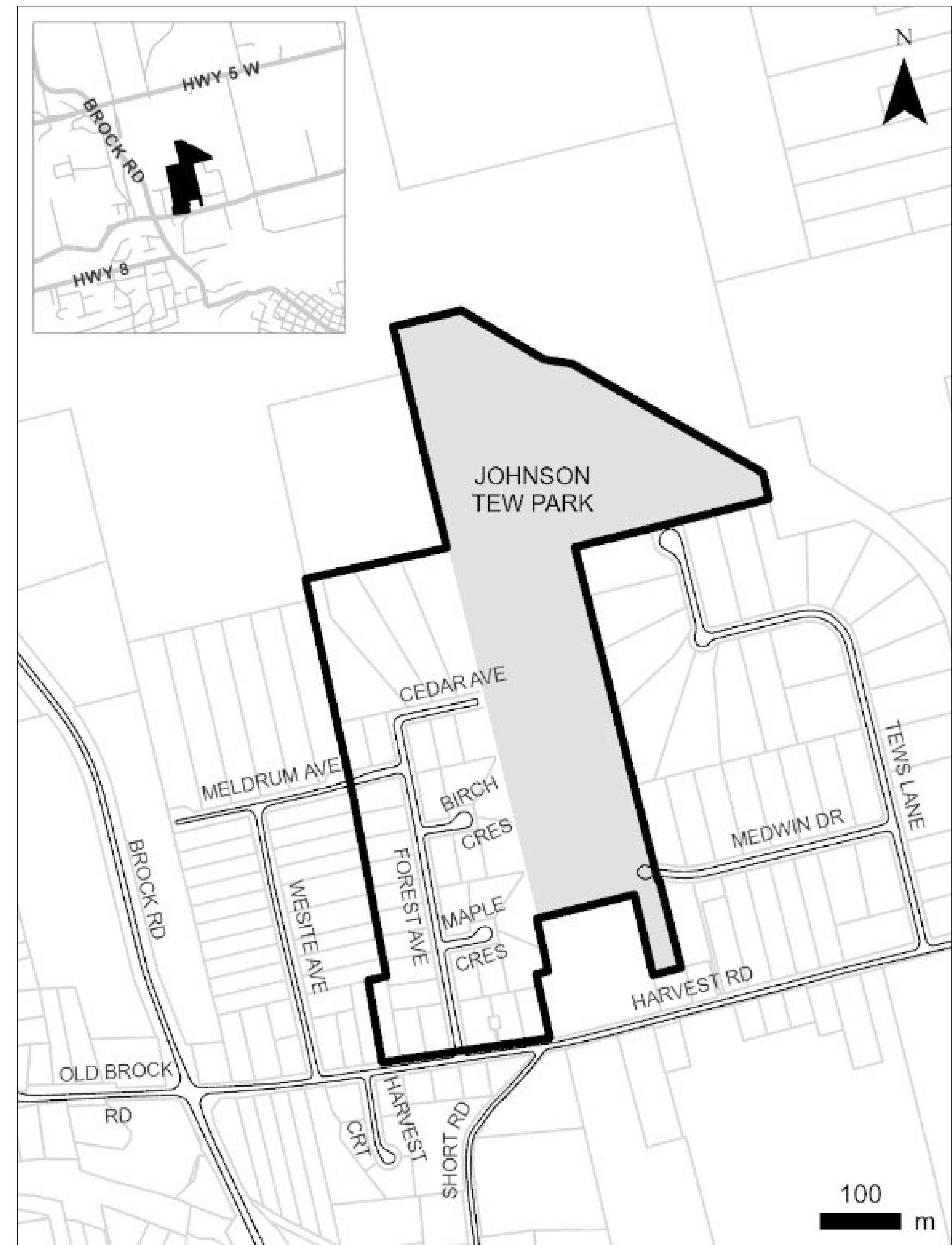
Comments received during this study will be used to help identify the approach for current and future improvements within the City of Hamilton.

Purpose & Study Area

The City of Hamilton has initiated a Schedule C Municipal Class Environmental Assessment (EA) study for the Greensville Rural Settlement Area (RSA), to provide improvements to the Greensville Drinking Water System (DWS).

The DWS supplies water to 36 homes within the Greensville RSA from one municipal well and pumping / treatment station.

The purpose of this study is to develop a preferred water servicing strategy including a backup water supply for the Greensville DWS.



The Study Area includes the 36 connections to the Harvest Road Water Supply System (HRWSS).

Municipal Class EA Process

The Municipal Class Environmental Assessment (EA) study process frames the planning and implementation of municipal infrastructure and is legislated through the *Ontario Environmental Assessment Act*. This study is being conducted as a Schedule 'C' project and will cover Phases 1 to 4 of the EA process:

Phase 1: Problem and Opportunity

- Review background planning and policy documents
- Identify study area needs, problems and opportunities

Phase 2: Alternative Planning Solutions

We are here

- Detailed existing condition inventories of socio-economic, natural and cultural environments
- Identify and evaluate feasible alternative solutions
- Select Recommended Alternative Solution
- **Present to public and agencies for comment (PIC1)**

Phase 3: Alternative Design Concepts

- Develop and evaluate Design Alternatives for the Recommended Solution
- Identify Impacts and Mitigation Measures
- Select a Recommended Design Alternative
- Present to public and agencies for comment (PIC2)

Phase 4: Environmental Study Report

- Document the decision-making process in an Environmental Study Report (ESR)
- Circulate draft ESR to agencies for review
- Publish Notice of Study Completion for 30-day comment period

