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October 24, 2016

216-313

Timbercraft Consultation Inc.
1629 Jocko Point Road
North Bay, Ontario
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Attention : Danny Benson, President

Dear Danny,

**GROUNDWATER SUMMARY STATEMENT
BACHER CONSTRUCTION PIT AND QUARRY
TOWNSHIP OF ALGONQUIN HIGHLANDS
(FORMER McCLINTOCK TWP.)
HALIBURTON COUNTY, ONTARIO**

As requested, Waters Environmental Geosciences Ltd. has prepared a Summary Statement relating to the groundwater conditions in the vicinity of a proposed Category 9 and Category 11 (above the water table) pit and quarry application in the Township of Algonquin Highlands (former McClintock Twp.), Haliburton County, near Dorset, Ontario.

This groundwater Summary Statement has been developed in accordance with guidance received from the Ministry of Natural Resources, and through reference to Policy No. A.R.4.01.04 (dated March 15, 2006). Specifically, our Statement addresses the issue of the final extraction depth of the quarry operation, and it's relationship to the underlying groundwater table.

This Statement constitutes our professional opinion of the site conditions, as evidenced by our personal field observations, and supplemented by available hydrogeological/geological/topographic data covering the study area. As such, this is not a detailed hydrogeological report (such as is required for excavations below the water table), but does rely upon hydrogeological interpretations, and has been prepared by a qualified professional (in accordance with the Professional Geoscientists Act, 2000).

The following sections detail the results of our assessment for the proposed pit and quarry site in the Township of Algonquin Highlands.

1.0 PHYSIOGRAPHY

The proposed Bacher Construction Pit and Quarry, in the Township of Algonquin Highlands, is located on Crown Land approximately 6 km northwest of the Town of Dorset. The site is accessed via Livingstone Lake Road (Municipal Road 12) and McClintock Road, and has UTM co-ordinates of the approximate centre of the study area at Zone 17, 668570 mE and 5017930 mN (NAD83). A site location map is presented in Figure 1.

Based on available topographic mapping (Natural Resources Canada 1:50,000 NTS mapping, 31-E/7, 2010), the site is situated in a relatively flat-lying area surrounded by topographic highlands to the northeast, northwest and south. The northeast side of the site is flanked by a surficial drainage creek which extends southwards from Limburner Lake (approximately 3 km north of the study area) and ultimately discharges into Harvey Lake (approximately 200 m east of the study area). Local relief is moderate and on the order of 50 m. Regional surficial drainage is to the northeast, via Harvey Lake into Fletcher Bay (part of Kawagama Lake) (Figure 1).

Regionally, the site lies within an area known as the Algonquin Highlands within the Central Gneiss Belt (Ministry of Northern Development and Mines, 1988, and Ontario Geological Survey, 1984). Bedrock beneath the study area is mapped as comprising monzogranite intrusive rock, gneissic with laminated structure and a metamorphic fabric (Ontario Geological Survey, 2003).

The surficial geology in a majority of the study area is dominated by sandy gravel glaciofluvial outwash deposits with sub-ordinate peaty organic terrain and rock knobs, with low local relief (planar to knobby) and a wet to dry surficial drainage condition (Ontario Geological Survey, 1981). The granular materials are identified as ice-contact deposits (Ministry of Northern Development and Mines, 1988) resulting from the retreat of the Late Wisconsin-aged ice sheet which covered the study area. The highland areas surrounding the site are characterized as being dominated by bedrock knob landforms, with sub-ordinate rock ridge topography and sandy till ground moraine overlying bedrock, with mainly high local relief (knobby to ridged) with a dry surficial drainage condition.

Figure 2 presents an oblique view of the site, and was generated by combining the topographic map onto regional digital elevation data (obtained from GeoBase, Canadian Council on Geomatics). The oblique view has a 10 X vertical exaggeration, and the position of the site between prominent elevated highland areas can be seen. McClintock Road, which is used to access the study area, forms a local topographic divide southeast of the study area, with surficial drainage to the west of McClintock Road being directed towards Ashball Lake and then into Otter Lake. On-site drainage is towards Harvey Lake.

2.0 HYDROGEOLOGIC SETTING

A conceptualization of the hydrogeologic setting of the study area was undertaken through a site reconnaissance visit and a review of available topographic mapping (and associated surface water features). The Ministry of the Environment's on-line database indicated no reported well constructions within several kilometers of the study site.

