THE MUNICIPALITY OF CHESTER

Request for Direction

Public Works

Subject:	Exit 6 Groundwater Exploration
To:	Council
Date Prepared:	February 18, 2026
Origin:	Exit 6 Growth Strategy
Prepared by:	Fred Whynot, P. Eng., Director of Public Works
Approved by:	Tara Maguire, CAO

Recommended Action

That Council give direction to Staff regarding the pursuit of groundwater near Exit 6.

Purpose

Upon closer investigation there are concerns regarding the quality and quantity of groundwater near the Exit 6 target area. Further, pursuit of the same will exceed the current budget estimate of $118,919.70. This area appears to be the best for a potential groundwater supply, but it comes with risk. Considerable funds could be expended with an unacceptable source. No other groundwater sites are recommended for exploration currently. Staff are seeking council direction on next steps.

Background/Context

During the Policy and Strategy Session of November 20, 2025, A Growth and Services Plan update (Exit 6/Hubbards) was presented by Zzap and exp. Their high growth potential options are essentially central water system based. During the presentation a property with a potential high yield groundwater source was identified. Exploration of this area is required to determine if a groundwater fed central water distribution system is possible.

Discussion/Analysis

Following direction from Council, staff obtained quotes and estimates to further investigate the property suggested. A preliminary estimate (all numbers include our portion of HST) is as follows:

Engineering	$35,831.70
Well drilling Program	$72,702
Access Road	$10,386
Total	$118,919.70

This amount can be covered under the existing Potable Water Source Investigation project and the consultant was approved to proceed. The consultant has since completed a Water Supply – Background Review Summary Report (attached). The consultant has identified concerns with water quantity and quality and also concerns with the proximity of the existing well at 10 Beaches. The new well drilling location is recommended to be at least 500 m away, complete with well monitoring of the same. This requirement may require an access road for the field equipment of approximately 450 m in length. Quotes have been received by well drillers and estimates have been increased for monitoring equipment. At the time of this report writing, the access road estimate is pending. The estimate can easily exceed $60,000. With the new information, our estimate is as follows:

Engineering	$36,351
Well drilling Program	$54,008

Access Road	$60,000
Total	$132,702

Currently, we are projected to require an approximate increase of $14,000 to our project budget. The drilling program is expensive and has a likely negative outcome. However, if an ample groundwater resource is found, higher development density may be realized as discussed during the Policy and Strategy Meeting report.

Options for Consideration

There are two options for consideration, with one of the options having two possible outcomes.

- Option 1 – Do not continue with the water exploration as detailed above.
  - **Pros**:
    - Only costs to date will be expended.
    - Remaining budget can be used for further potable water investigation activities elsewhere.
  - **Cons**:
    - Only low density development will be likely for Exit 6/Hubbards.
- Option 2 – Proceed with the water exploration at a potential cost of $132,702.
  - **Pros**:
    - The last option for groundwater will be investigated.
    - A viable groundwater resource could be discovered, allowing potential central water system development and higher housing density.
  - **Cons**:
    - All funds in the estimate can be expended with a result that will not meet our needs.

Financial Implications

It is likely that at least an additional $14,000 will be required if Council proceeds with Option 2. Funding source to be determined.

- Capital and operational costs
- Funding sources and budget status
- Long-term financial effects
- Whether the project is budgeted in the current or future years

Implementation/ Next Steps:

Staff to proceed as directed by Council.

Connection to Strategic Priorities

Priority Area: Strong Communities

1. Strengthen Municipal Identity

Priority Area: Sustainable Infrastructure

1. Investigate Future Water Sources and Systems

2. Manage Assets for Long-Term Sustainability
3. Invest in Growth-Ready Infrastructure
4. Invest in Expansion of Existing Sewersheds and New Sewer Systems

Strategic Growth & Development

1. Plan and Support Targeted Growth Areas
2. Be Open for Business
3. Position the Municipality as a Destination of Choice

Good Governance & Corporate Excellence

1. Enhance Public Engagement & Communication
2. Address Community Needs
3. Prioritize Customer Service & Resident Experience
4. Ensure Transparent and Accountable Decision-Making
5. Maintain Operational Efficiency

