Schedule ‘C’ Class Environmental Assessment Study
New Supplementary Water Supply Source for the Palgrave – Caledon East Drinking Water System

Public Information Centre #2

Wednesday, October 4th, 2023

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Why Are We Here?

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- The Region of Peel is undertaking a **Municipal Class Environmental Assessment Study** to identify infrastructure upgrades required to the existing Palgrave – Caledon East Drinking Water System.
- Upgrades are necessary to enhance the security of water supply, minimize potential risks associated with declined well efficiency, and meet the long-term water needs of the serviced area.
- The objectives of this **Public Information Centre #2** are to:

Present the results of the evaluation of alternatives, the potential anticipated impacts and mitigation measures, and introduce the Preliminary Recommendation regarding the Preferred Design Concept.

Receive your feedback on the information presented tonight to confirm the Preliminary Recommendation.

We need your feedback!

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Your feedback is important to this Class Environmental Assessment Study!

Please review all materials to learn about the process, the activities completed to date, and the **Preliminary Preferred Design Concept being recommended.**

Your opinion is important to us! Members of the project team are available to answer questions or hear your comments.

Please complete the **Comment Form** after reviewing the materials and drop it in the Comment Box tonight or return it to the contact people shown on the form by October 20th, 2023.

Municipal Class EA Process and Timeline

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Getting Started

- Review available information / data
- Identify Problem / Opportunity Statement

NOTICE OF COMMENCEMENT

March & August 2021

Exploring the Options

- Consider ways to address existing concerns
- Inventory study area
- Identify potential impacts
- Evaluate options and select the recommended **Preliminary Preferred Solution**

VIRTUAL PUBLIC INFORMATION CENTRE #1

May – June 2022

Conceptualizing the Preferred Solution

- Develop design concepts to implement the Preferred Solution
- Identify impacts and mitigation measures
- Evaluate options and select the recommended **Preliminary Preferred Design Concept**

WE ARE HERE

IN PERSON PUBLIC INFORMATION CENTRE #2

October 4th, 2023

Documenting the Process

- **Prepare a report** and satisfy the documentation requirements of the Class Environmental Assessment process
- Make report available for **public review**

NOTICE OF COMPLETION

Winter 2023

Implementing the Recommendations

- Complete detailed design of the recommended design concept
- Initiate construction

DETAILED DESIGN / CONSTRUCTION

2024 - 2025

Overview of Palgrave – Caledon East Drinking Water System

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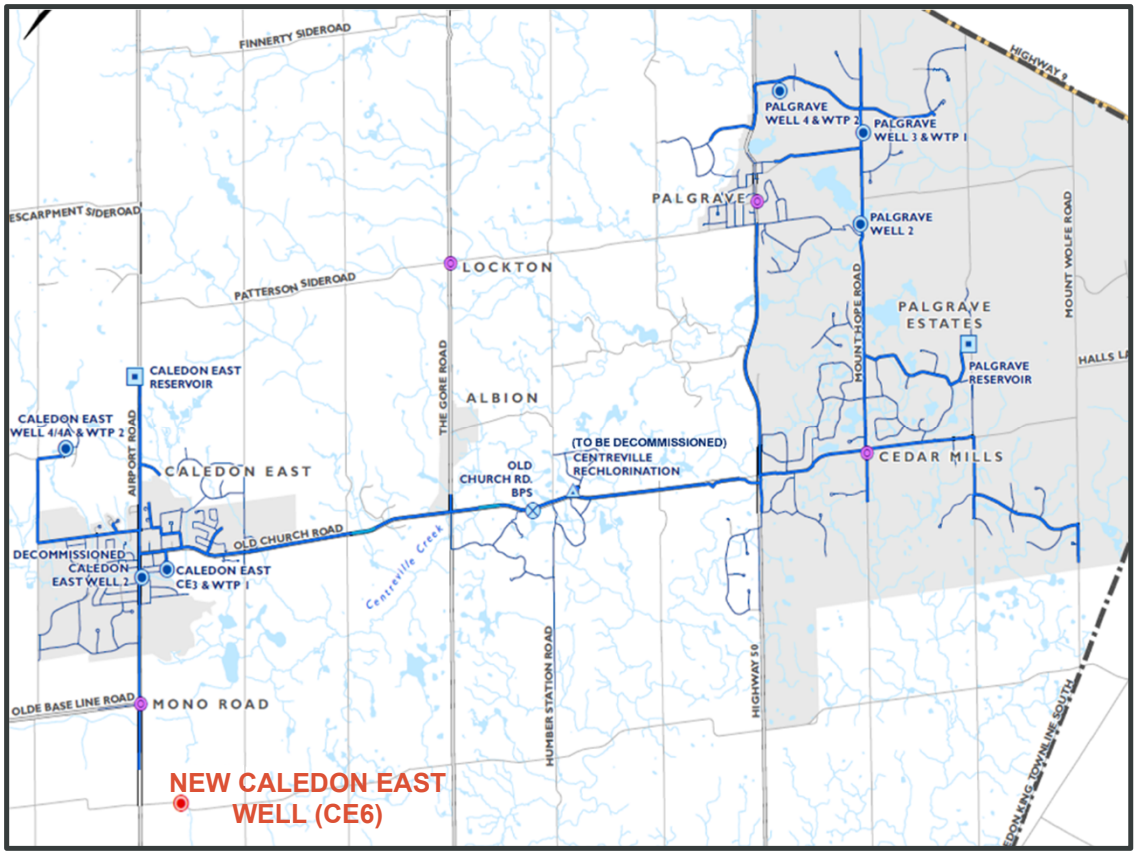
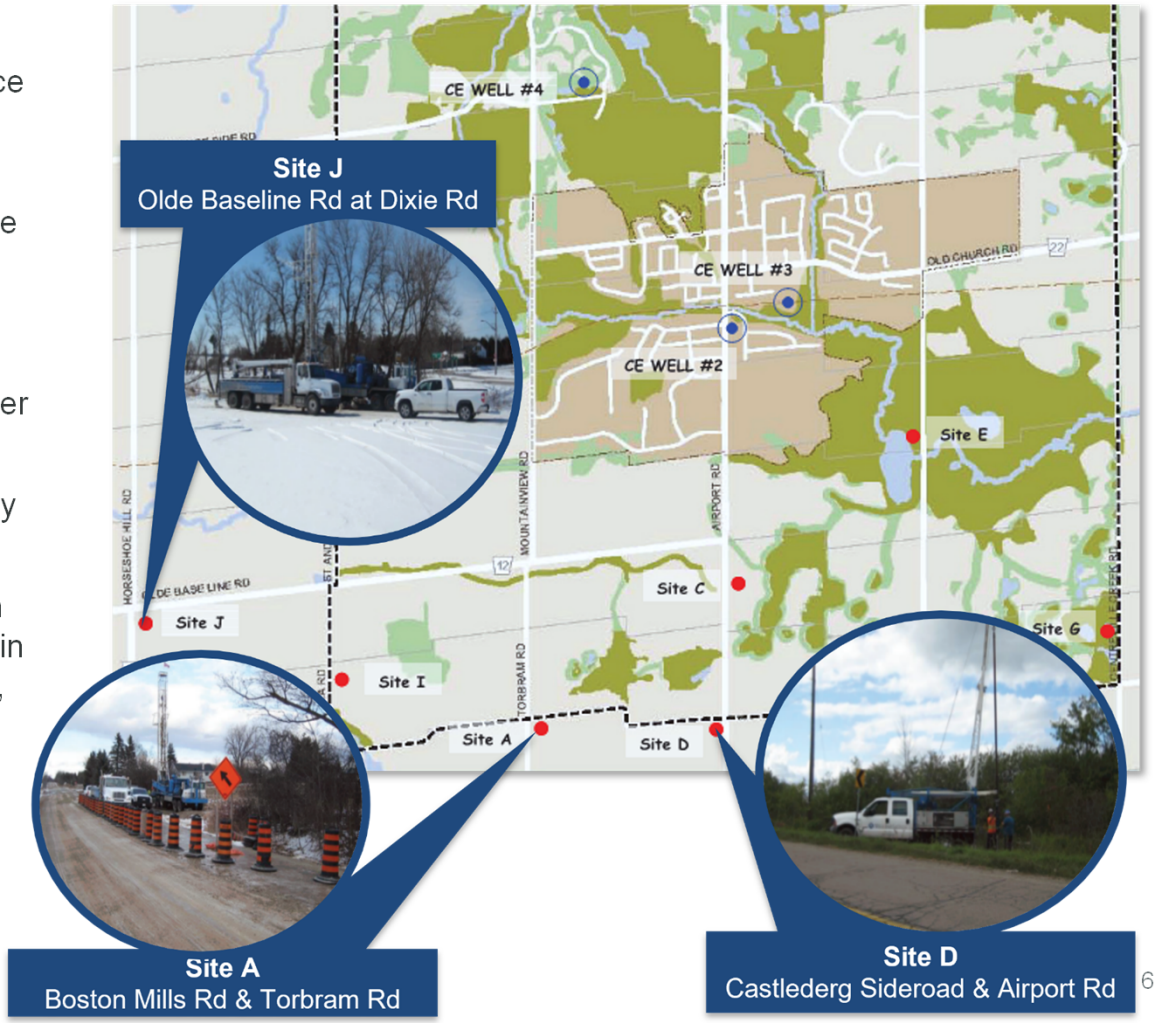
- The Palgrave – Caledon East Drinking Water System is groundwater-based system owned and operated by the Region.
- It supplies drinking water to the communities of Caledon East, Palgrave, Palgrave Estates, Mono Road, Albion, Centreville, and Cedar Mills.
- Major infrastructure components:
  - 6 municipal groundwater wells – 3 in Caledon East and 3 in Palgrave.
  - 4 water treatment plants – 2 in Caledon East and 2 in Palgrave.
  - 2 water storage facilities and 2 booster pumping stations.
  - An interconnecting watermain allowing conveyance of treated water from Caledon East to Palgrave and vice versa.