Phase 5: Implementation

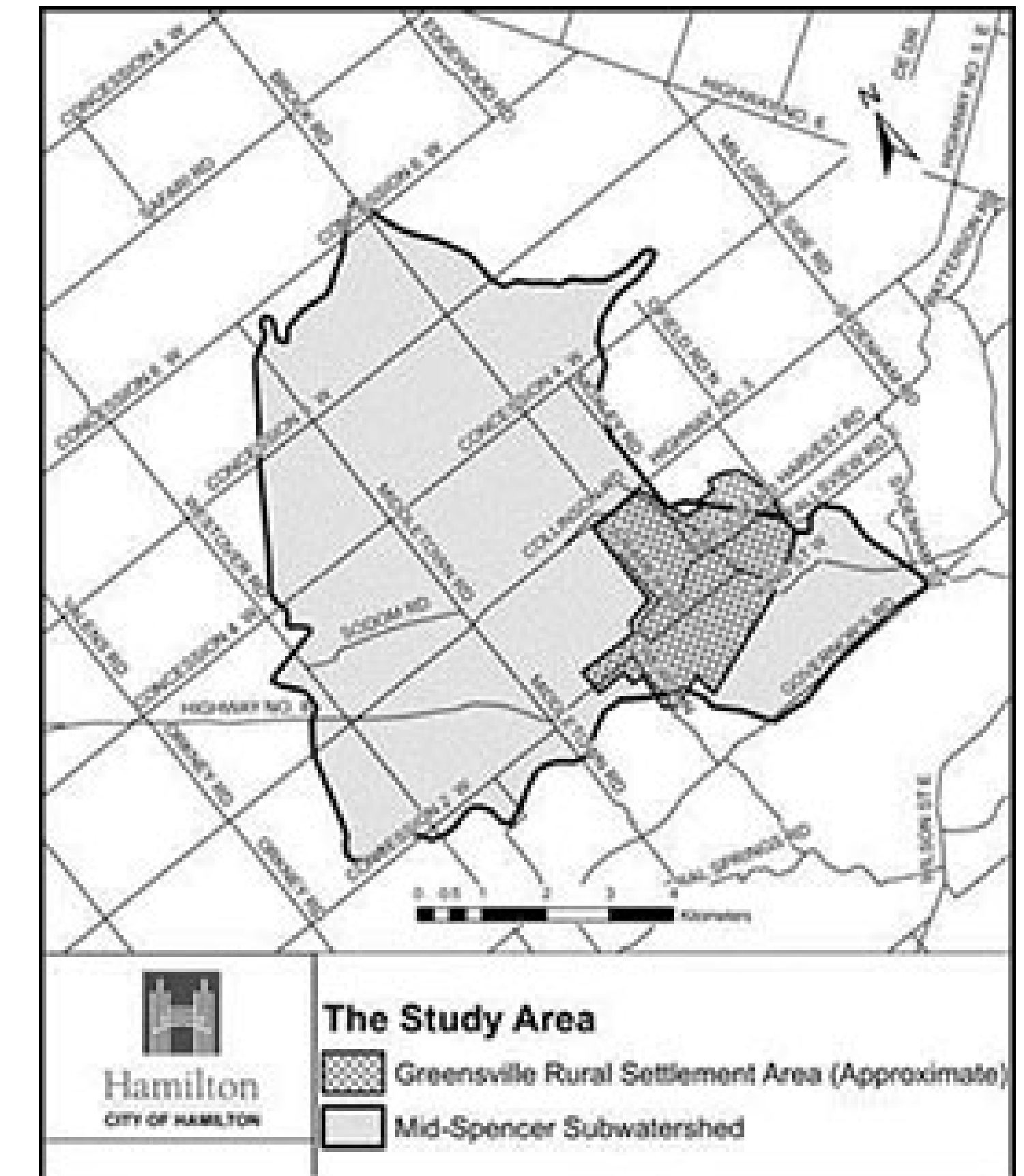
- Complete Contract Drawings and Tender Documents
- Construction and Operation
- Monitoring for Environmental Provisions and Commitments

Continuous Consultation

Previous Studies

Mid-Spencer Creek / Greensville Rural Settlement Area Subwatershed Study (2016)

This study identified a management strategy for community servicing (water and septic), recommending to maintain individual wells and septic systems on future lots and to add a backup well to the existing supply well (FDG01). The location, sizing and preliminary design of the treatment plant and storage tank would be subject to further assessment under a subsequent Schedule C Municipal Class EA.



Greensville Backup Well Feasibility Study (2017-2022)

A Feasibility Study was completed to identify potential backup well alternatives and explore cost implications associated with the 2016 Sub-watershed Study recommendations. The Feasibility Study was initiated as a Schedule 'C' Municipal Class EA, however, due to the identification of aging infrastructure at FDG01 and additional alternatives, the EA transitioned into a Feasibility Study.



The recommendation of the Feasibility Study was to implement a single well supply with one fenced wellhead, installation of a well pump, transmission line, pumping control and treatment building at the end of Cedar Avenue. Further, the Cedar Avenue cul-de-sac would require modification to accommodate maintenance vehicles. The potential alternative locations for the new treatment building are located within the Johnson Tew Park and will be further assessed under this Schedule 'C' EA.

Previous Studies Continued

Condition Assessment – FDG01 (2019)

In 2019 the City received a Condition Assessment for Well FDG01 which **identified deficiencies and areas of concern for the Greensville DWS assets** including power and building electrical, process equipment corrosion, and some site civil and structural assets in need of replacement and maintenance. The condition of the facility overall was scored as “good” on average and the facility average risks were “medium”. The critical risks included pressure tanks 1 to 4 and the well pump. Other high-risk components included UV reactors, valving, piping, well pump motor and starter.



Constructability and Risk Assessment (2022)

In 2022, an evaluation of the constructability and risks associated with various alternative supply scenarios for the Greensville DWS was completed along with a multi-objective decision analysis and cost estimates. The alternatives reviewed in this study included alternatives to a backup well for emergency supply such as a trucked water connection and an on-site reservoir with 1-days storage. Upgrades to Well FDG01 per the Condition Assessment were estimated to require 8-months of backup trucked water supply among other limitations. **This review indicated the preferred alternative supply scenario would be a new treatment building for a new well head FDG02 as the primary supply for Greensville and decommission FDG01.** The investment into FDG02 would result in a more reliable facility for the community and City operations for the long-term at an accessible site.



