HYDROGEOLOGICAL ASSESSEMENT

NP-8671, Lot 188, Forestry Island

in the Municipality of Temagami, Ontario

Prepared for

Kilbourne-Murgel Cottage

Temagami, Ontario
47.05°N, -79.81°W

Prepared by:

Michael Kilbourne, P.Geo.
Effective Date January 22, 2025

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1.0 SUMMARY

This report, titled "Hydrogeological Assessment NP-8671, Lot 188, Strathcona or Forestry Island, in the Municipality of Temagami, Ontario (the "Report") was prepared by Michael Kilbourne, P.Geo. (the "Author"). The purpose of this Report is to review the geological environment, hydrogeological nature and physiography of Forestry Island, namely Lot 188, (the "Property") for assessment and approval of severing an existing lot NP-8671.

1.2 AUTHOR AND SITE INSPECTION

This report was prepared by Michael Kilbourne, BSc. Hons., P.Geo. of Bracebridge, Ontario.

The Author is part owner of the Property.

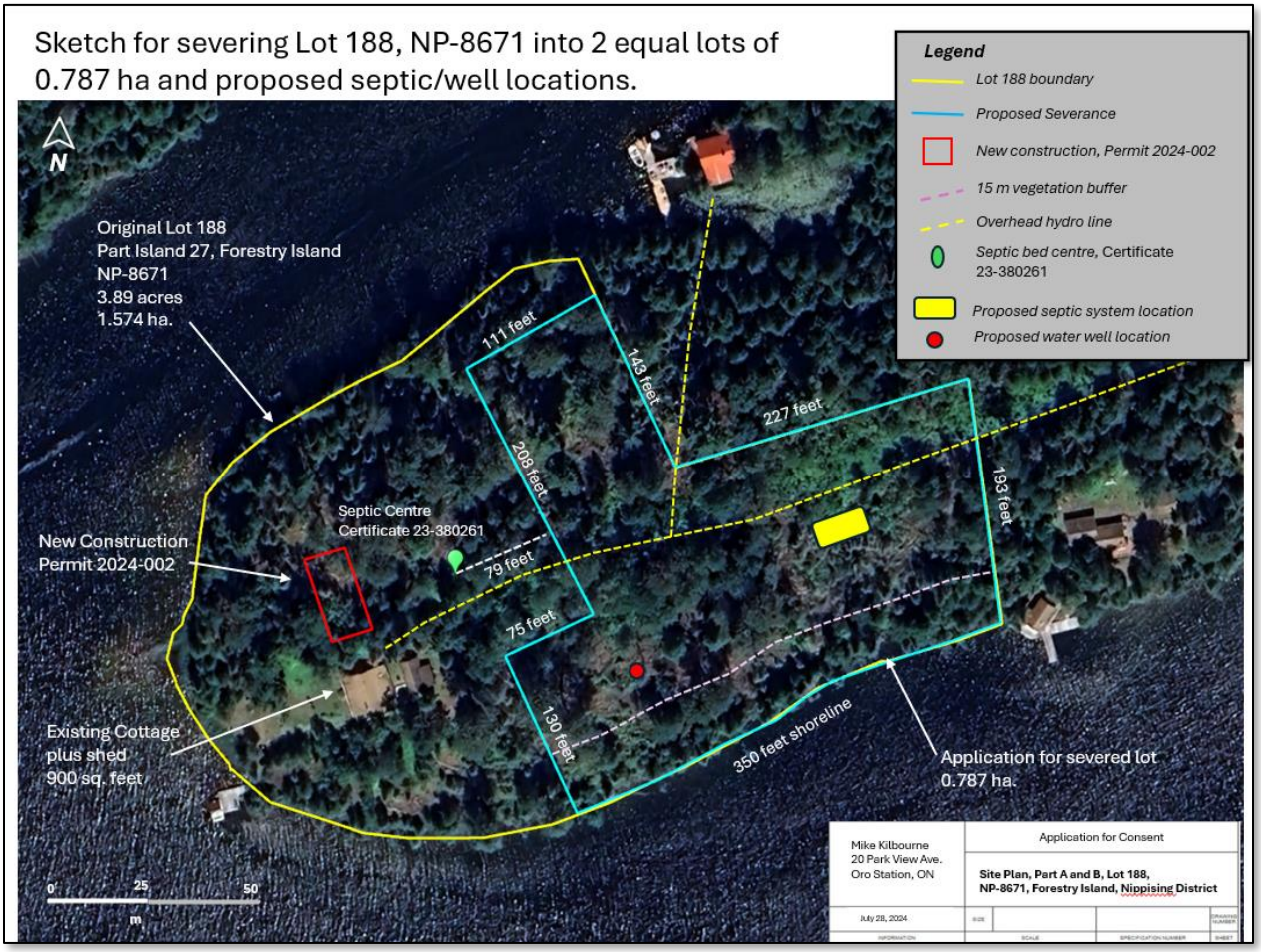
1.3 PROPERTY DESCRIPTION, LOCATION AND ACCESS

The Property is located approximately 2.1 linear km southwest of Temagami, Ontario in the District of Nipissing, Province of Ontario. The nearest settlement is the town of Temagami with a current approximate population of 900 inhabitants. The Property lies within NTS map sheets 31M/04 within Strathcona Township. The approximate geographic centre coordinates of the Property are 47.05°N, -79.81°W (UTM coordinates 590036E, 5212180N, Zone 17T, NAD83). The overall Property covers an area of 1.574 hectares with intentions of severing the Property into two lots of 0.787 hectares each.

1.4 CONCLUSIONS AND RECOMMENDATIONS

The proposed severed lot of NP-8671 has sufficient area, hydrogeological and topographical parameters to support a drilled well for potable water and septic system for any future proposed dwellings.

The following figure provides locations for the above needs.



The proposed septic system location on the above figure is located away from the current hydro line (10m), existing property boundaries (30m), the area along shore >25% slope (15m) and 30m from the shoreline.

The proposed drilled water well location is well suited away from the proposed septic system (65m), 25m from the shoreline, 10m away from the slope >25% and 30m from any property boundary. The well should supply ample water supplies for any proposed dwellings based on ground water levels in nearby wells.