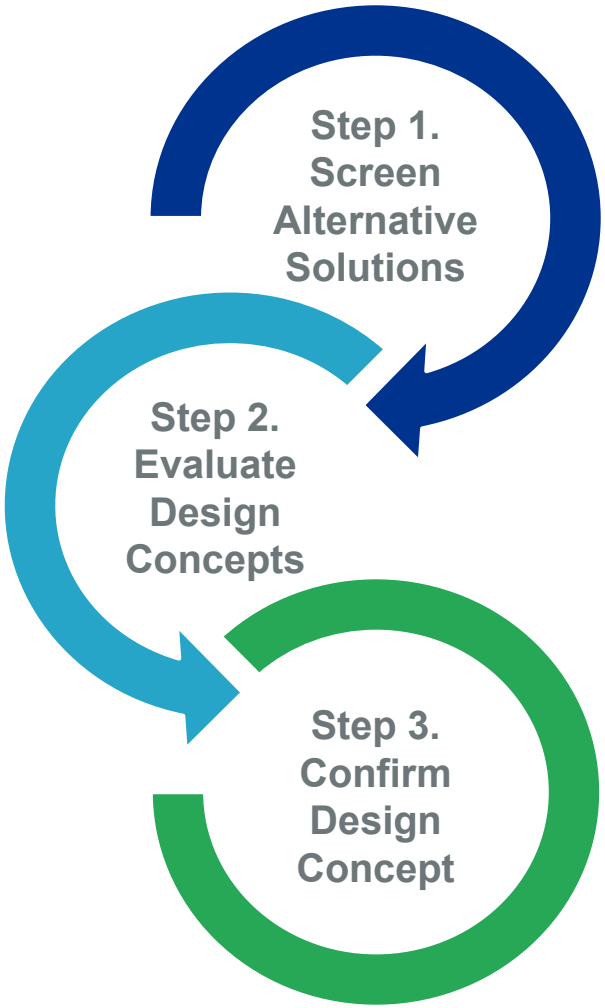


Study Context – Groundwater Exploration Program

- A Groundwater Exploration Program was undertaken in 2019 to find an additional new source of water supply in the Caledon East area.
- 10 possible sites were identified and ranked in order of drilling sequence. Three (3) test wells were drilled at the most promising sites (**Sites A, D and J**) to assess viability for a new permanent groundwater municipal supply source.
- **Sites A** produced limited quantity of water. No water was encountered on Site J.
- Favorable aquifer conditions with high water quality and sufficient quantity were found on Site D.
- After initial testing, a new production well **Caledon East #6, CE6**, was constructed and further tested in 2019/2020 on the TWD site – east of Airport Road, north of Castlederg Sideroad.
- Testing of CE6 confirmed that the well can sustainably produce 50 L/s for extended periods without interference to existing domestic wells or surface water features in the area.