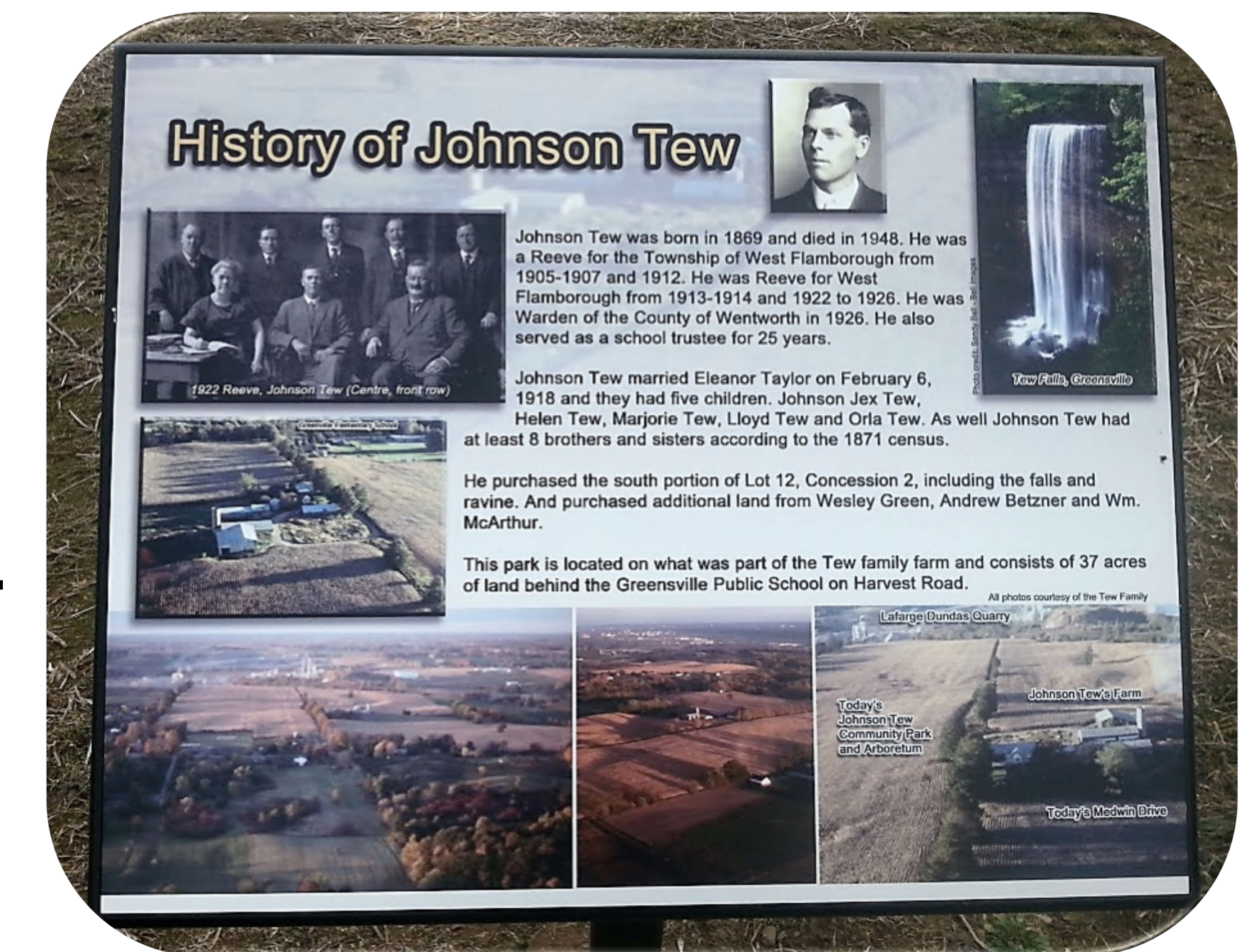
Existing Conditions

The following studies have been completed to document the existing conditions within the Study Area:

- **Built Heritage Resources and Cultural Heritage Landscapes**
 - The study area contains residences over 40 years of age, and municipal plaques. It was confirmed that these residences are **not** considered to be built heritage resources. Two plaques are located in the northern part of Johnson Tew Park but are not expected to be impacted by construction activities.

- **Archaeological Assessment**
 - A Stage 3 Archaeological Assessment carried out in 2014 indicated that the proposed area for a new treatment building in the park at the end of Cedar Avenue does not present archaeological concerns. There are no anticipated impacts to archaeological resources from the project alternatives.

