



# Existing Conditions Fact Sheet: Groundwater and Geochemistry

Issued: October 2023

Groundwater is any water that is found below the Earth's surface. Groundwater is held below the ground in soil and rock layers known as aquifers. Surface water seeps through the Earth's surface and eventually becomes groundwater. The construction of the Community Access Road has the potential to directly and indirectly affect groundwater. For example, a spill entering surface water. Therefore, what happens to surface water can affect groundwater and must be studied.

## Our Studies

The Study Area associated with the Community Access Road is dominated by bedrock in the southern parts, and sloping, generally flat terrain of wetlands with abundant peat to the northern and eastern parts. There were many glacial deposits left after the last major ice age, including glacial tills, and other coarse and fine materials. More recent organic deposits, such as peat, are common in poorly drained areas.

Generally, shallow groundwater flow directions would be expected to follow the local topography. On a regional scale, groundwater flow direction would be similar to the surface water, which is north and east towards James Bay. Most groundwater accumulates (or recharges) in spring as snow melts. Groundwater pooling may occur in low lying areas such as river valleys. There is one water supply well in the Study Area (at the Ogoki airport) and it is not reported to be used for drinking water.

During the groundwater field investigation, 49 monitoring wells were installed at 20 sites along the proposed Community Access Road route. The wells will be monitored three times a year, until the end of 2024.



## Study Areas

Study areas identify the geographic limit where potential effects of the road may occur. The existing conditions are documented for three study areas:

- Project Development Area (PDA): the area of direct disturbance
- Local Study Area (LSA): the area where direct effects of the road are likely to take place
- Regional Study Area (RSA): the area where indirect effects are likely to occur





# Groundwater and Geochemistry

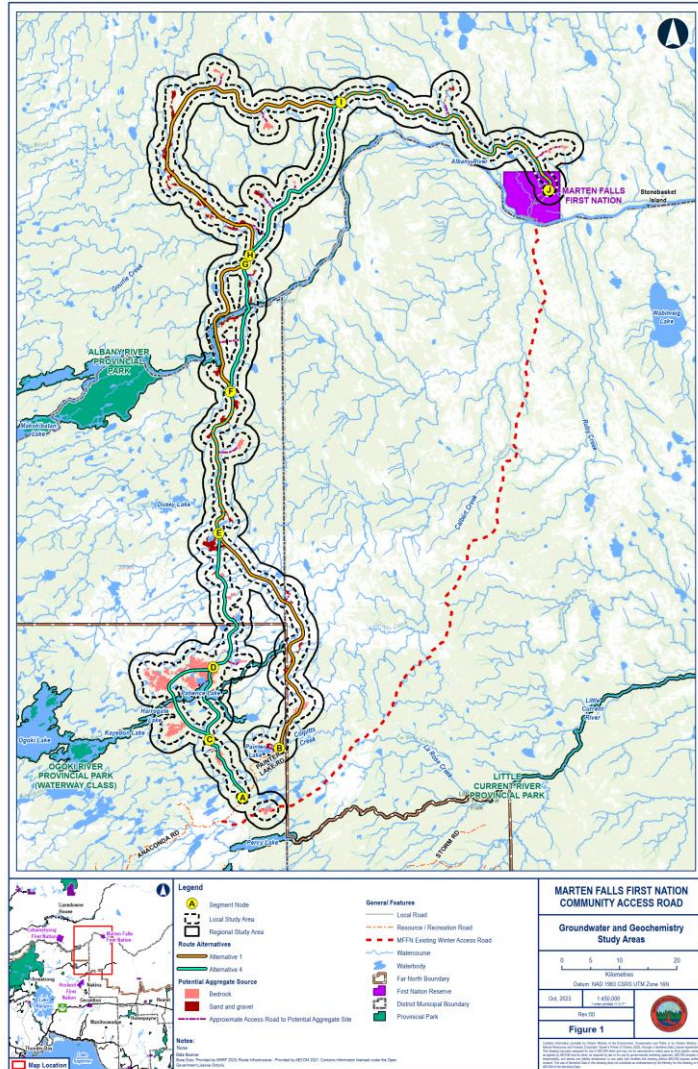
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Monitoring well depths range from about 2 m to 11 m below ground surface. Groundwater levels to date have ranged from near surface-level to about 10 m depth. Typical groundwater levels are less than 2 m below ground surface, but some sites have consistently deeper levels.

## Our Findings

Regional investigations of groundwater quality have indicated that groundwater in northern Ontario has a high mineral content (considered hard water) and is relatively high in iron. Early groundwater quality results from the study samples are consistent with these observations, and more detailed testing is still in progress.

In addition, 94 overburden and 14 bedrock samples collected during soil and groundwater field work have undergone testing to understand their potential for acid generation and metal leaching. All 94 overburden samples are considered non-potentially acid generating. All but two bedrock samples are considered non-potentially acid generating. Trace metal results show bismuth and calcium levels are above 10 times the typical crustal abundance in multiple samples. Metal leaching assessment is still ongoing.



## Contact Information

You are welcome to contact the Project Team at any time with questions or comments.

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