Selecting the Preferred Solution – The Process



1. Identify and Screen Alternative Solutions

Alternatives to address the Problem/Opportunity Statement were identified and screened against "must-meet criteria":

- ✓ Potential contribution to a water supply increase
- ✓ Ability to meet drinking water standards, policies and permitted land uses
- ✓ Compatibility with existing infrastructure
- ✓ Ability to balance benefits and costs relative to other options

The alternative to Connect a New Well (CE6) to the Existing Distribution System was recommended for further evaluation. Other alternatives that failed to meet the must-meet criteria were screened out.

2. Identify and Evaluate Alternative Design Concepts

The alternative to Connect a New Well (CE6) to the Existing Distribution System was conceptualized into Design Concepts and evaluated against multi-criteria to maximize benefit and/or to minimize impacts to:

✓ Technical and Operational ✓ Natural Environmental ✓ Community/ Social ✓ Cost

3. Select and Confirm the Preferred Design Concept

A **Preliminary Preferred Design Concept** has been selected based on the evaluation results. Feedback from the public is necessary to confirm the recommendations.

Results from Step 1 were presented in detail at PIC 1 (May/June 2022). Results from Steps 2 and 3 are presented in the following panels.

Step 1 Summary – Options for Preferred Alternative Solution

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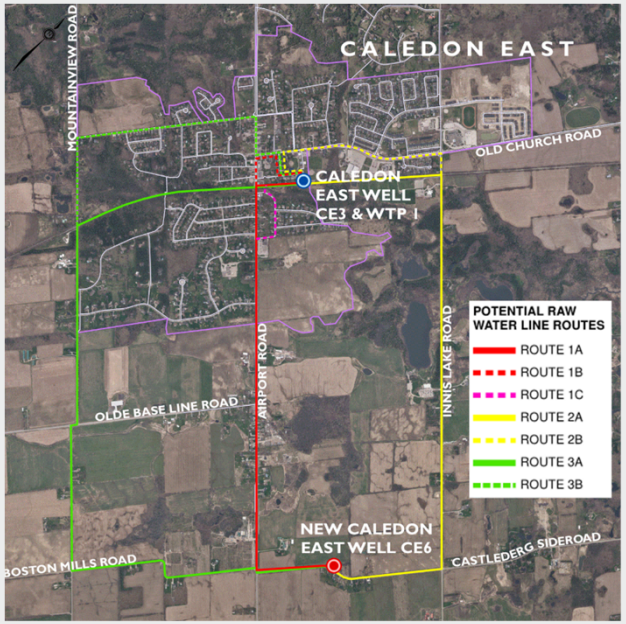
The Alternative to **Connect a New Well (CE6) to the Existing Distribution System** was conceptualized further into two (2) options:

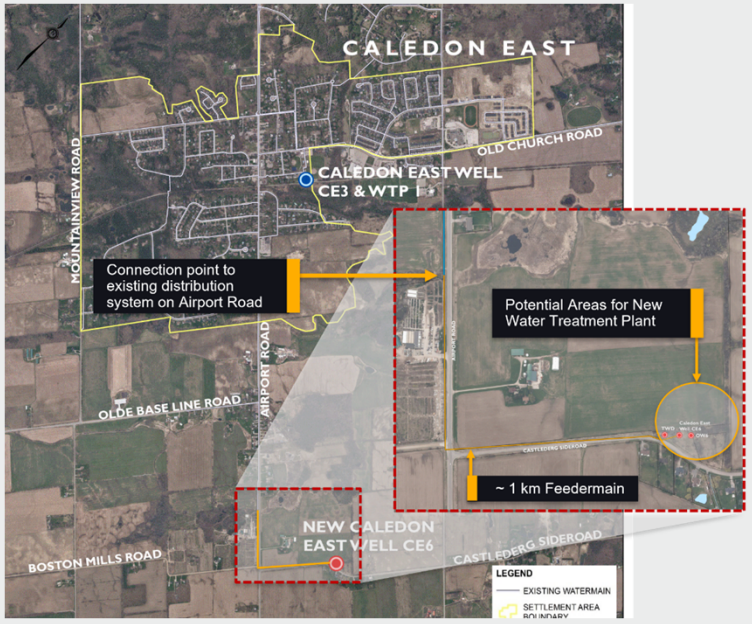
Option 1 – Additional Supply Capacity through a connection between New Well CE6 and existing Caledon East Water Treatment Plant (WTP) #1. Raw water to be treated at WTP #1.

- 7 Potential raw water pipeline routes between New Well CE6 and WTP#1 were identified (as shown below)