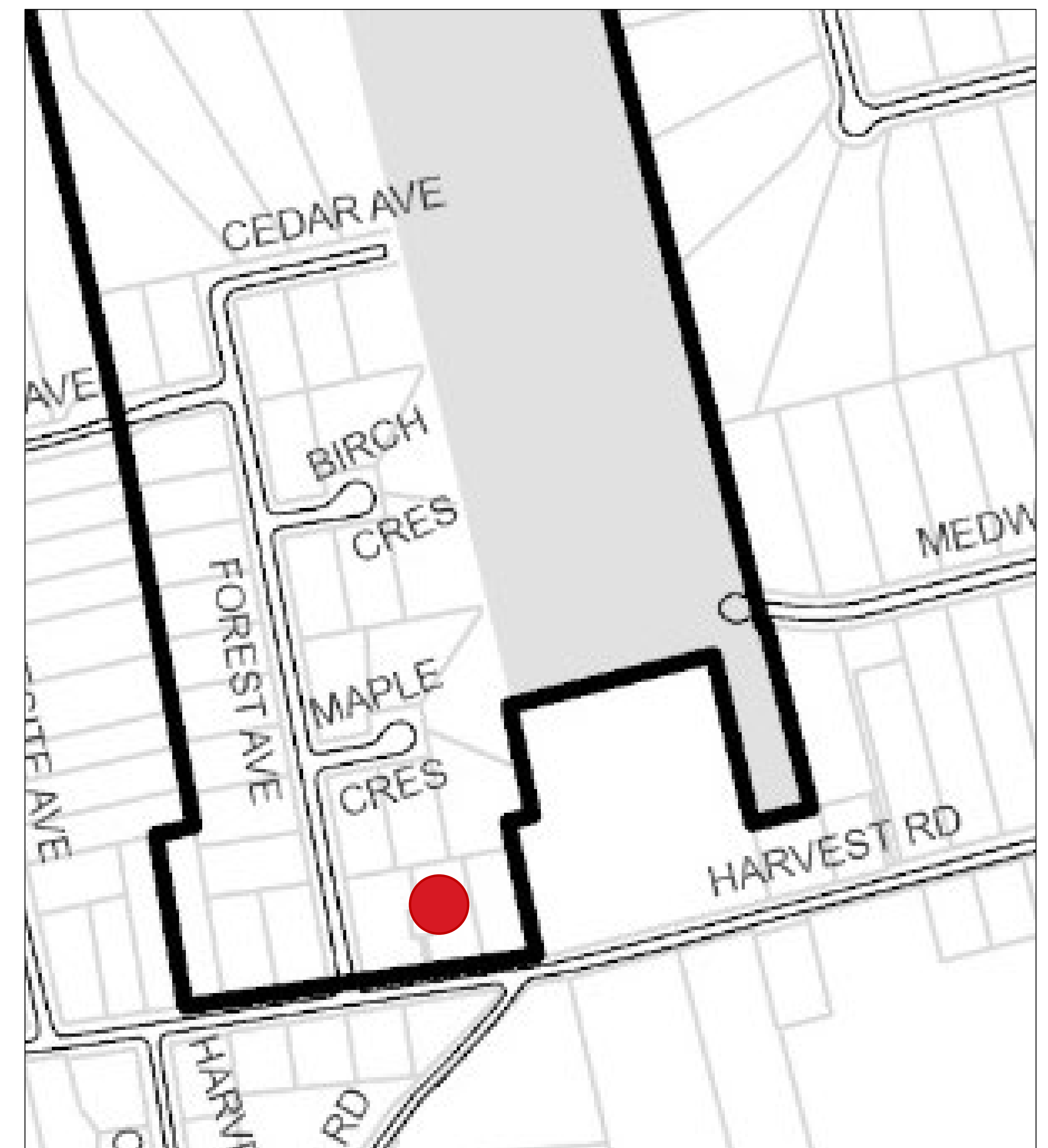
- **Natural Environment**
 - Significant woodlands are present within the Greensville RSA, though are not present within the study area. Bobolink and Eastern Meadowlark have been detected within the Park.



Existing Water Supply

The Greensville DWS is supplied drinking water through the HRWSS from one well identified as FDG01. Information about the existing water supply is provided below:

- Constructed in 1975
- Provides water to 36 homes
- All residents in the area are on individual septic systems
- FDG01 is located near the intersection of Harvest Road and Forest Avenue between two existing residential properties with minimal buffer around the wellhouse. Access to the wellhouse is restricted to a narrow driveway with overhead electrical wires.
- The municipal drinking water license for FDG01 stipulates a daily rated capacity of 199 cubic meters per day (m^3/d), and a Permit to Take Water (PTTW) daily rated capacity of 197 m^3/d .
- During 2021 to 2022, the average daily flow was 33.2 m^3/d and the maximum day demand was 93.4 m^3/d



 Approximate location of FDG01

Problem & Opportunity Statement

The Greensville DWS is serviced by one groundwater-sourced municipal communal well system, which is not equipped with backup water supply, and several components of the existing system (FDG01) are reaching end of life. FDG01 is operating safely and effectively, however, it does not meet the City's current outstation design manual.



In 2022, the City completed a Constructability and Risk Assessment which identified alternatives for backup water supply and identified the implementation of a new municipal communal well and treatment building with water storage could provide reliable water supply and quality to the Greensville DWS and meet the City's water outstation design manual criteria.



The City is committed to providing safe and reliable drinking water to the Greensville DWS residents and will evaluate alternative servicing scenarios with backup water supply for the Greensville DWS.

Alternative Well Supplies

Several test wells have been explored in Johnson Tew Park at the end of Cedar Avenue as potential alternative well supplies for Greensville DWS.

The City completed a 72-hour pump test in 2023 on TW2-13 to confirm the reliability of supply from alternative wells in the Study Area

- **TW2-13**
 - is the most promising alternative supply
 - expected to meet Greensville DWS demands; has an expected long-term water taking rate of 129.6 cubic meters per day
 - no water quality exceedances
- **TW1-13 and TW3-13**
 - not viable sources due to inadequate supply and water quality issues



Long List of Alternative Solutions

The following long list of potential alternative servicing solutions was developed to address the problem and opportunity statement and are described in the subsequent slides:

- **Do Nothing** – Included as part of the standard EA process
- **Alternative 1** – Expand the Lake Based Distribution System
- **Alternative 2** – Construct a Reservoir
- **Alternative 3a** – Trucked Water Connection and Refurbishment of FDG01
- **Alternative 3b** – Trucked Water Connection and Upgrades to FDG01 Towards City Water Outstation Design Manual
- **Alternative 4a** – Two Stations: Refurbish FDG01 with One New Well Head and Treatment Building in the Park
- **Alternative 4b** – Two Wells: Maintain FDG01 as Well House, add Watermain to One Treatment Building and One New Well Head in the Park
- **Alternative 5a** – One Station: One New Well Head, Reservoir and Treatment Building in the Park, Decommission FDG01
- **Alternative 5b** – One Station: One New Well Head and Treatment Building in Park, Backup Trucked Water Connection
- **Alternative 6** – One Station: Two New Well Heads, Treatment Building, and Reservoir

Alternative Solutions 1 & 2

- **Do Nothing** - The Do Nothing alternative assumes no upgrades to the existing FDG01 well supply and treatment system. This alternative provides a benchmark for the other alternatives to be measured against.
- **Alternative 1 – Expand the Lake Based Distribution System** - New pump station (potentially at Woodley Lane and a 2.2km connection to the FDG01 treatment building).
- **Alternative 2 – Construct a Reservoir** - New reservoir facility in the study area for the DWS to be supplied by trucked water, and decommissioning of FDG01 well.



Alternative Solution 3: Backup Trucked Water Connection

Alternative 3a – Trucked Water Connection and Refurbishment of FDG01 - Construct trucked water connection at end of Cedar Avenue and refurbish existing FDG01.