2.0 PROPERTY DESCRIPTION and LOCATION

2.1 LOCATION

The Property is located approximately 2.1 linear km southwest of Temagami, Ontario in the District of Nipissing, Province of Ontario. (Figure 2.1). The nearest settlement is the town of Temagami with a current approximate population of 900 inhabitants. The Property lies within NTS map sheets 31M/04 within Strathcona Township. The approximate geographic centre coordinates of the Property are 47.05°N, -79.81°W (UTM coordinates 590036E, 5212180N, Zone 17T, NAD83). The overall Property covers an area of 1.574 hectares (Figure 2.2) with intentions of severing into two lots of 0.787 hectares each (Figure 2.3).

Figure 2.1 *Location map of the Property, Ontario.*

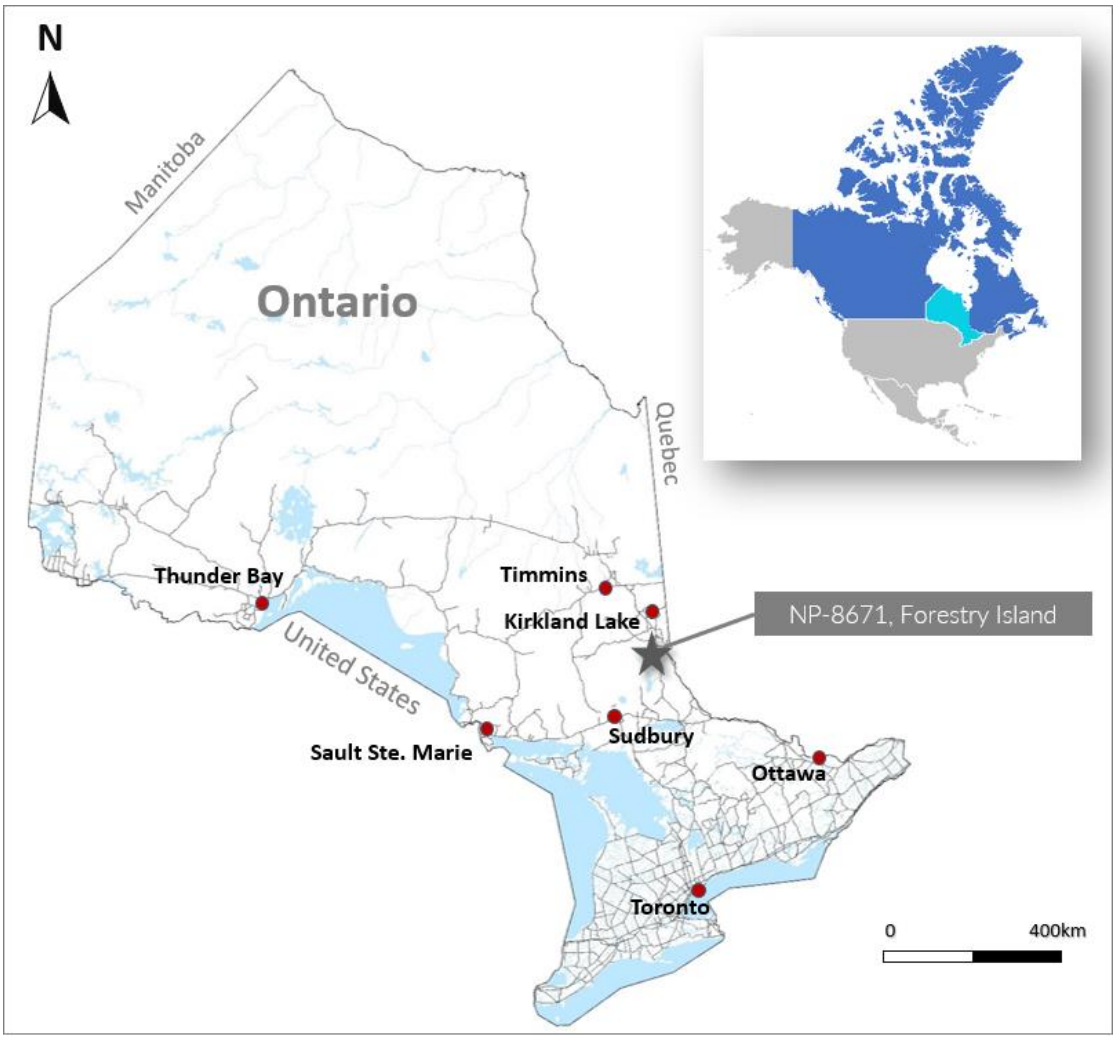


Figure 2.2 *Location map of Forestry Island, Temagami, Ontario.*

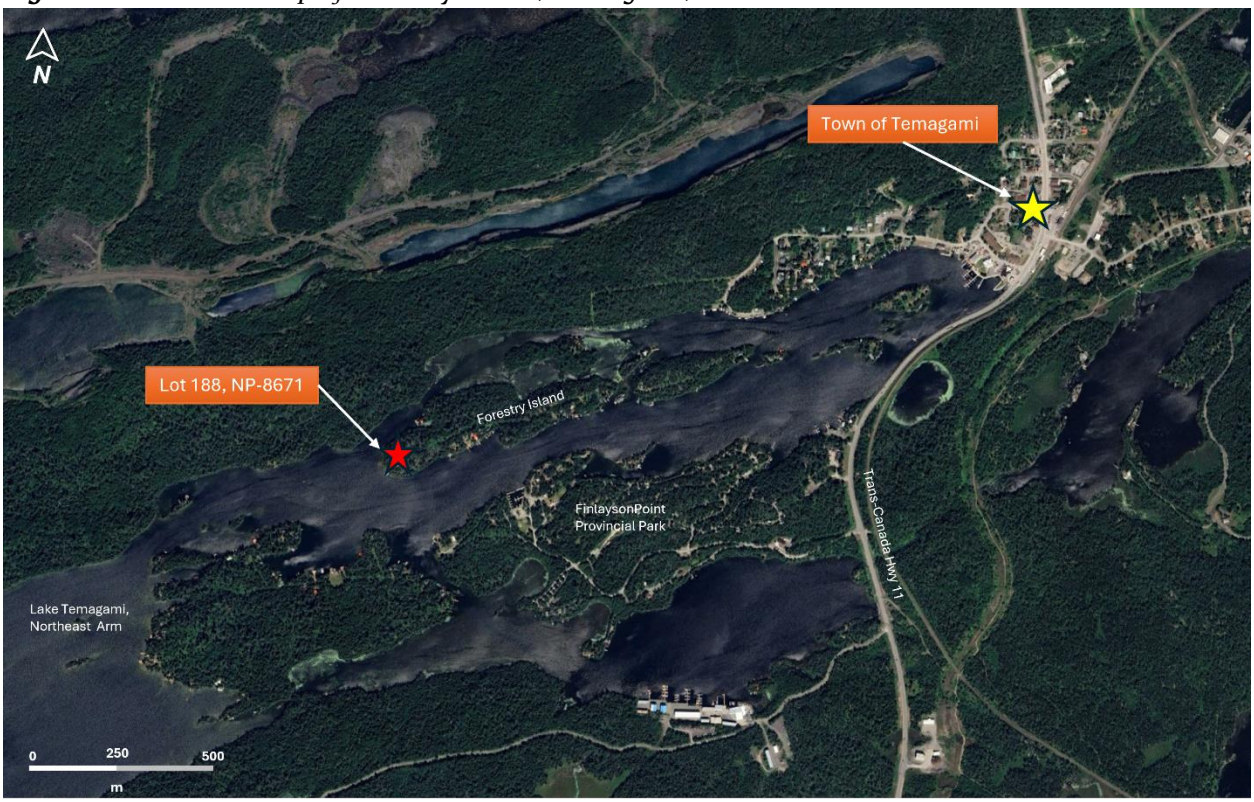
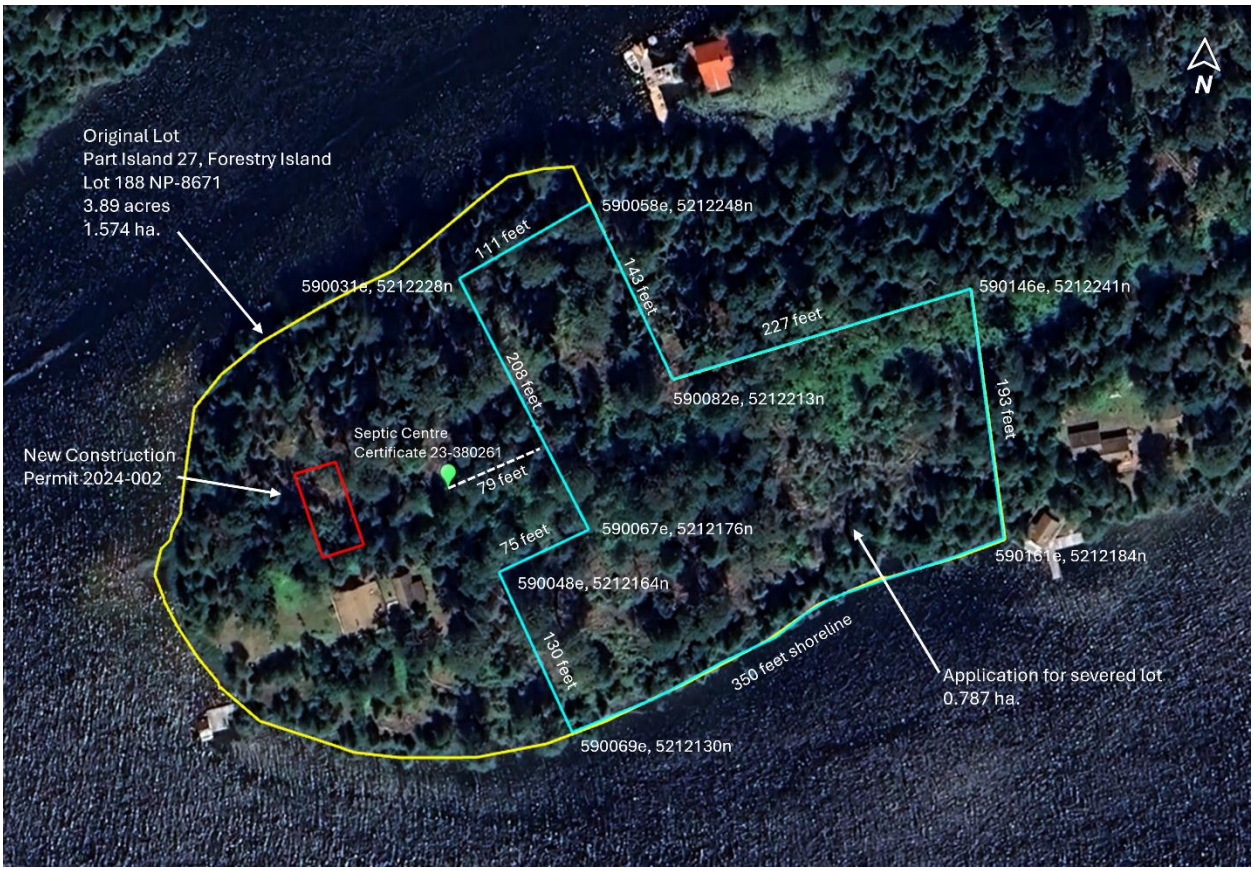