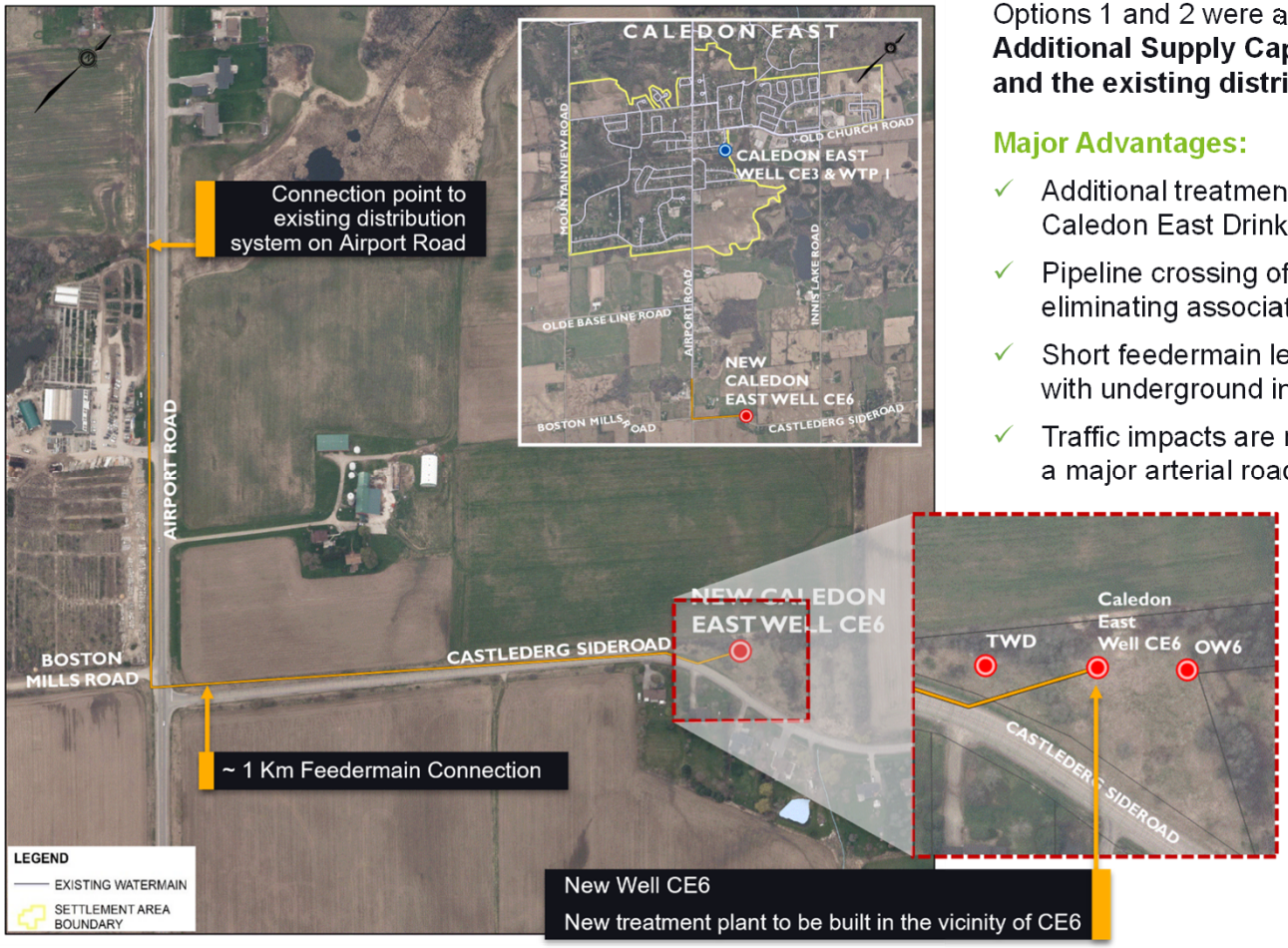


Option 2 – Additional Supply Capacity through a connection between New Well CE6 and existing distribution system. Raw water to be treated at a New Water Treatment Plant, to be built in the vicinity of CE6 well site.

- Potential areas for the New Water Treatment Plant were identified (as shown below)



Step 1 Summary – Preferred Option for the Alternative Solution



Options 1 and 2 were assessed against a multi-level criteria. **Option 2 – Additional Supply Capacity through a connection between New Well CE6 and the existing distribution system was selected as preferred.**

Major Advantages:

- ✓ Additional treatment plant improves security / redundancy of the Palgrave – Caledon East Drinking Water System.
- ✓ Pipeline crossing of key natural and hydrologic features are avoided, eliminating associated construction challenges and environmental impacts.
- ✓ Short feedermain length (~1 km) reduces project cost and potential conflicts with underground infrastructure.
- ✓ Traffic impacts are minimized by avoiding construction for a long distance in a major arterial road (Airport Road).

Key considerations:

- Property acquisition for the new well CE6 site is being explored with the property owner (Town of Caledon).
- The new water treatment plant site will comprise a pumping/control building – Approximate building footprint 20m x 25m.
- All new infrastructure to be built outside of floodplain limits with the appropriate setbacks.

Step 2 – Developing Alternative Design Concepts

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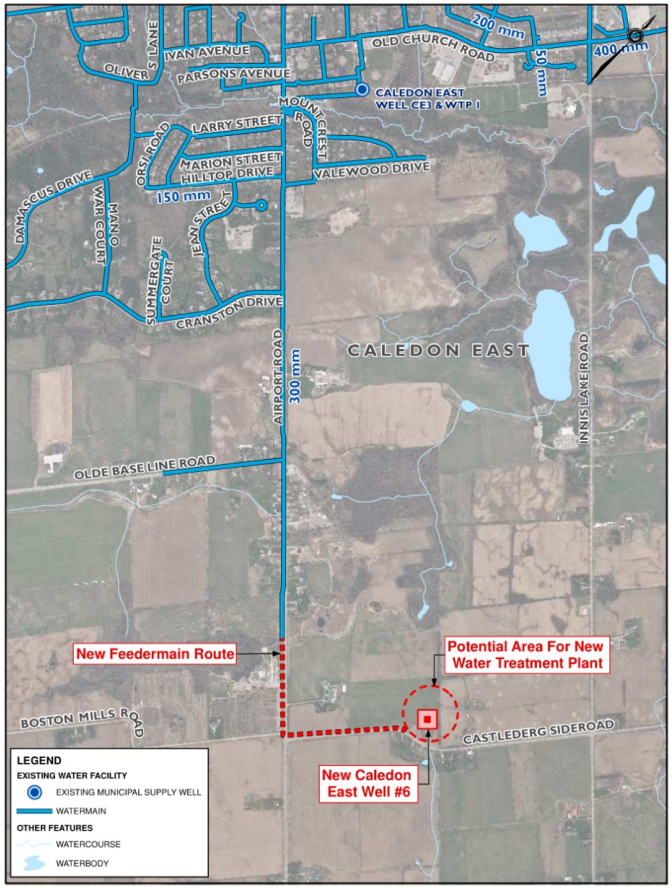
Option 2 – Additional Supply Capacity through a connection between New Well CE6 and existing distribution system, was further developed into alternative design concepts to reflect potential implementation scenarios for the New Water Treatment Plant and the New Feedermain.

Key considerations for New Water Treatment Plant:

- Proximity to production well location (Well CE6)
- Viability for property acquisition
- Treatment trains/technologies to satisfy the disinfection requirements and provision for future iron/manganese removal (in anticipation of more stringent regulations)
- Building layout configurations

Key considerations for Interconnecting Feedermain:

- Available pipe installation methods, open cut vs trenchless
- One (1) route was established for the interconnecting feedermain, reflecting the shortest possible length between the 2 connection points – the new treatment plant at the CE6 well site and the existing Caledon East distribution system on Airport Road. Shortest route results in least potential impacts.