Alternative 3b – Trucked Water Connection and Upgrades to FDG01 Towards City Water Outstation Design Manual - Construct trucked water connection at the end of Cedar Avenue and refurbish FDG01 and associated upgrades to work towards the City Outstation Design Manual.



Alternative Solution 4: Maintain FDG01 well with backup well

Alternative 4a – Two Stations:

Refurbish and Maintain FDG01 with One New Well Head and Treatment Building in the Park

Alternative 4b – Two Wells: Maintain FDG01 as Well House, add Watermain to One Treatment Building and One New Well Head in the Park

Decommission FDG01 treatment components.



Alternative Solution 5: One Station

Both alternatives involve decommissioning the FDG01 station and converting the primary supply for Greensville to a new well and pump station building in the park to be known as FDG02.

- **Alternative 5a – One New Well Head, Reservoir and Treatment Building in the Park, with a reservoir for backup storage**
- **Alternative 5b – One New Well Head and Treatment Building in Park, Backup Trucked Water Connection**













Alternative Solution 6: One Station with Two Well Heads in the Park

- **Alternative 6 – One Station: Two New Well Heads, Treatment Building, and Reservoir** - Decommission FDG01 well and facility and construct two (2) new wells and one treatment building in the park with an underground storage reservoir. This alternative can also include a trucked water connection.

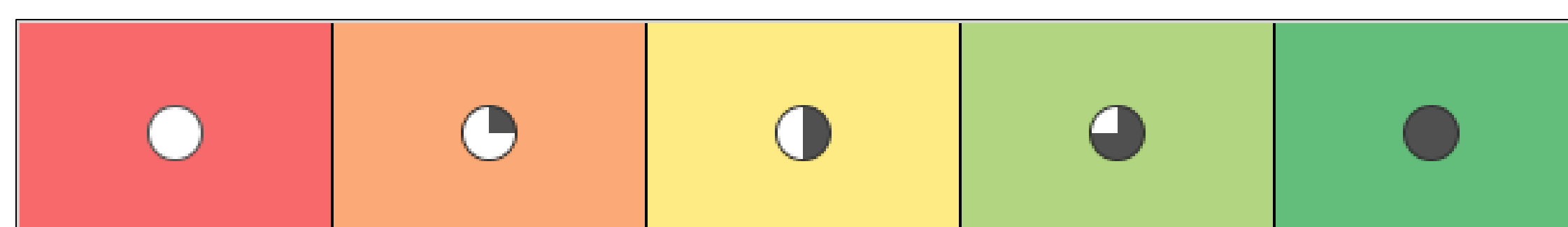


Preliminary Screening of Servicing Scenarios

- The long-list of alternative solutions were reviewed for construction feasibility and ability to meet the updated study problem statement
- Alternatives 1 through 3 (3a and 3b) were not carried forward due to constructability and fitness issues with the problem statement

Long-List of Alternative Servicing Scenarios	Construction Feasibility	Meets Problem Statement	Key Considerations	Short-Listed Alternatives
Do Nothing			•Does not meet Problem Statement; Poor reliability and existing condition; No backup supply	No
1 – Expand Lake Based Distribution System			•Outside study area; Poor feasibility •Long single-point-of-failure for the community; Requires booster station	No
2 – Construct a Reservoir			•Concerns with water age and water quality •Poor fit with Problem Statement	No
3a – Backup Trucked Water Connection to FDG01			•Concerns with feasibility of refurbishing FDG01 •Poor fit with Problem Statement	No
3b – Backup Trucked Water Connection and FDG01 Refurbishment			•Concerns with feasibility of upgrading FDG01 •Poor fit with Problem Statement	No