Figure 2.3 *Location map of Lot 188, NP-8671 and severance layout.*

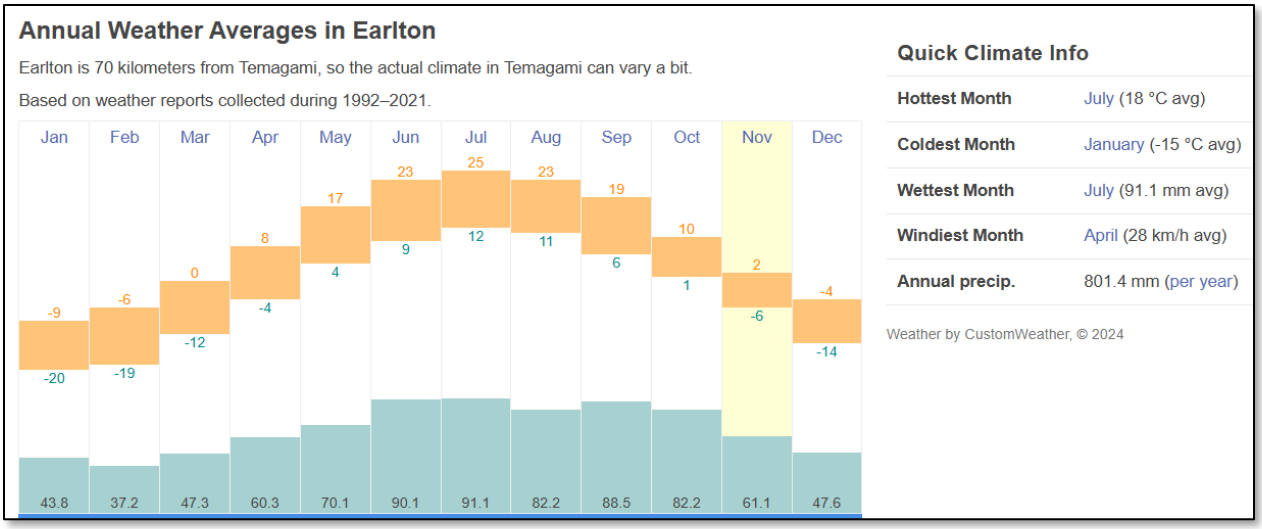


3.0 ECOLOGICAL SETTING and PHYSIOGRAPHY

3.1 ECOLOGICAL SETTING

The Property is located within the Lake Temagami Ecoregion (4E). The climate in this ecoregion is humid and cool. It has been classified by the Ecoregions Working Group (1989) as the Humid Low Boreal Ecoclimatic Region. Mean annual precipitation in the ecoregion ranges between 725 and 1,148 mm per year and the mean summer rainfall is between 217 and 291 mm. The mean annual temperature ranges from 0.8 to 4.3°C and the mean growing season length is 171 to 200 days (Ecoregions Working Group, 1989.

Figure 3.1 *Annual weather averages from 1992-2021 from Earlton, Ontario weather station.*



3.3 PHYSIOGRAPHY

The Property is within the Precambrian Canadian Shield which is a major physiographic division of Canada. The area is predominantly underlain by granitic and metamorphosed mafic volcanic bedrock. This undifferentiated rock is exposed at the surface or covered by a thin, irregular layer of drift. Glaciofluvial deposits of sand and gravel are scattered throughout with topography described as gently to moderately rolling uplands of shallow soils and bedrock knobs with interspersed sand-filled depressions.

The region is dominated by mixed forest stands typical of the forests of northeastern Ontario. Black spruce, balsam and tamarack trees occupy low-lying areas with poplar, birch and pine primarily found along drier ridges. Swampy recessive areas are characterized by cedar and tag alder. There are areas of good bedrock exposure up to 30% especially along the ridges and overall bedrock exposure is considered moderate. Overburden on Forestry

Island ranges from 0-3 m. The Property ranges in elevation from approximately 315 m to 321 m above sea level.

Most of the lakes and streams of the Temagami drain into Lake Temagami which forms part of the drainage basin of Lake Nipissing. Kanichee Lake, Net Lake and most of the lakes east of Highway 11 drain eastward into Lake Timiskaming. The relatively thin soil cover has resulted in a drainage pattern which is largely controlled by structural features in the bedrock. The tendency of the large lakes, including the Northeast Arm of Lake Temagami, to display linear and rectilinear forms indicates a similar bedrock control (Bennet, 1978).