Alternative Design Concepts – Water Treatment Plant

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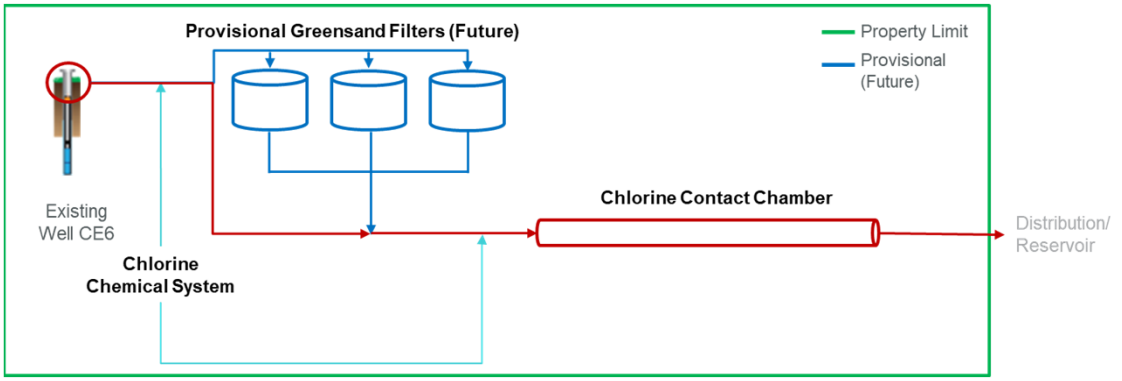
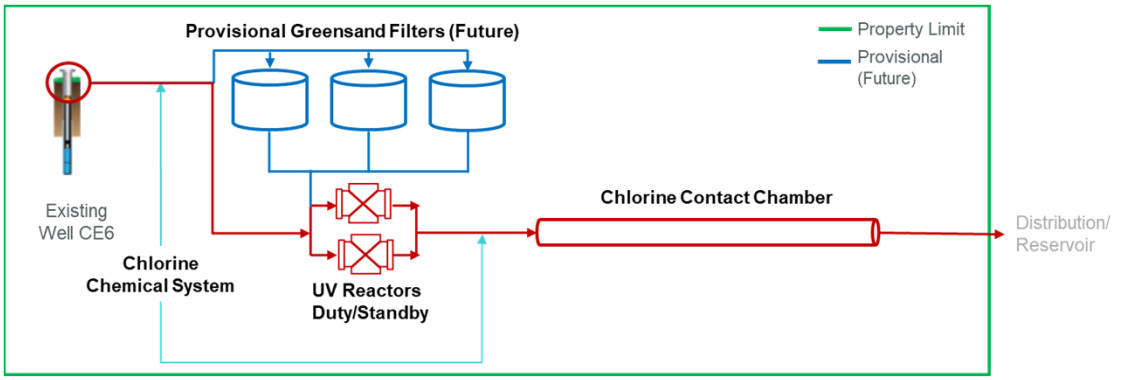
Two (2) alternative design concepts were developed to represent potential treatment trains for disinfection and provision for iron/manganese removal:

Option WTP1: Disinfection through chlorination only



Option WTP2: Disinfection through a combination of chlorination and UV irradiation



Alternative Design Concepts – Feedermain

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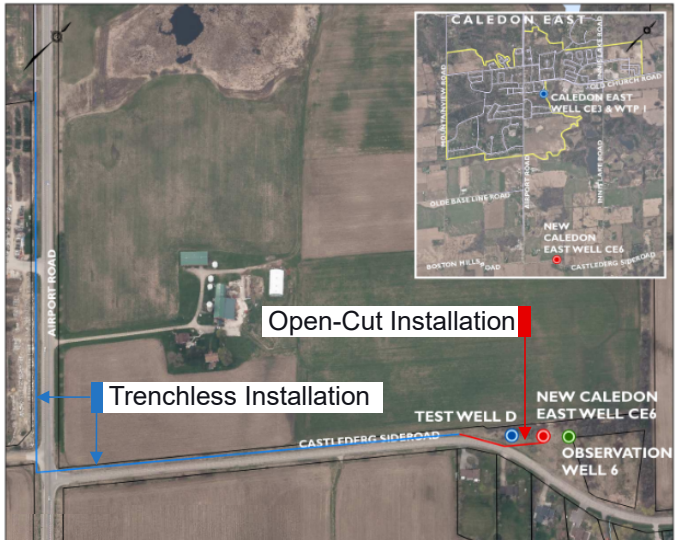
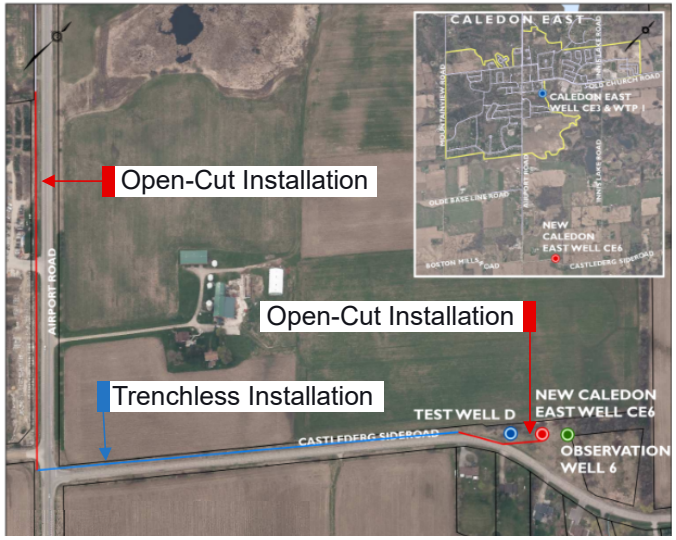
Three (3) alternative design concepts were developed to represent potential pipeline installation methods for the 1-km interconnecting feedermain:

Option F1: Pipe installation predominantly by open-cut method. No trenchless sections

Option F2: Pipe installation predominantly by trenchless methods. Minimum open cut sections



Option F3: Pipe installation by a combination of open cut and trenchless methods



Evaluating Alternative Design Concepts

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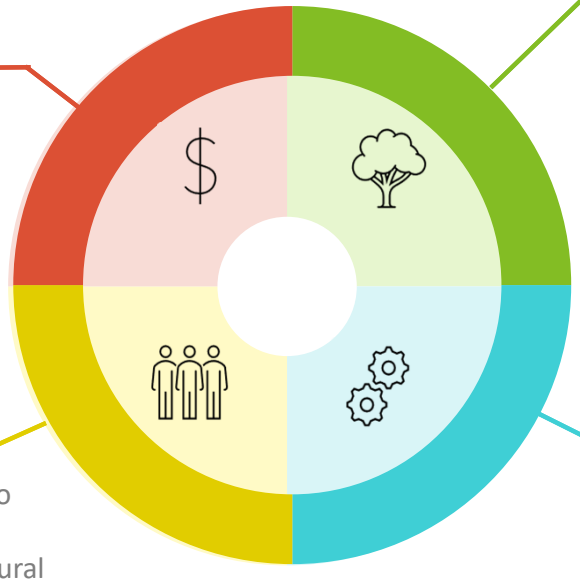
Evaluation criteria were used in the comparative evaluation of alternative design concepts. All criteria were weighed equally. Alternative design concepts were assessed relative to each other against four (4) groups of criteria.