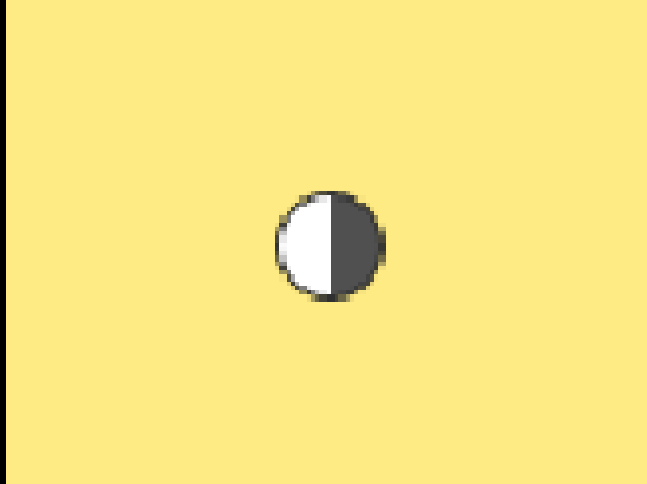
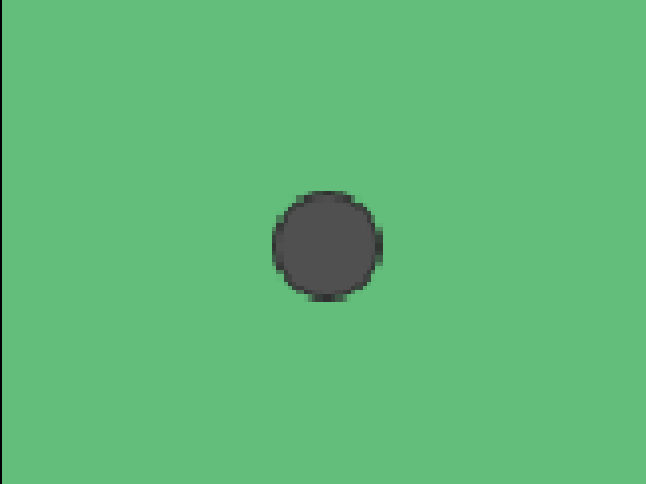
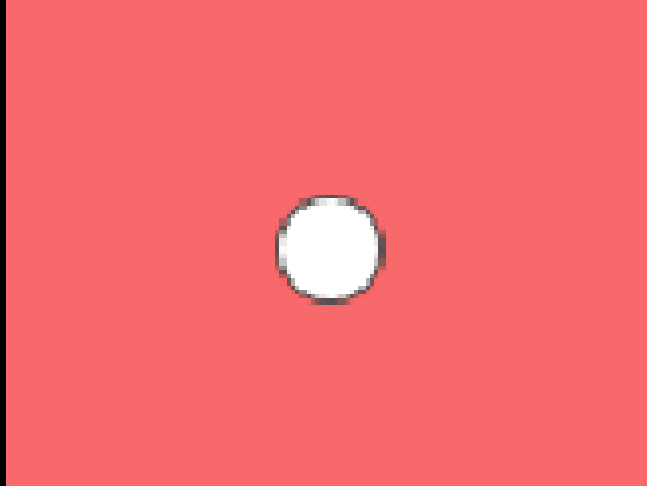
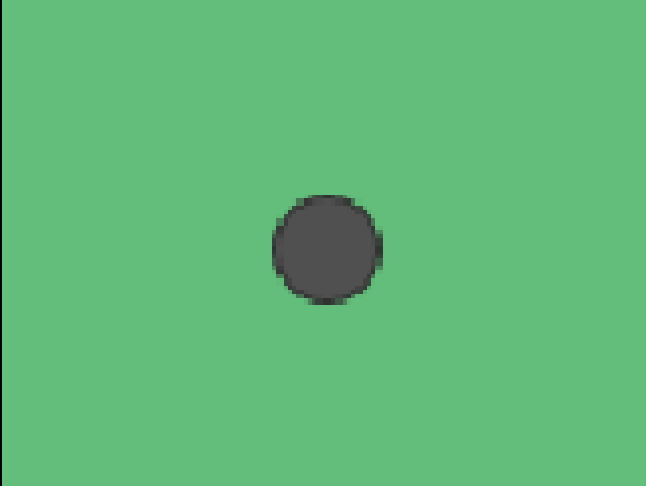
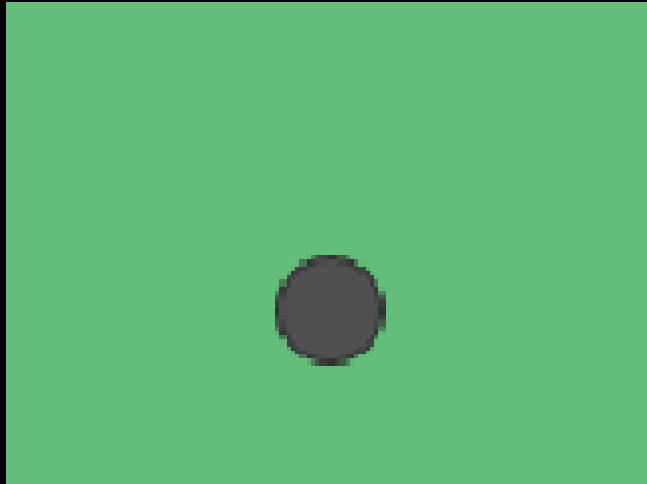
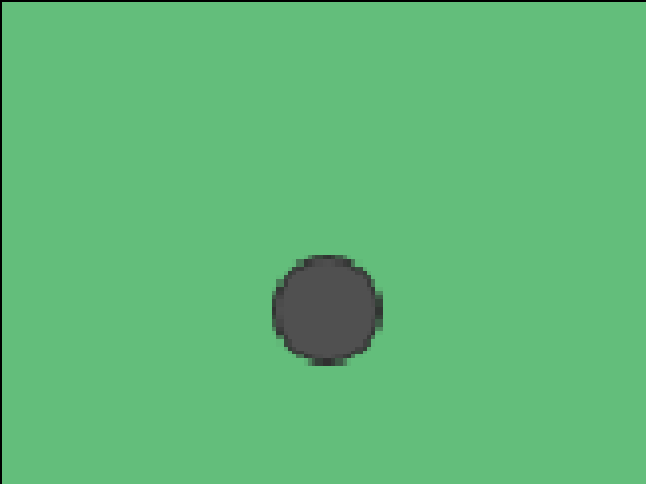
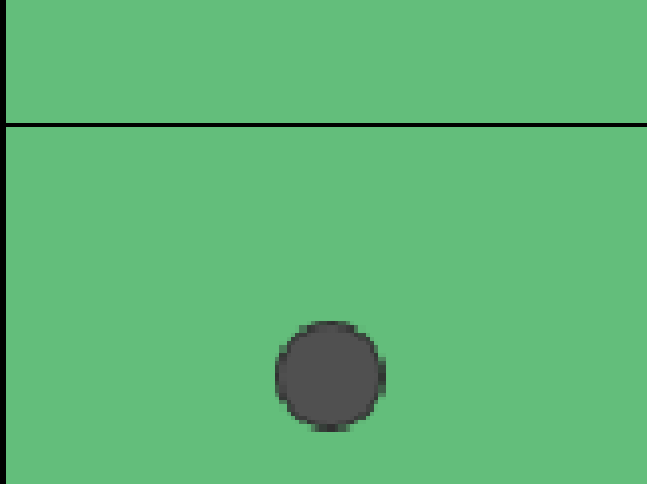
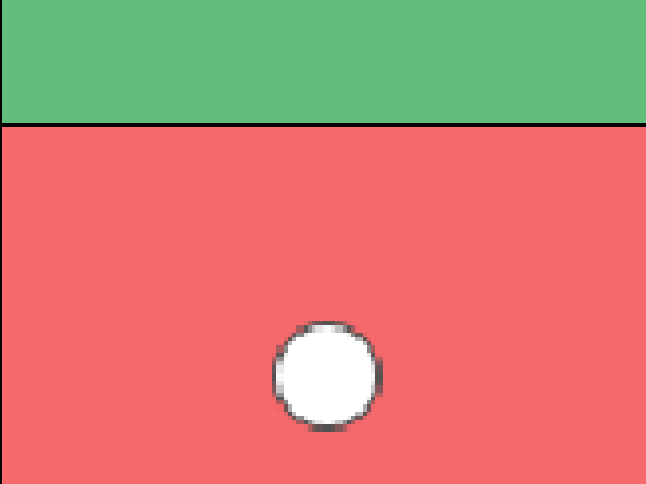
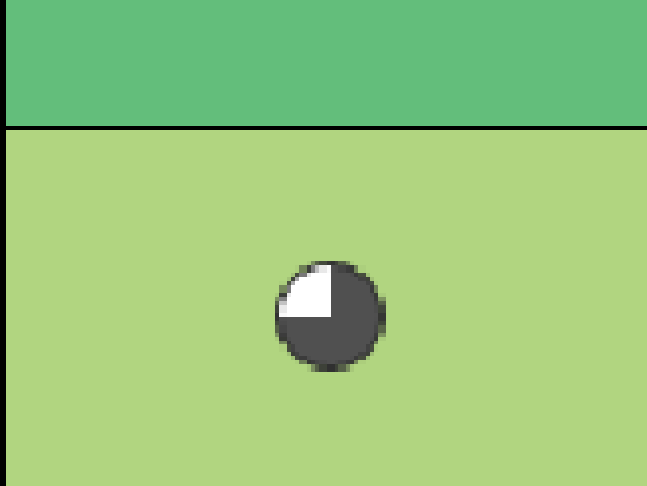
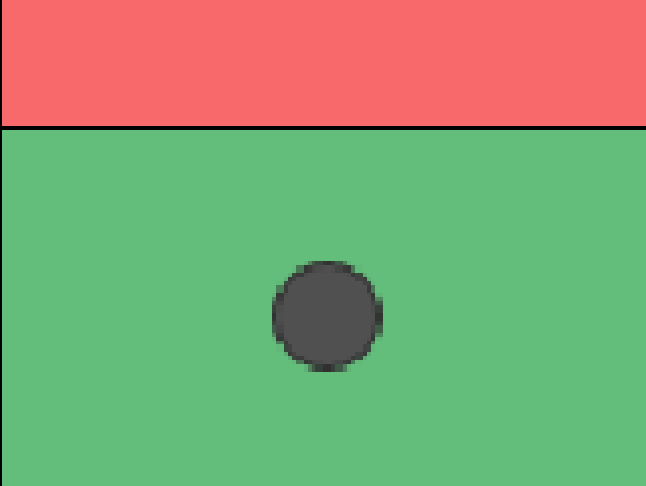
Least Preferred