2.1 Field Reconnaissance

A site reconnaissance was completed on August 23, 2016, during which time the general site conditions were recorded. The general site features are presented in Figure 3, which was derived from an on-line Ontario Base Mapping application (www.geographynetwork.ca) and Google Earth imagery, plus additional information provided by Timbercraft Consultation Inc.

The site consists of an existing aggregate operation, and was accessed from McClintock Road via an unpaved entrance road. The site was observed to be gently sloping in a southeastwards direction from the access road, in the general direction of Harvey Lake and the surficial drainage creek that flanks the eastern side of the study area. The surficial materials observed on-site consisted of sands and gravels, with boulders present.

The site conditions were photographed, and the general site features as observed August 23, 2016, are presented in Photoset 1. There was no standing water observed on-site, and the surficial materials appeared to be well-drained (sands to gravelly sands). Although no test pits or boreholes were advanced during the site reconnaissance, test pit information collected by Timbercraft Consultation Inc. (during a previous site visit) were provided to Waters Environmental Geosciences Ltd. for inclusion into the present assessment.

2.2 Water Table Analysis

The available topographic mapping, plus site data provided by Timbercraft Consultation Inc., provided the primary data used in the present evaluation of the water table profile, and allowed the development of a regional groundwater map for use in the present assessment. As well, the on-line database of water well records for the study area and extending outwards for a few km from the site, was consulted (MOECC website). There were no reported water well records within 1 km of the study area.

Groundwater contours were developed through an interpretation of the stream elevations and surface water ponding elevations across the broad landscape (extending several kilometres from the study area itself), as well as through reference to test pit information provided by Timbercraft Consultation Inc. This analysis was performed in-house by Waters

Environmental Geosciences Ltd., and the subsequent regional water table interpretations were extrapolated onto the present study area.

The results for the proposed Bacher Construction Pit and Quarry area are presented in Figure 4, which shows the interpreted regional water table elevations adjacent to, and beneath, the study area. The groundwater contours of Figure 4 indicate a relatively flat water table surface beneath the study site, with the groundwater elevations falling gently to the east and towards the adjacent surface water creek system. The groundwater contours are steeper in the adjacent highland areas, but regionally the groundwater flow is directed towards Harvey Lake.

Based on our observations and interpretations of the available topographic mapping, the maximum elevation of the water table rises to approximately 380 m at the extreme northwest corner of the site, dropping to an elevation of approximately 368 m at the eastern boundary of the property. By way of comparison, the elevation of Harvey Lake is reported as 366 m (GeoBase, Canadian Council on Geomatics).

As observed in Figure 4, the water table is not a flat surface in the study area, and presents a surface that reflects the local drop in topography across the region. Intermediate elevations of the water table beneath the interior sections of the site can be determined using the groundwater contour pattern of Figure 4 as a guide.

3.0 SUMMARY AND CLOSURE

Our analysis of the available information indicates that the water table elevation beneath the proposed Bacher Construction Pit and Quarry area constitutes a gently sloping water table surface. The interpreted water table elevations in the northwestern corner of the study area are approximately 380 m, and fall towards the east to a final elevation of 368 m. Although Figure 4 has used a 10 m contour interval in its construction, intermediate groundwater elevation contours can be obtained by interpolating between the indicated contour lines and using the perimeter groundwater elevation values for guidance.

The water levels presented in Figure 4 are considered to be representative of the highest groundwater conditions on-site. Based on the available information and our interpretation of the hydrogeologic setting, future development of the proposed Bacher Construction Pit and Quarry should avoid excavations (in the bedrock) that would be deeper than 382 m (in the northwest) to 370 m (in the east). Also, for excavations in the overburden, extraction activities should avoid excavations that would be deeper than 381.5 m (in the northwest) to 369.5 m (in the east). Figure 4 should be used to interpolate between the plotted water table contours for any intermediate elevation values.

The above recommendations have been made in order to maintain a minimum 2 m freeboard in bedrock materials, and 1.5 m freeboard in overburden materials, above any static water level, which is required under Policy No. A.R.4.01.04.