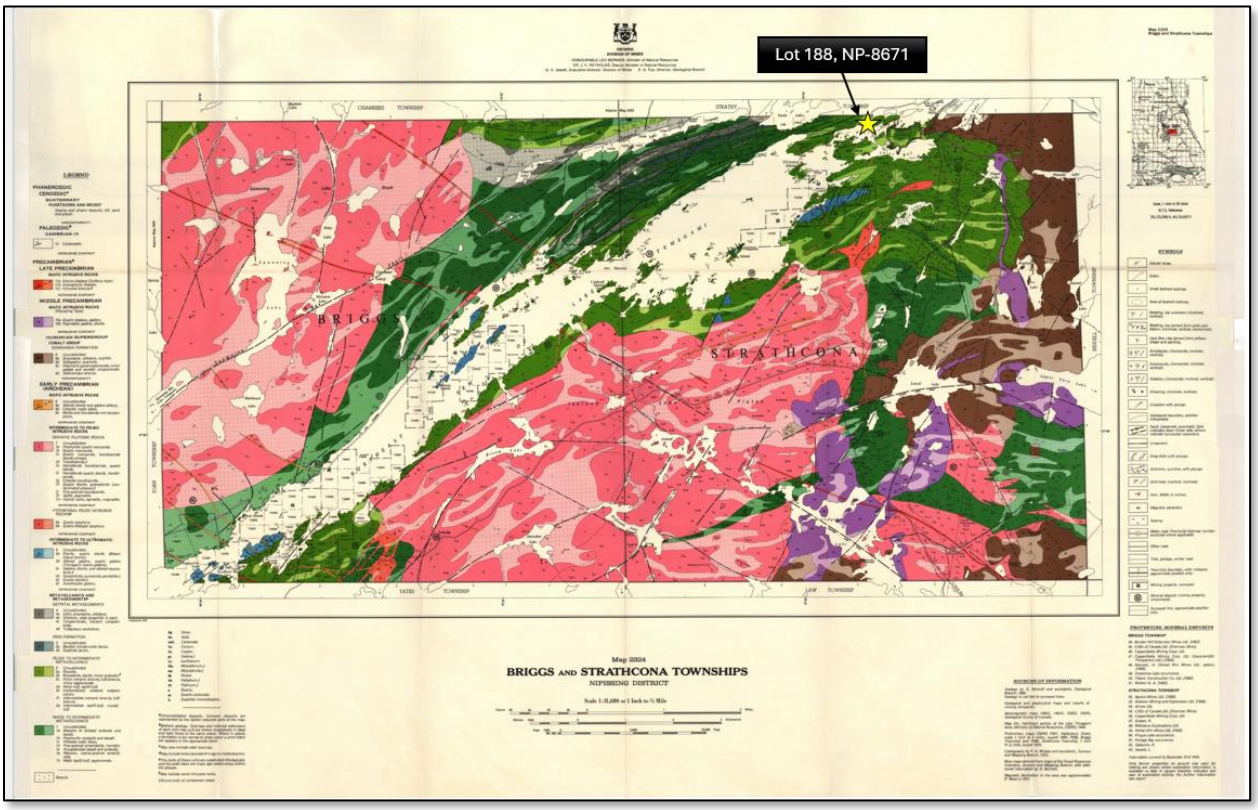
4.0 GEOLOGICAL SETTING

4.1 REGIONAL GEOLOGY

The Property is located in the Wawa-Abitibi Terrane within of the Superior Province of Canada which spans three provinces of Manitoba, Ontario and Quebec. The Superior Province is the earth's largest Archean craton that accounts for roughly a quarter of the planet's exposed Archean crust and consists of linear, fault bounded Subprovinces that are characterized by volcanic, sedimentary and plutonic rocks (William et al., 1991).

The Property is situated within the Temagami Greenstone Belt (TGB) that comprises a small portion of the Wawa-Abitibi Terrane. The main geological feature of the Northeast Temagami area is a northeast trending metavolcanic-metasedimentary belt of Early Precambrian (Archean) age of 2.7 Ga (2.7 billion years). The belt averages about 13 km across and is about 29 km long. The dominant structure is that of a northeast-trending syncline modified by emplacement of granitic plutons (Figure 4.1).

Figure 4.1. *Regional geology of the study area within the Temagami Greenstone Belt.*



Two generalized volcanic cycles beginning with mafic flows and ending with intermediate to felsic pyroclastic rocks and sedimentary rocks can be recognized in the area. A thick

sequence of Algoma-type iron formation lies just above the main felsic to intermediate pyroclastic assemblage. A variety of metagabbros, metadiorites, and felsic porphyries intruded the metavolcanics. The metamorphic grade of the Early Precambrian rocks is mainly that of the lower greenschist facies.

The surrounding granitic batholiths are mainly trondhjemite, and quartz monzonite in composition and are intrusive into the metavolcanics. The southeastern and northwestern parts of the map-area are overlain by rocks of the Gowganda Formation of the Huronian Supergroup which consist mainly of relatively undisturbed paraconglomerate and siltstone units, forming a complex interlayered

assemblage. The Gowganda Formation is intruded by dikes and sills of Nipissing Diabase. Northwest-trending diabase dikes appear to intrude the above rocks and are the youngest rocks in the map-area. Fine-grained chloritic dikes, lamprophyre, and coarse-grained altered gabbros cut the granitic rocks, but have not been found by the author to intrude the Huronian rocks (Bennet, 1978).

4.2 GEOLOGY OF FORESTRY ISLAND

The geology of Forestry Island is dominated by intermediate to mafic metavolcanic rocks. Much of the outcrop exposure displays a high degree of foliation into a carbonatized and sericitic schist with an azimuth of 080 and vertical dip (personal geological observations).