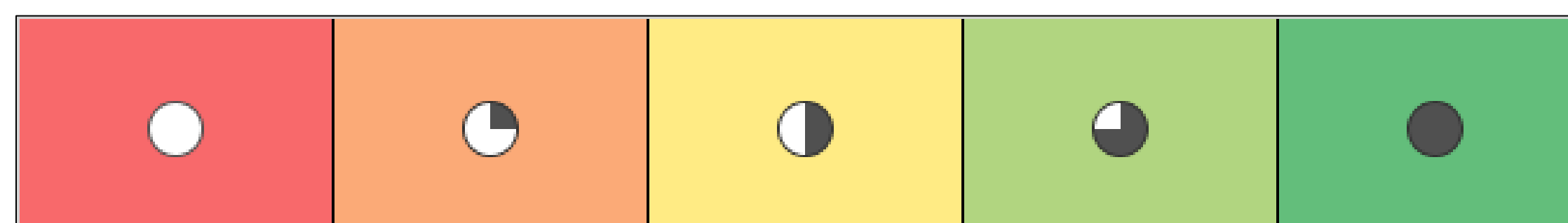
Most Preferred

Preliminary Screening of Servicing Scenarios Continued

- Alternatives that were preferred following this preliminary screening were carried forward for a review against the study Evaluation Criteria

Long-List of Alternative Servicing Scenarios	Construction Feasibility	Meets Problem Statement	Key Considerations	Short-Listed Alternatives
4a - Two Stations: Refurbished FDG01 with Backup Well and Pump Station in Park			<ul style="list-style-type: none"> Requires retrofitting FDG01; can rely on new well and pump station during construction Meets Problem Statement 	Yes
4b – Two Wells: FDG01 and Watermain to One Pump Station in the Park, One Well in Park			<ul style="list-style-type: none"> Poor construction feasibility Meets Problem Statement 	No
5a – One Station: One Well and Reservoir in the Park			<ul style="list-style-type: none"> High construction feasibility Meets Problem Statement Provides redundant storage; Reservoir will help manage projected seasonal / peak demands 	Yes
5b – One Station: One Well and Pump Station in Park, Trucked Water Connection for Backup			<ul style="list-style-type: none"> High construction feasibility Poor agreement with Problem Statement Potential for seasonal / peak demands to exceed capacity of one (1) well 	No
6 – One Station with Two New Well Heads in the Park			<ul style="list-style-type: none"> Good construction feasibility Meets Problem Statement 	Yes

Least Preferred



Most Preferred

Evaluation Criteria

The short-listed alternative solutions were evaluated using the factors and criteria below to identify the recommended servicing solution. Comments received from agencies, stakeholders, Indigenous communities and members of the public will be integrated as required.

Socio-Economic

- Existing Land Uses
- Aesthetic Value
- Benefit to the Community and Public Acceptance – Consistent with 2022 Feasibility Study

Natural Environment

- Terrestrial Habitat (i.e., natural heritage features)
- Wildlife (i.e., Species at Risk)
- Groundwater and Surface Water Quality and Quantity
- Source Protection
- Climate Change

Transportation/Engineering

- Maintenance Requirements / Operability
- Constructability
- Land Requirements
- Utilities
- Water Quantity