Attachments

Chester Groundwater Supply Background Review Memo

Memo

To: Fred Whynot, P.Eng., MODC Director of Public Works

From: Kyle MacIntyre, P.Eng., Project Manager

cc: Brad MacLean, Hydrogeologist

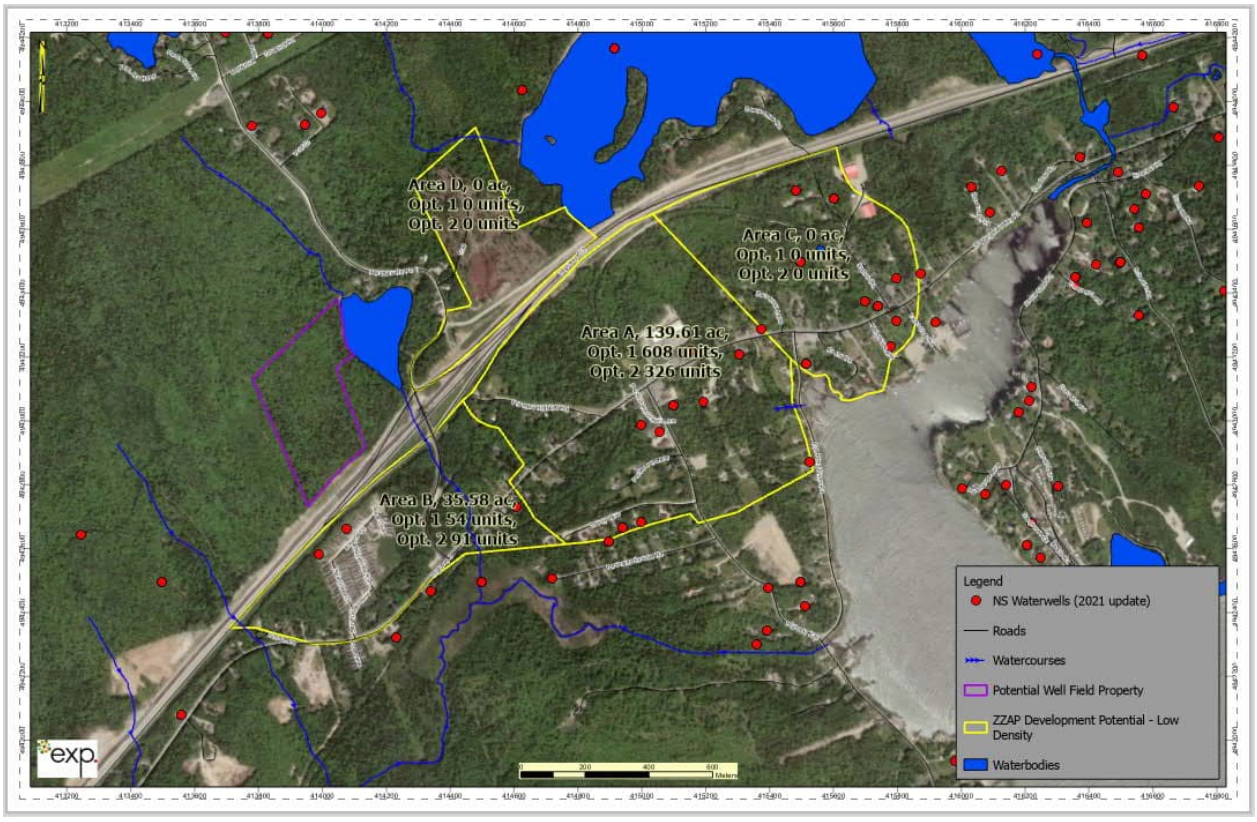
Date: February 6, 2026

Subject: Water Supply Exploration – Background Review Summary Report

Our File: 25-1862

Dillon Consulting Limited (Dillon) was engaged by the Municipality of the District of Chester (MODC) for hydrogeological support related to community development at Exit 6 (Simm's Settlement) as part of the source water investigation project. The purpose of this scope is to identify, test and analyze a potential groundwater well for its capacity to service a proposed development.