Economic Criteria – 25%

- Life cycle costs, including Capital and Operation and Maintenance Costs

Natural Environmental Criteria – 25%

- Impact to existing natural heritage features
- Impact to water resources and source water protection areas
- Compatibility and conformity with existing and future land uses
- Potential impacts on climatic conditions and project vulnerability to climate change

Socio-Cultural Criteria – 25%

- Potential short- and long-term disruption to local users and existing uses
- Potential impact to archaeological and cultural heritage features

Technical & Operational Criteria – 25%

- Constructability
- Permits and approvals requirements
- Legal/jurisdictional requirements
- Land acquisition requirements

Scoring Approach and Preferability

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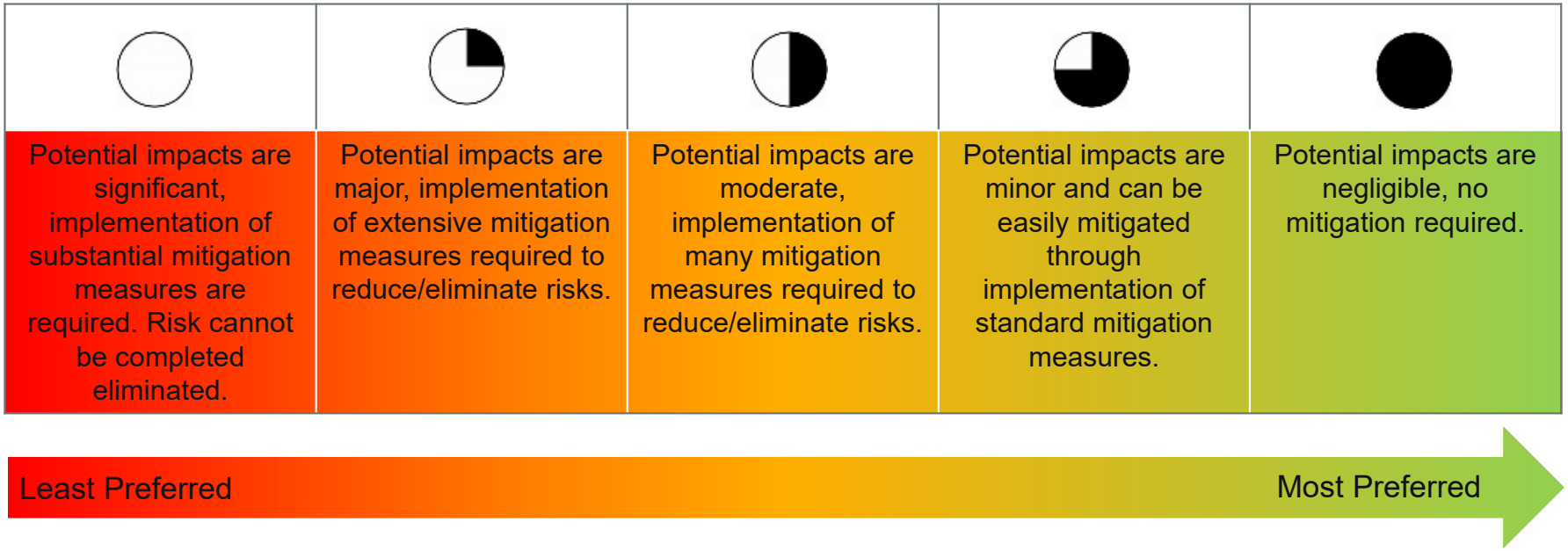
Alternative Design Concepts were assessed relative to each other, and assigned a score based on potential net impact and available mitigation measures. Scores have been based on the following scoring approach:



Preliminary Preferred Water Treatment Design Concept

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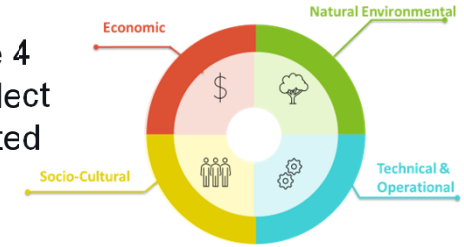
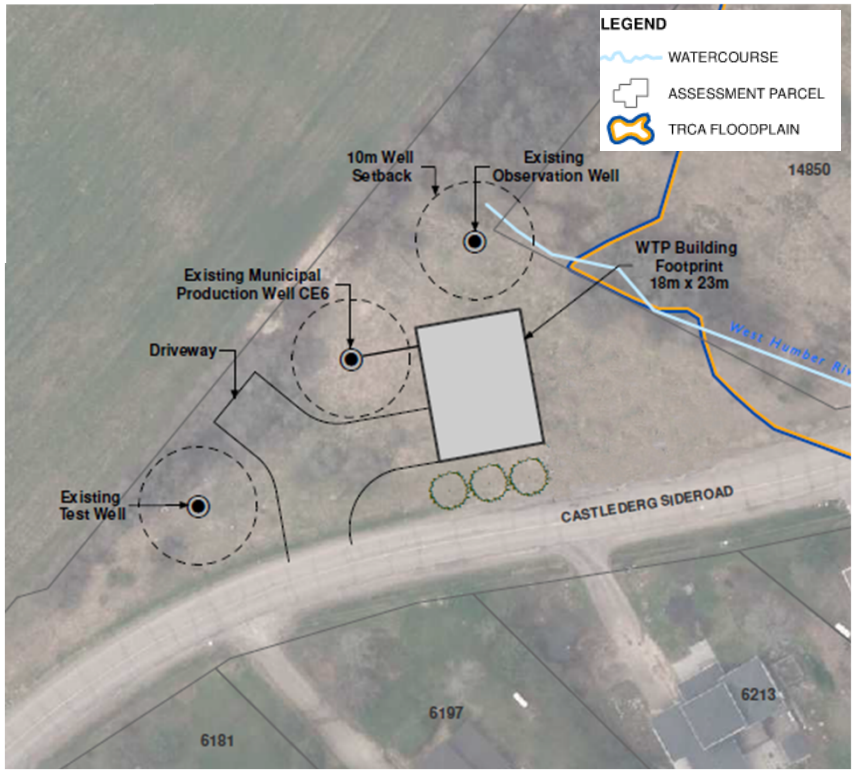
Design concepts were assessed against the 4 criteria groups. Scores were assigned to reflect advantages/disadvantages and the anticipated impacts, with the following results:



Option WTP1 – Disinfection through chlorination only	**Option WTP2 –** Disinfection through a combination of chlorination and UV irradiation
●	◕
Preliminary Preferred – Recommended for Implementation	

Key Advantages of Option WTP1:

- ✓ Fewer treatment technologies reduces the complexity of the treatment process.
- ✓ Simplicity of treatment process equipment results in lower operational and maintenance needs and lower energy requirements.
- ✓ Significantly lower capital cost ($6.3M), labour, and operational & maintenance costs, compared to Option WTP2.