Please note that, for the site to operate as an above the water table operation, care must be taken to insure that the depth of excavation is limited in the vicinity of any nearby surface water feature. The available mapping suggests that a tributary of the creek system extends into the proposed site boundaries, and therefore the pit/quarry base elevations in the immediate vicinity of this surface water feature may require adjustment in order to maintain the required freeboard between the pit base and the local water table surface associated with these surface water features.

Based on the information reviewed in the present study, there is no recorded groundwater usage in the immediate study area. There are, however, cottages located on Harvey Lake (accessed via Harvey Lake Road), which may rely upon either groundwater wells or surface water supply intakes from the lake itself. Based on the groundwater contours of Figure 4, these cottages are situated cross-gradient to the proposed pit and quarry development. It is our interpretation that the proposed aggregate pit and quarry development, which is proposed to remain above the water table, will have no impact on the underlying groundwater flow system or potential nearby groundwater users.

The preceding analysis has been based on the best available site information provided by Timbercraft Consultation Inc. (and augmented by information collected by Waters Environmental Geosciences Ltd.). It is our understanding that this report will be relied upon by the operator in the development of this property for the indicated land use. Should new information become available related to hydrogeology beneath the study area, it is recommended that Waters Environmental Geosciences Ltd. be allowed to review the data and determine if a modification (or amendment) to the present report is warranted.

Please note that the above recommendations have been based on the information provided to Waters Environmental Geosciences Ltd., and subsequent data collected by our firm, in accordance with the work program agreed to by you. No warranties, representations or liabilities of whatsoever nature are extended to other parties who may receive copies of this report (or abstracted information from it).

In no event shall Waters Environmental Geosciences Ltd. have any legal duty or responsibility to any third party reviewing this report unless it has a formal contractual relationship with such a third party. Contractors or others who are considering work activities on this site should satisfy themselves of the site conditions reported herein before submitting quotations or work proposals for this site.

Should future site development activities encounter groundwater conditions which are not anticipated by this report, it is recommended that Waters Environmental Geosciences Ltd. be contacted to determine the significance of the new information, and it's potential effect on the recommendations provided herein.

We thank you for the opportunity of working with Timbercraft Consultation Inc. on this project. If you have any questions regarding this report, please contact the undersigned directly.

Yours truly,

WATERS ENVIRONMENTAL GEOSCIENCES LTD.

Peter A. Richards, M.Sc., P.Eng.
President, Senior Environmental Engineer

REFERENCES

Ministry of Northern Development and Mines, 1988. Aggregate Resource Inventory of Part of Haliburton County, Southern Ontario, Ontario Geological Survey, Aggregate Resources Inventory Paper 141

Natural Resources Canada, 2010. NTS Map 31-E/7, Kawagama Lake, 1:50,000 scale

Ontario Geological Survey, 1981. Southern Ontario Engineering Geology Terrain Study, Data Base Map 5505, Haliburton, 1:100,000 scale

Ontario Geological Survey, 1984. Geological Series Preliminary Map, Quaternary Geology, Kawagama Lake Area, Nipissing and Muskoka Districts and Haliburton County, Map P.2705, 1:50,000 scale

Ontario Geological Survey, 2003. Precambrian Geology, Kawagama Lake Area, Map P.3525, 1:50,000 scale

QUALIFICATIONS OF PETER A. RICHARDS, M.SC., P.ENG.

Peter A. Richards has a Masters of Science degree in Hydrogeology (1982) and an undergraduate degree in Geophysics (1978), both from Queen's University (Kingston). His strong background in Geology and Geological Sciences was further augmented in 1989, after completing an assigned examination program from the Association of Professional Engineers of Ontario, when Mr. Richards became a licensed Professional Engineer.

He has been working in the field of Hydrogeology continuously since 1983, initially in the consulting industry, then as Groundwater Evaluator in the Ministry of the Environment (covering the Northeastern Region from Sudbury) and finally back in the consulting industry, culminating in the formation of his own consulting firm, Waters Environmental Geosciences Ltd. (in 2000). Mr. Richards is President of Waters Environmental Geosciences Ltd., which operates under a Certificate of Authorization from the Professional Engineers Ontario and is in full compliance with the requirements of The Professional Geoscientists Act (2000).