The preliminary boundaries of the development are shown below in the October 2025 map developed by exp:



In preparation of the drilling and testing of potential water supply wells, Dillon has conducted a background review of the hydrogeology in the vicinity of Simm's Settlement/Exit 6. Specifically, MODC identified two adjacent properties for the well installation immediately west/southwest of Maple Lake and north of Highway 103 (PIDs 60410602 and 60082393) while available mapping does not specifically indicate any significant fractures in this area (likely limited by land cover and lack of drilled wells) these

properties were considered ideal in terms of development proximity and land access; they are shown in red below:

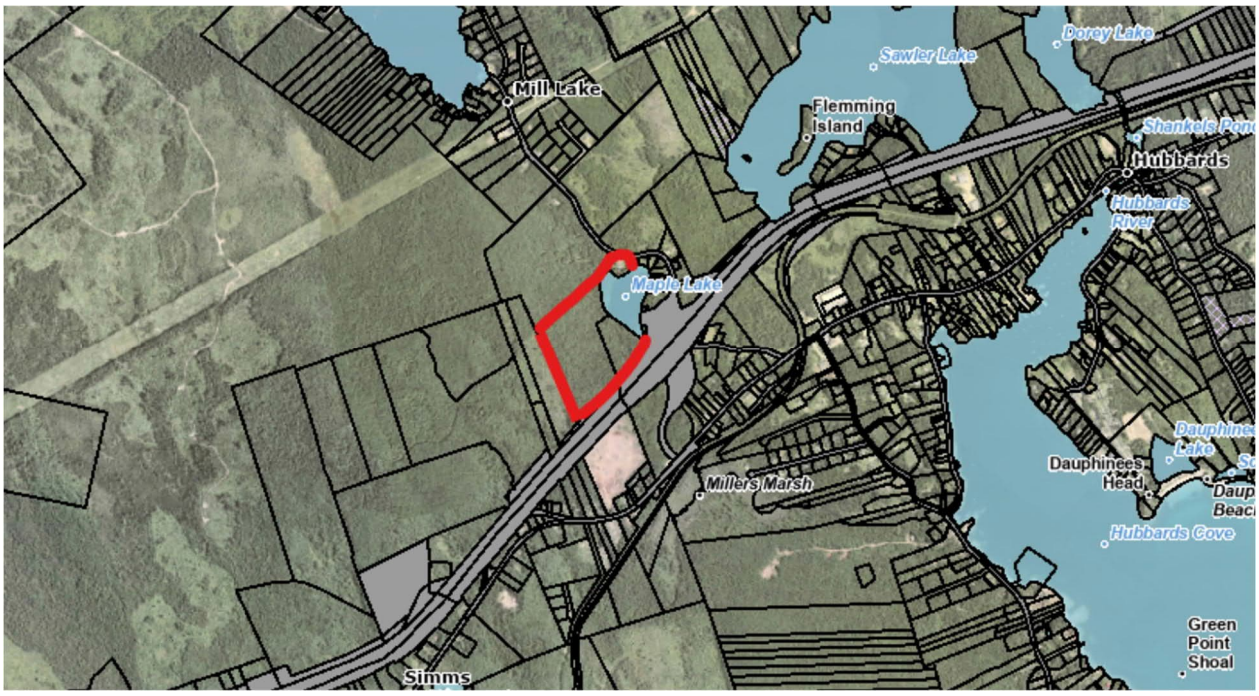


Figure 1: Subject Properties in Red

It is Dillon's understanding that various studies, including hydrogeology, have already been completed in for this area. MODC has made available for review:

- Exit 6 Preliminary Water Resource Review, EXP, Oct 20, 2025;
- Hubbards Watershed Servicing Study, CBCL Consulting 2009;
- Initial Concepts Exit 6 Comprehensive Community Development Plan, ZZAP, 2025; and
- Level 1 Groundwater Assessment, Highway 3, Simms Settlement, HERAA Consulting 2025.

Also included in the review were the following publicly available sources. For sources that had already been reviewed in previous studies, Dillon did not conduct a new analysis but instead confirmed the prior findings.

- Department on Natural Resources Groundwater/Geological maps:
  - Geoscience Atlas;
  - Groundwater Atlas; and
  - Bedrock Geology Map of the Chester Area, NTS sheet 21A/09.
- Nova Scotia GeoNova Topography data, Map Sheet 10 446000 64000;
- Nova Scotia Well Log and Pumping Test Database;
- Property ownership mapping (NS Property Online); and
- Google Earth.

Hydrogeological Setting

Regarding bedrock geology, the area is underlain by the South Mountain Batholith, specifically the Sandy Lake Formation (monzogranite) (Keppie, 2000). Groundwater flow in this granite is exclusively via secondary porosity (i.e., fractures); bedrock mapping indicates no major faults or fractures in the immediate area of the subject property however available mapping in this area may have been limited by overburden/land cover and lack of drilled wells. The fracture sets are described as irregular with poor connectivity. This results in generally low but highly variable yields where a well might rely on a single fracture, making interference effects significant if new wells connect into the same fracture network as existing users (HERAA, 2025).