Conceptual site layout and property limits are subject to change during detailed design and further consultation with the Town of Caledon.

Preliminary Preferred Feedermain Design Concept

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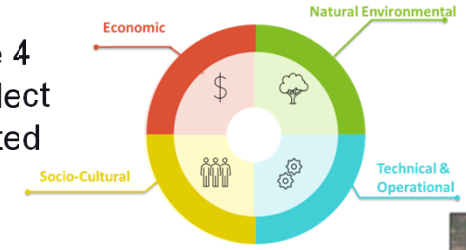
Design concepts were assessed against the 4 criteria groups. Scores were assigned to reflect advantages/disadvantages and the anticipated impacts, with the following results:



Option F1 – Predominantly Open-cut	Option F2 – Predominantly Trenchless	Option F3 – Combination of Open-cut and Trenchless
◕	●	◕
	Preliminary Preferred – Recommended for Implementation	

Key Advantages of Option F2:

- ✓ Avoids reoccurring disruptions on Castlederg Sideroad.
- ✓ Lowest potential for disruption to neighbouring residents and local road users.
- ✓ Lowest potential to impact streetscape and traffic during construction, particularly avoiding traffic impact to Airport Road.
- ✓ Estimated capital construction cost of $1.7M.

Source Water Protection Update / Wellhead Protection Areas

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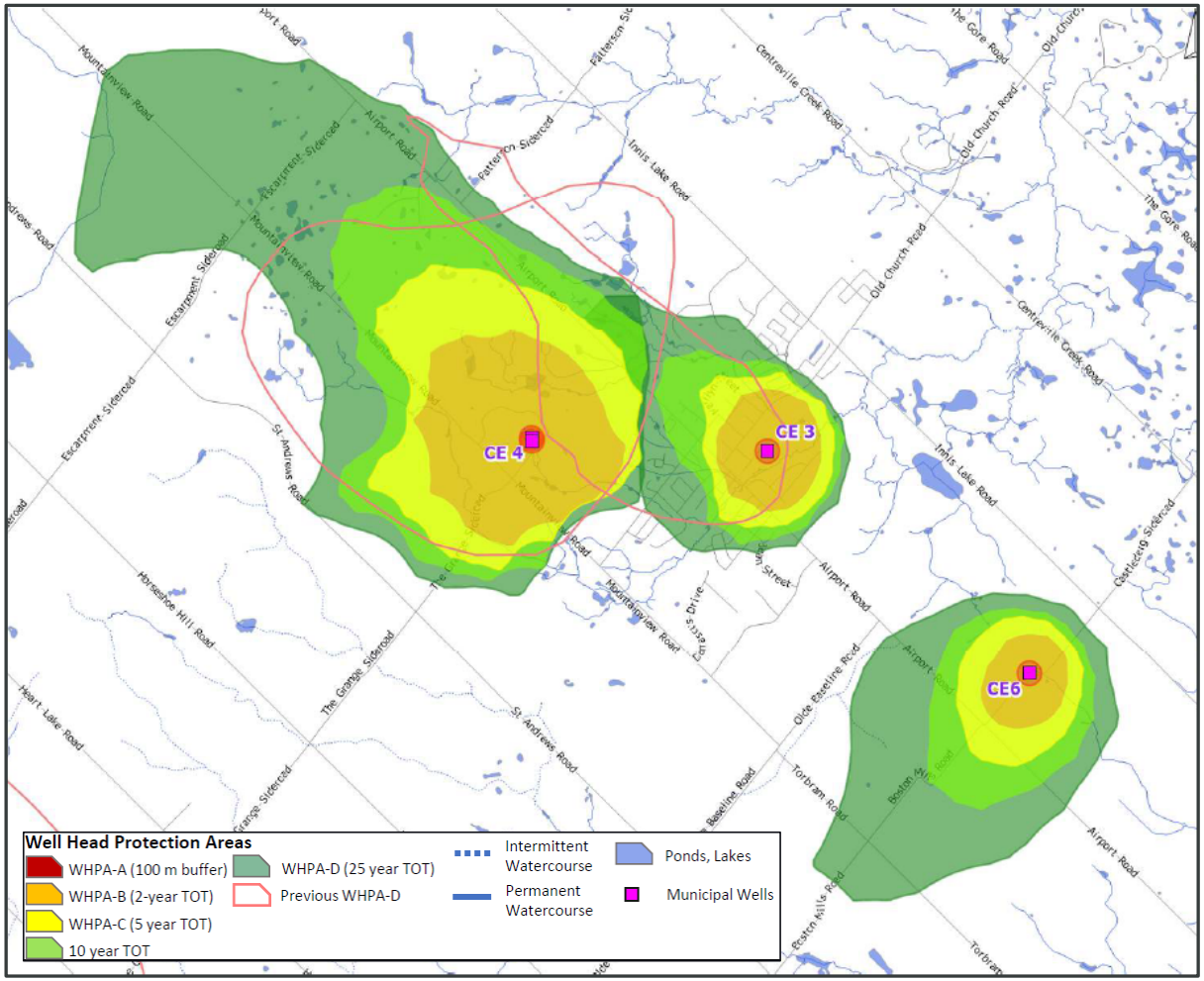
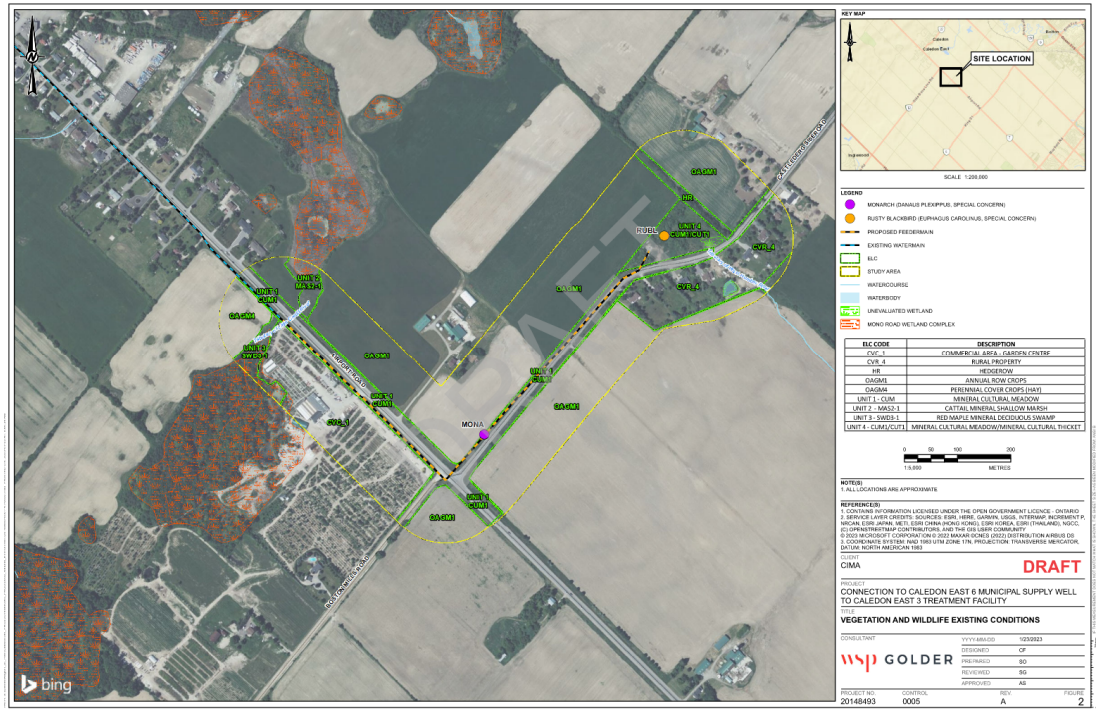