Mr. Richards is a member of the International Association of Hydrogeologists, the Association of Groundwater Scientists and Engineers and the Association of Professional Engineers of Ontario. He authored an assessment of the hydrogeology of the City of Greater Sudbury (contained in The Physical Environment of the City of Sudbury, Ontario Geological Survey, Special Volume 6, 2002), and was a part-time faculty member of Laurentian University (Sudbury), where he taught 4th year Hydrogeology in the Environmental Earth Science program (from 1995 to 2007). He also taught Hydrology and Water Quality Assessment part-time at Cambrian College (Sudbury) in the Environmental Monitoring and Impact Assessment program (in 2012 and 2013). He has presented papers on hydrogeology at several conferences and is published in a peer-reviewed journal. Mr. Richards has also been retained as a hydrogeological peer reviewer of other consultants' hydrogeological work for two Conservation Authorities in Northeastern Ontario, under the Source Water Protection initiative of the Ministry of the Environment.

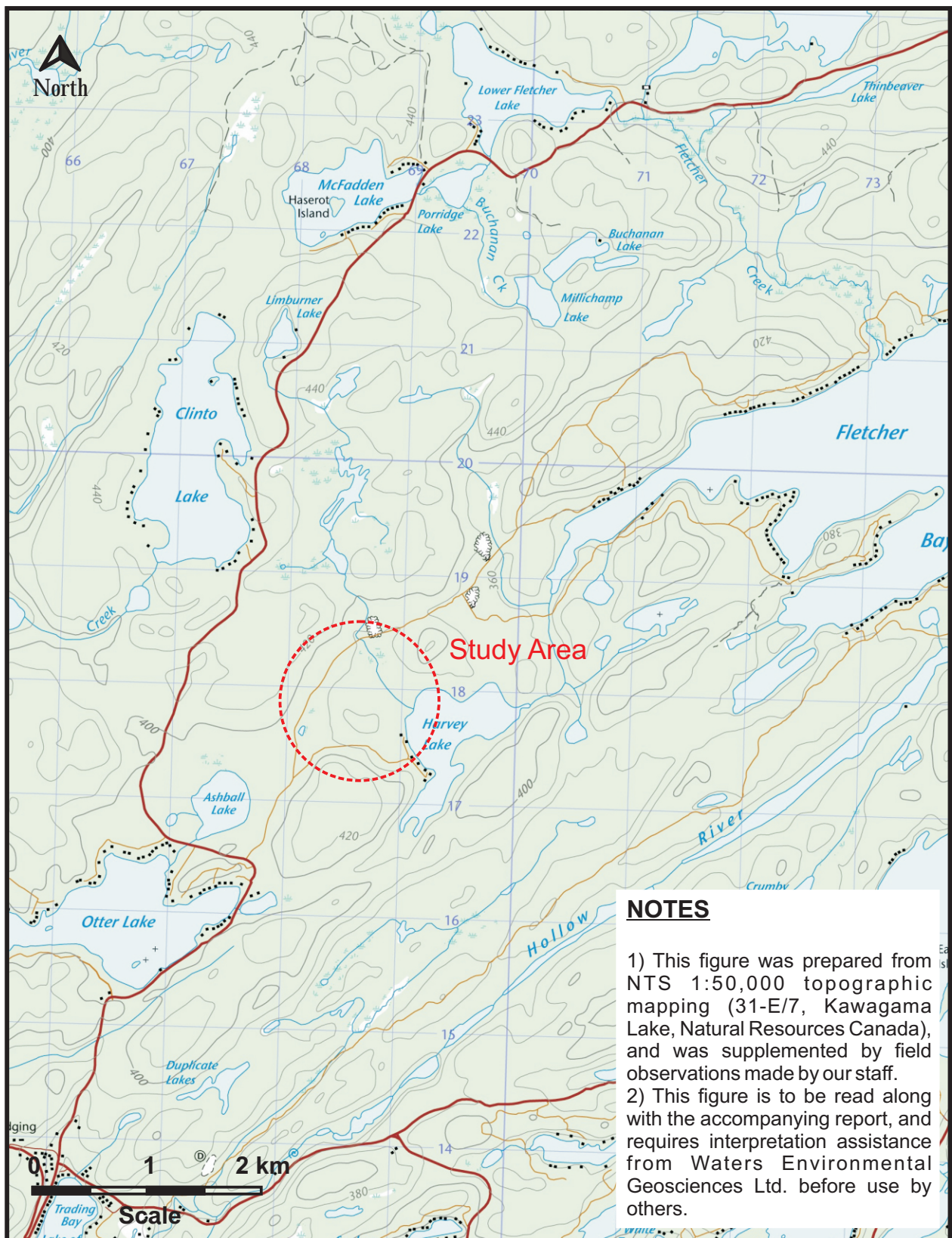


Figure 1

Site Location Map

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Bacher Construction Pit And Quarry