Financial

- Life Cycle Costs

Cultural Environment

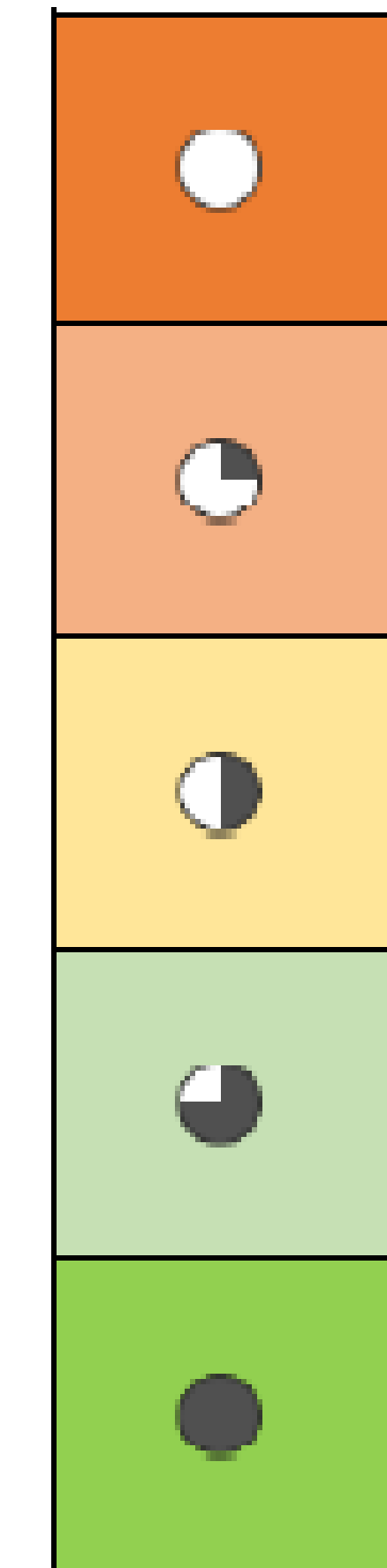
- Archaeological Resources
- Built Heritage Resources and Cultural Heritage Landscape

Evaluation of Alternative Servicing Solutions

The short-list of alternative servicing solutions was reviewed against the evaluation criteria and the recommended alternative servicing solution was identified.

	Alternative 4A - Two Stations	Alternative 5A – One Station	Alternative 6 – One Station
Evaluation Criteria	Refurbish and Maintain FDG01 with One New Well Head and Treatment Building in the Park	One New Well Head, Reservoir and Treatment Building in the Park, Decommission FDG01	Two New Well Heads, Reservoir and Treatment Building in the Park, Decommission FDG01
Natural Environment			
Socio-Economic Environment			
Cultural Environment			
Technical Engineering			
Financial			
Overall	Least Preferred	Most Preferred	Moderately Preferred

Least Preferred



Most Preferred



Recommended

Alternative Station Locations

Alternative locations for a new treatment building under review for this study for the Greenville DWS are listed below:











- **Alternative Location 1:** to the South of the park path entrance at the end of Cedar Avenue
 - Lot identified and secured by the City
 - Near alternative well supply (TW2-13)

- **Alternative Location 2:** to the North of the park path entrance at the end of Cedar Avenue
 - Lot would require identification and ownership by City
 - Further away from alternative well supply (TW2-13)

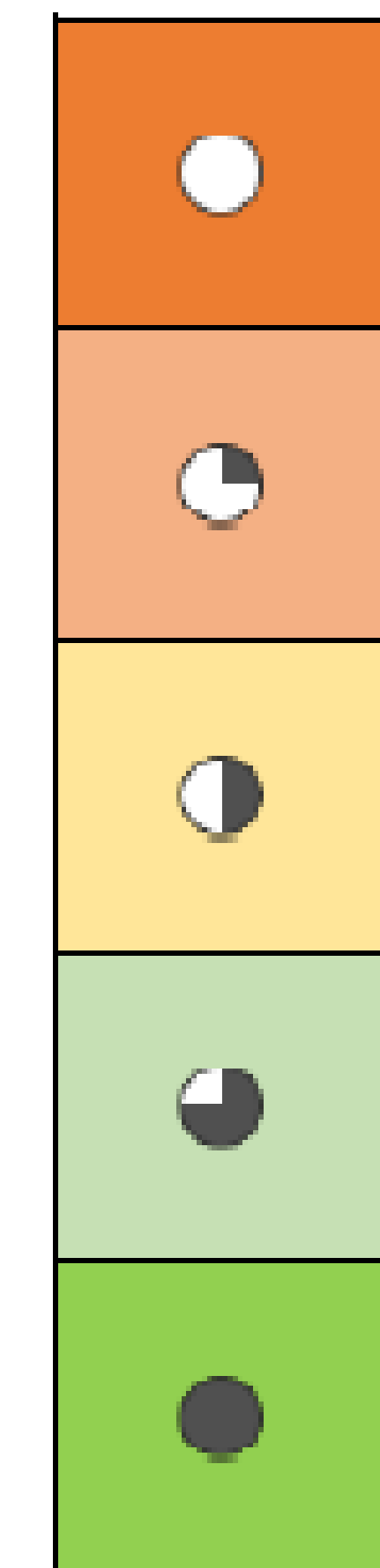


Evaluation of Station Locations

The two alternative station locations in the Park were evaluated against the natural, socio-economic, and cultural environmental, technical, and financial evaluation criteria.

Evaluation Criteria	Alternative Location 1	Alternative Location 2
	<u>South</u> of Park Path Entrance at the end of Cedar Avenue	<u>North</u> of Park Path Entrance at the end of Cedar Avenue
Natural Environment		
Socio-Economic Environment		
Cultural Environment		
Technical Engineering		
Financial		
Overall	Moderately to Most Preferred	Most Preferred

Least Preferred



Most Preferred

Next Steps

Following this PIC, the project team will complete the next steps identified below:

Review and respond to comments received

Continue to engage Indigenous communities, and consult with the public and agencies

Confirm the Preferred Water Servicing Strategy & Location

Confirm the Preferred Water Servicing Strategy Design

Complete Technical Studies

The results of these next steps will be used to identify the **Preferred Water Servicing Strategy**, which will be presented at Public Information Centre #2, tentatively scheduled for Winter 2024.

Thank you!

Thank you for participating in this Public Information Centre for the City of Hamilton, Municipal Class Environmental Assessment for the Greensville Drinking Water Supply study. Your feedback is valuable and appreciated.

Please provide comments by filling out the online survey or by contacting a member of the project team below by November 10, 2023:



Marco Silverio

Project Manager, Source Protection Planning
City of Hamilton

Phone: 905-546-2424 ext. 6099

Email: marco.silverio@hamilton.ca



Nicole McLellan

Project Manager (Consultant)

Stantec Consulting

Phone: 519-575-4229

Email: nicole.mclellan@stantec.com