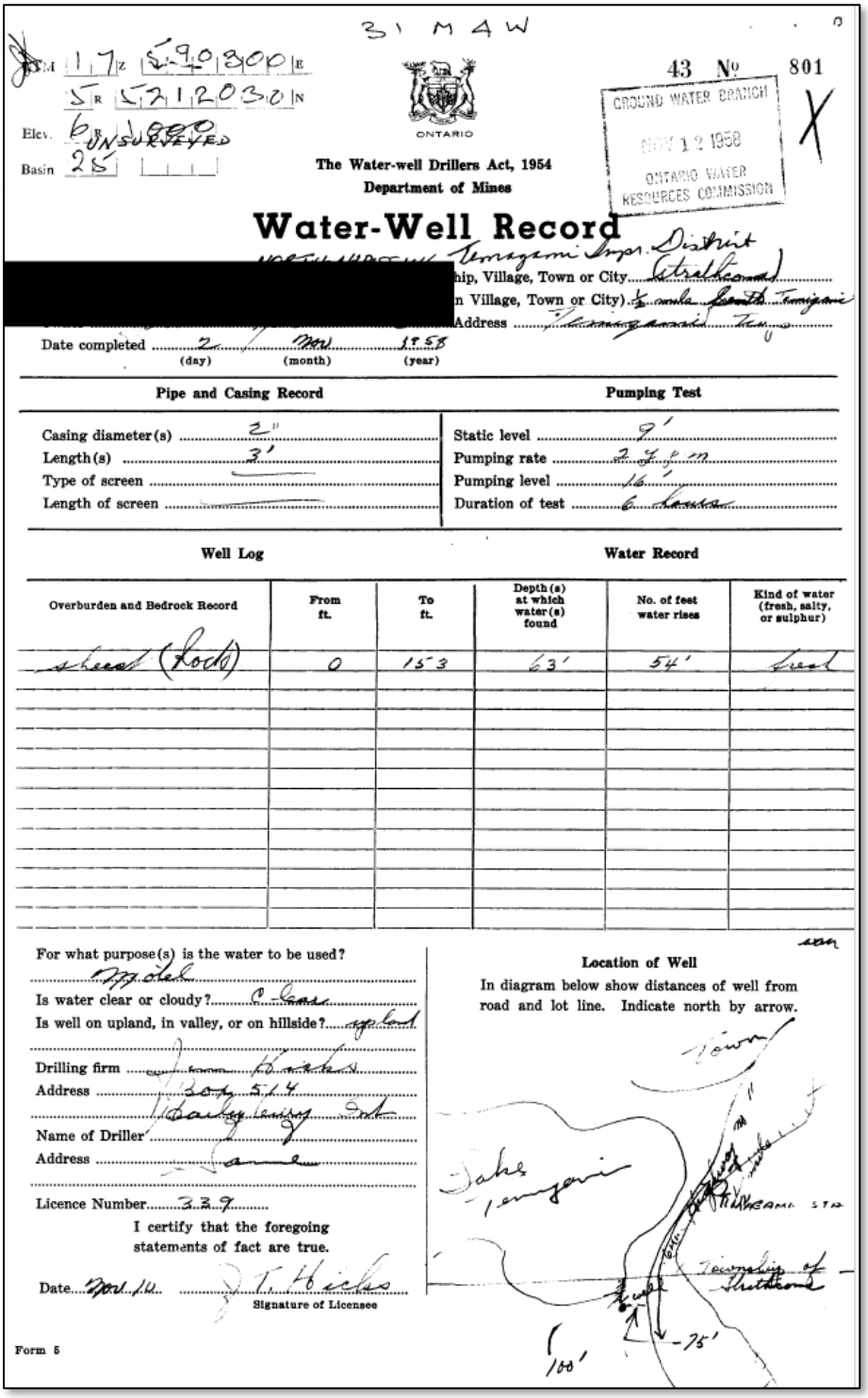
5.0 HISTORIC WELLS AND BOREHOLES

5.1 WATER WELLS

Records for two nearby water wells were found in historic records. These water wells are numbered 801 and 804. Borehole 801 is located on Forestry Island. Borehole 804 is located on Finalyson Point (Figure 5.1). These wells were drilled in 1958 and 1959 respectively. Logs for these holes are presented in Figures 5.2 and 5.3. Both wells produced fresh water at 63 and 33 feet respectively.

Figure 5.1 *Borehole locations for wells 801 and 804.*

Figure 5.2 *Borehole log for water well 801.*



31 M 4 W

43 No 801

GROUND WATER BRANCH
NOV 12 1958
ONTARIO WATER RESOURCES COMMISSION

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

Water-Well Record

Date completed 2 (day) / May (month) 1958 (year)

Pipe and Casing Record

Casing diameter(s) 2"
Length(s) 3'
Type of screen
Length of screen

Pumping Test

Static level 9'
Pumping rate 2 g.p.m.
Pumping level 16'
Duration of test 6 hours

Well Log / **Water Record**

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
sheet (Rock)	0	153	63'	54'	fresh

For what purpose(s) is the water to be used?
Domestic
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside? upland

Drilling firm [illegible]
Address Box 514
Cobalt Ont.
Name of Driller [illegible]
Address [illegible]

Licence Number 329

I certify that the foregoing statements of fact are true.

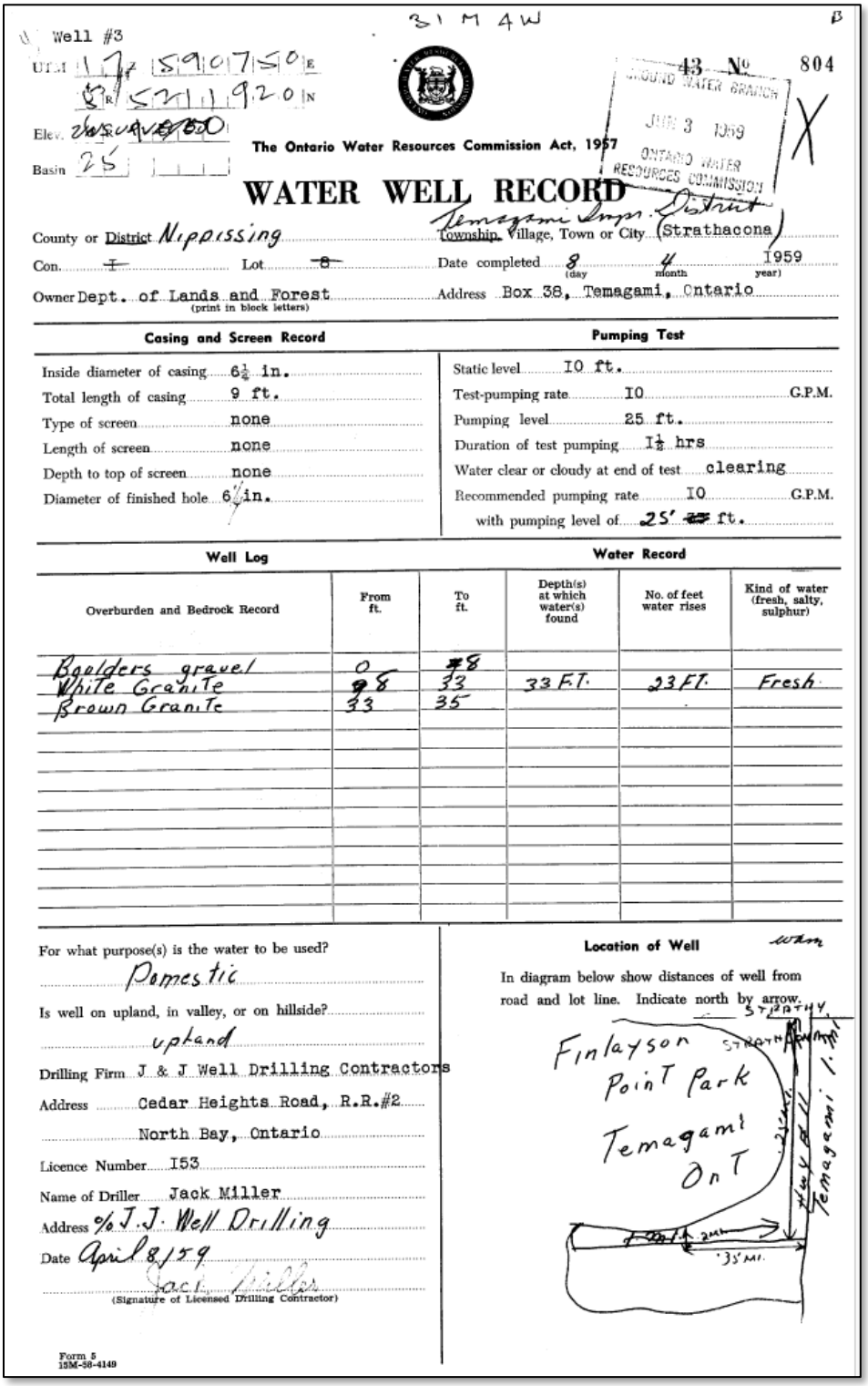
Date Nov. 10 T. Hicks
Signature of Licensee

Form 5

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.