- A Wellhead Protection Area (WHPA) is the area in which land use can impact the water sourced by a municipal well. In this area, land use restrictions apply to protect the well supply.
- A WHPA is a designated vulnerable area around a municipal supply well delineated under the Clean Water Act, 2006, to protect existing and future sources of municipal drinking water.
- WHPAs are created using mathematical models that predict the movement of groundwater from its source area to a municipal drinking water well. WHPAs are updated as new data is collected and to reflect changes to the groundwater-based municipal drinking water systems.
- Source protection plan policies outlined in **https://ctcswp.ca/** will apply to the CE6 WHPAs and will also be considered in the design, construction, and long-term operation of the proposed works.
- Geographic limits of the proposed WHPAs for New Well CE6 have been delineated, as shown on the adjacent map.

Natural Environmental Features

A field investigation was completed to identify potential impacts on natural environmental features and functions resulting from implementation of the proposed works.

- The cultural meadow (Vegetation Unit 1) and the CE6 well property (Vegetation Unit 4) were identified as Candidate and Confirmed Significant Wildlife Habitats for insects, a few birds and mammal species.
- No negative impacts to any of these species is anticipated as standard best management practices will be implemented to include:
  - Exposed surface will be re-stabilized and re-vegetated immediately following disturbance
  - Appropriate vegetation clearing techniques will be used
  - All equipment to be cleaned prior to transportation and use on the site
  - Sedimentation, erosion control and spill prevention practices to be implemented
  - Vegetation removal to avid the migratory bird nesting season
  - No active nests to be removed or disturbed
  - All disturbed areas will be restored to pre-construction activities



Anticipated Impacts and Mitigation Measures

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Potential Impacts	Mitigation Measures
Property acquisition of CE6 well site – required for new infrastructure	• Consultation with the Town of Caledon – property owner has confirmed viability for property acquisition. Discussions with Town are underway.
Short-term construction impacts – noise, dust, traffic, visual impacts	• Temporary measures will be undertaken during construction to minimize noise, dust, mud and visual impacts. • Standard best practices will be used throughout the construction areas. • Construction will adhere to local noise by-laws. • Health and safety is a priority to the Region. All construction will adhere to strict safety guidelines. • A traffic control plan will be prepared to mitigate any potential traffic disturbance in the area during construction.
Plant Architectural Aesthetics – Visual appearance to neighbours	• Architectural aesthetics of the New Water Treatment Plant to match the character of the surrounding areas. • Possible visual disturbances to be mitigated through landscape improvements.
Natural Environment – Water quality/quantity, disturbance to existing natural features, ecosystems, source water protection areas, floodplain areas	• Project will not affect the quantity or quality of groundwater or surface water features in the area. • Any conditions from WHPA policies will be included in the amended Municipal Drinking Water License. • New infrastructure will be built outside of floodplain area limits. Appropriate setbacks from floodplain areas will be maintained. • Erosion and sediment control measures will be implemented to mitigate any impacts to surface water sources and the surrounding environment.

What Are We Doing Next?

- Receive comments from this Public Information Centre. Confirm preliminary preferred design concepts being recommended.
- The Region will continue the property acquisition process of the New CE6 well site with the CE6 well site landowner (Town of Caledon).
- An Environmental Study Report documenting the decision-making process and recommendations of the Class EA study will be prepared and made available for a 30-day public review period. You will have an additional opportunity to review and comment on the recommendations.
- The source protection authority plans to submit the proposed amended Credit Valley – Toronto and Region – Central Lake Ontario (CTC) Source Protection Plan, which includes the updates to the Wellhead Protection Areas of the Palgrave-Caledon East Drinking Water System to the Ministry of the Environment, Conservation and Parks for approval in fall 2023.

Early Fall 2023
Environmental Study Report

Late Fall 2023
30-day Public Review Period

Winter 2023
Completion of Class EA Process

2024
Start of Detailed Design

Thank you for Participating!

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Comments will be considered in finalizing the preferred design concepts for the required Additional Supply Capacity through a connection to the New Well CE6 with:

- New Water Treatment Plant, on CE6 well site, with treatment processes including disinfection through chlorination and provision for iron/manganese removal.
- 1 km feedermain installation on Castlederg Sideroad and Airport Road to be installed predominantly by trenchless methods.

Project Information

- For more information about this project, please visit our webpage:

  https://www.peelregion.ca/public-works/environmental-assessments/caledon/revised-project-name.asp

- Should you have any questions or comments at any time during the project, please contact:

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Project Manager

Thank You for Attending!