The overburden consists of Stony Till Plain and Silty Drumlins, both being types of glacial till. The overburden thickness averages 6 meters regionally, though thickness can range from 4 to 30 meters (Stea, Conley & Brown 1992; CBCL, 2009). Generally, topography in the area slopes south-east towards Highway 103. There appears to be a watershed divide crossing the subject property, which influences the direction of surface water runoff and can result in diverging groundwater flow. The eastern portion of the property slopes steeply towards Maple Lake; the western portion of the property slopes gently to a treed area (Nova Scotia GeoNova, 2015).

Water Quantity and Yields

The background review highlights that groundwater yields in the area are modest and statistically skewed by a few high-producing wells. There are approximately 96 wells within an approximate 2 km search radius of the site. While reported yields range from 1 to 270 L/min, the majority produce less than 40 L/min. The average yield is reported as roughly 45 L/min. A significant high-yield well (>100 L/min) supplies the Ten Beaches Estate trailer park, located approximately 300 meters south of the area (EXP, 2025; CBCL, 2009; Zzap, 2025). Bedrock aquifers in this area typically have low transmissivity (3.9 m^2/day) and low storativity, meaning the potential for well interference is increased (CBCL, 2009). Should a suitable well for testing be successfully drilled, it is strongly recommended that testing include observation of nearby well(s) (i.e., select well(s) within 500 to 1000 m) for potential interference.

Water Quality

Water quality is identified as a potential concern for the development of groundwater resources in the area. Wells screened in bedrock were noted to have a high prevalence of exceedances for Arsenic (As), Uranium (U), and Fluoride (F) relative to the Canadian Drinking Water Guidelines. In one survey of 15 bedrock wells, fluoride exceeded guidelines in 100% of samples, and arsenic in 80%. Lead (Pb) exceedances have also been noted nearby. Iron (Fe) and Manganese (Mn) frequently exceed aesthetic objectives (HERRA, 2025) and would require treatment (typical of many NS groundwater sources).

While not directly relatable to a drilled well, the majority of dug wells in the area have detections of Total Coliforms. This indicates a direct connection to surface inputs and vulnerability to septic effluent. Even shallow wells in the till can exhibit elevated Uranium and Arsenic derived from the underlying granite content in the till matrix (CBCL, 2009).

Well Placement Considerations

Given the low storativity of the granite aquifer, the potential for well interference should be considered in testing of potential potable wells. Close proximity (i.e., drilling within 500 to 1000 m) to the high-volume well at the nearby trailer park (Ten Beaches Estate) should be avoided if possible. Information provided to Dillon indicates that the existing well(s) are located approximately 30 m off of Highway 103 near Sea Glass Drive and Breeze Circle, which makes ideal setbacks difficult to achieve.

Accordingly if this property is to be considered, desktop review indicates that the wells should be placed on the northern portion of the subject property. Wells should be located a sufficient distance from Maple Lake (i.e., 60 m or more) as to comply with Nova Scotia GUDI regulation. There is no available fracture mapping onsite to further inform borehole placement. If these offsets cannot reasonably be avoided, monitoring of nearby well(s) within 500 to 1000 m is recommended during pumping tests to monitor for potential interference. It is anticipated that the preferred drilling contractor can include this monitoring within their scope of work and associated costs, allowing for the installation of at least two additional water level loggers, one on the subject property owner's existing well and one on the nearby Mini home well, in addition to the loggers installed in the proposed test well and observation well.

Summary of Risks

The available data suggests that while potable water is available in Simms Settlement, securing a reliable and safe supply groundwater presents significant challenges. A high yield well serving a nearby Mini home community indicates that sufficient groundwater production is possible under localized conditions. However, the overall dataset suggests that the primary constraints remain water quality concerns (widespread presence of arsenic, uranium, and fluoride) and quantity/interference (low bedrock transmissivity, resulting in generally low yields and/or potential interference with nearby wells).

Next Steps

1. **Meet with MODC to confirm any limitations related to property access and approval to proceed;**
2. **Finalize the project quote and issue a purchase order to the driller and pump tester;**
3. **Determine field dates and notify the property owner accordingly;**
4. **Complete well installation, pump testing, and observation activities; and**
5. **Perform data analysis and prepare the final report.**