Figure 5.3 *Borehole log for water well 804.*



Well #3

31 M 4W

B

UTM 17 590750 E

5R 5521920 N

Elev. [illegible]

Basin 25

43 No 804

GROUND WATER BRANCH JUN 3 1959 ONTARIO WATER RESOURCES COMMISSION

X

The Ontario Water Resources Commission Act, 1957

WATER WELL RECORD

County or District Nipissing Township, Village, Town or City Temagami Improvement District (Strathcona)

Con. I Lot 8 Date completed 8 (day) 4 (month) 1959 (year)

Owner Dept. of Lands and Forest (print in block letters) Address Box 38, Temagami, Ontario

Casing and Screen Record

Inside diameter of casing 6½ in.

Total length of casing 9 ft.

Type of screen none

Length of screen none

Depth to top of screen none

Diameter of finished hole 6 in.

Pumping Test

Static level 10 ft.

Test-pumping rate 10 G.P.M.

Pumping level 25 ft.

Duration of test pumping 1½ hrs

Water clear or cloudy at end of test clearing

Recommended pumping rate 10 G.P.M.

with pumping level of 25' ~~25~~ ft.

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Boulders gravel	0	~~98~~ 8			
White Granite	~~98~~ 8	33	33 F.T.	23 FT.	Fresh
Brown Granite	33	35			

For what purpose(s) is the water to be used?

Domestic

Is well on upland, in valley, or on hillside?

upland

Drilling Firm J & J Well Drilling Contractors

Address Cedar Heights Road, R.R.#2

North Bay, Ontario

Licence Number I53

Name of Driller Jack Miller

Address % J.J. Well Drilling

Date April 8/59

Jack Miller

(Signature of Licensed Drilling Contractor)

Form 5
15M-58-4149

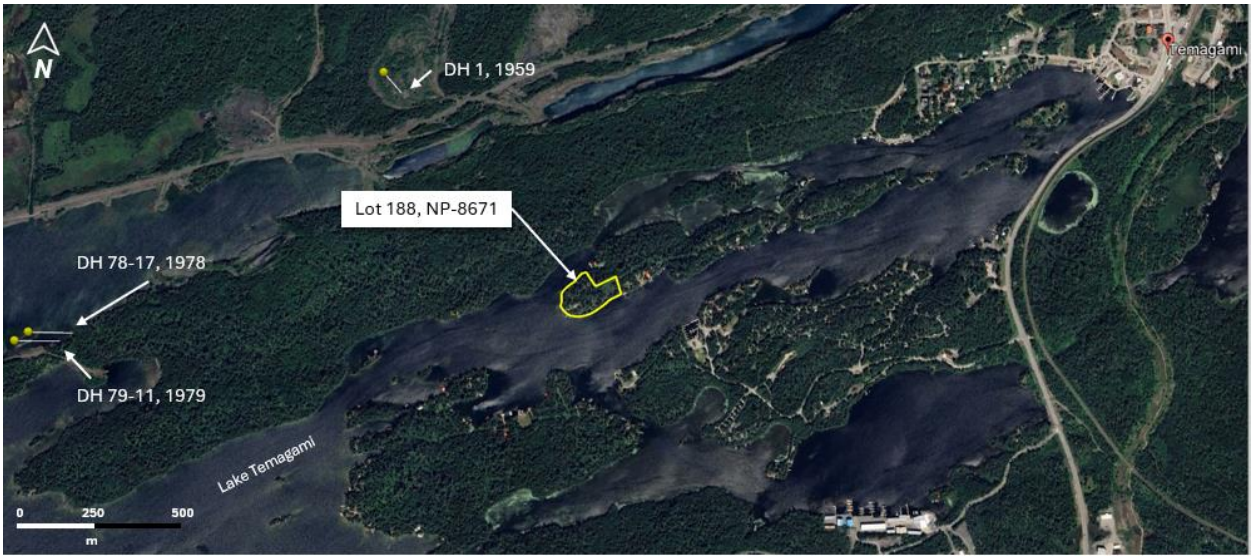
Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.

5.2 BOREHOLES

There are a few diamond drill holes in the area (Figure 5.4). These holes are exploration holes for iron mineralization and were drilled between 800 and 1500 m away from the Property. Hole 1 was drilled in 1959. Hole 78-17 was drilled in 1978 and 79-11 was drilled in 1979. There is no record of the water table in these holes. They do confirm overburden depths in the area between zero and 14 feet (4 m) in depth (AMIS 31M04SW0021 and 31M04SW0016 respectively).

Figure 5.4 *Diamond drill hole location map.*



6.0 TOPOGRAPHY

The Property is generally regarded as a flat ridge through the centre of the study area. Figure 6.1 displays those areas of greater than 25% slope towards the waters of Lake Temagami. Figures 6.2 through 6.4 are images of the shoreline.

Figure 6.1 *Topography of Property with slopes >25%.*

Figure 6.2 *North shore of Property facing east.*

Figure 6.3 *South shore of Property facing north.*

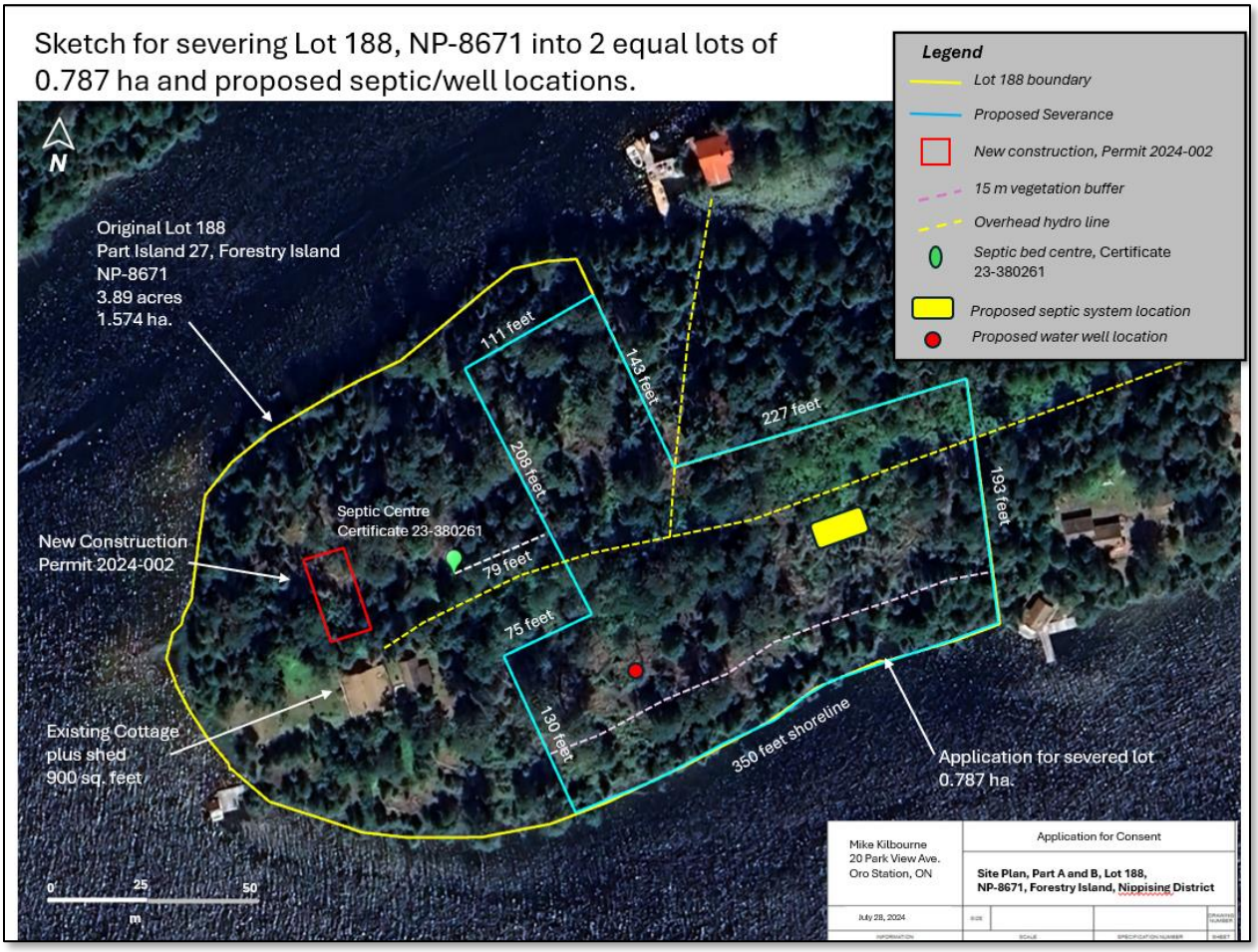
Figure 6.4 *Area of slope in central west section of Property facing northeast.*

7.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed severed lot of NP-8671 has sufficient area, hydrogeological and topographical parameters to support a drilled well for potable water and septic system for any future proposed dwellings.

The following figure provides locations for the above needs.

Figure 7.1 *Proposed septic system locations and drilled water wells for severed lot.*



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8.0 REFERENCES

Bennett, G., 1978. Geology of the Northeast Temagami Area, District of Nipissing, Ontario Geological Survey, Report 163, 159 p.

Williams, H.R., Stott, G.M., Heather, K.B., Muir, T.L., and Sage, R.P. 1991. Wawa subprovince. In Geology of Ontario. Edited by P.C. Thurston, H.R. Williams, R.H. Sutcliffe, and G.M. Stott. Ontario Geological Survey, Special Volume 4, Part 1, pp. 485–539

9.0 CERTIFICATE

CERTIFICATE OF QUALIFIED PERSON

MICHAEL KILBOURNE, P.GEO.

I, Michael Kilbourne, P.Geo., of 15 Spencer St., PVT, Bracebridge, Ontario, P1L 0B7, do hereby certify that:

1) I am an independent consulting geologist.

2) This certificate applies to the report titled "Hydrogeological Assessment, NP-8671, Lot 188, Forestry Island in the Municipality of Temagami, Ontario" with an effective date January 22, 2025.

3) I graduated with a degree of Bachelor of Science Honours, Geology from the University of Western Ontario in 1985.

4) I am a Professional Geoscientist (P.Geo.) registered with the Professional Geoscientists of Ontario (PGO No. 1591) am registered with the Odres des Geologues du Quebec (OGQ, No. 1971) am registered with Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG No. L4959) am registered with the Professional Engineers and Geoscientists of Newfoundland Labrador (PEGNL P.Geo. No. 11098 and Permit No. N1316) and am a member of the Prospectors and Developers Association of Canada

5) I have over 40 years of experience in the exploration and mining industry with various junior exploration and mining companies throughout North America. I have supervised and managed over 150,000 meters of diamond drilling. I was a production geologist at the Pamour Gold Mine in Timmins from 1991 to 1996 gaining invaluable experience in underground narrow vein, underground bulk and open pit gold mining. I have managed and been involved in various geological exploration programs for precious metals, base metals, rare-element mineralization and aggregate mining throughout North America since 1980. I have held former executive positions with publicly traded junior resource companies.

6) As of the effective date of the Report, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated at Bracebridge, Ontario this 22nd day of January 2025.

{SIGNED}

[Michael Kilbourne]

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Michael Kilbourne, P.Geo. (PGO #1591)