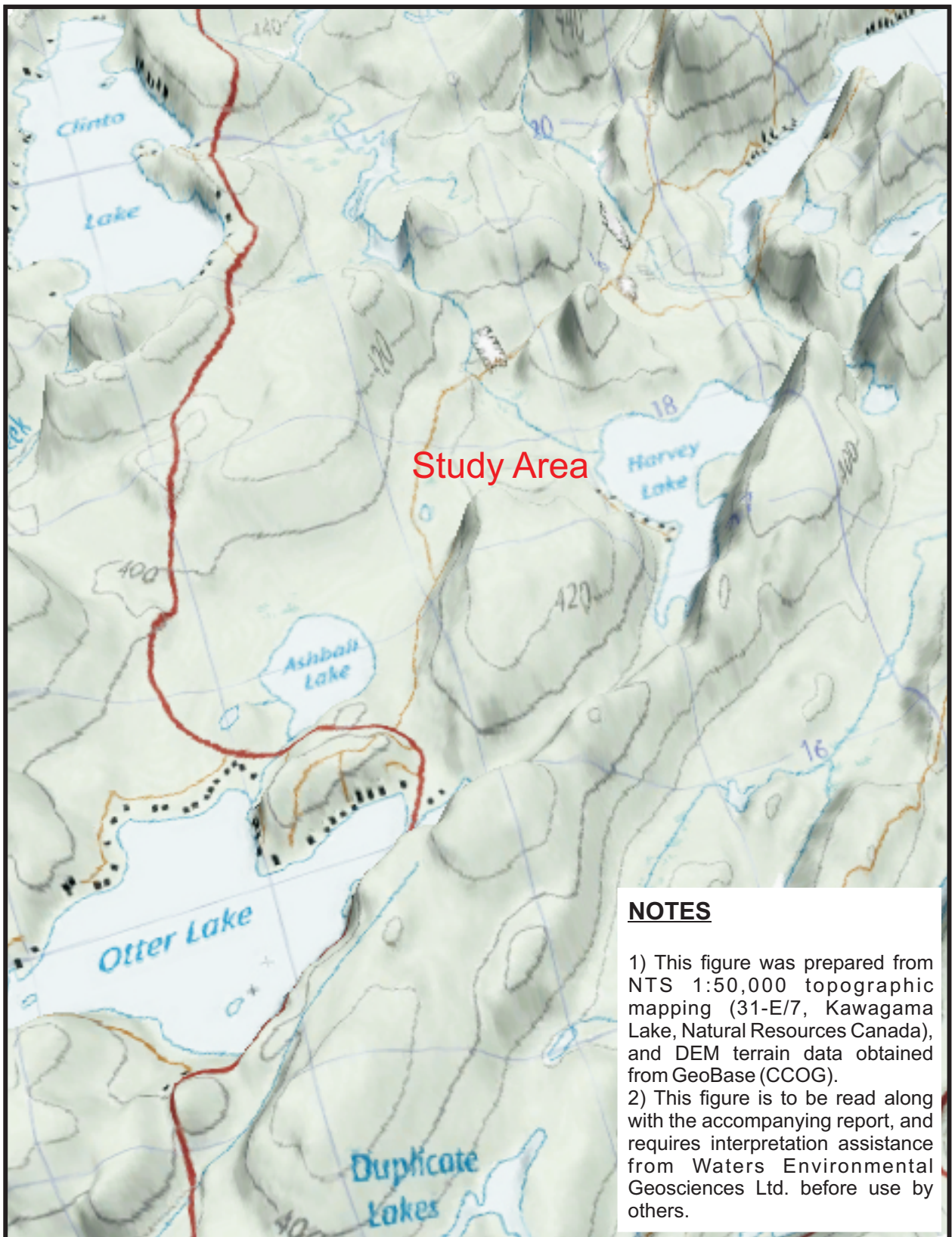


Figure 2

Site Topography

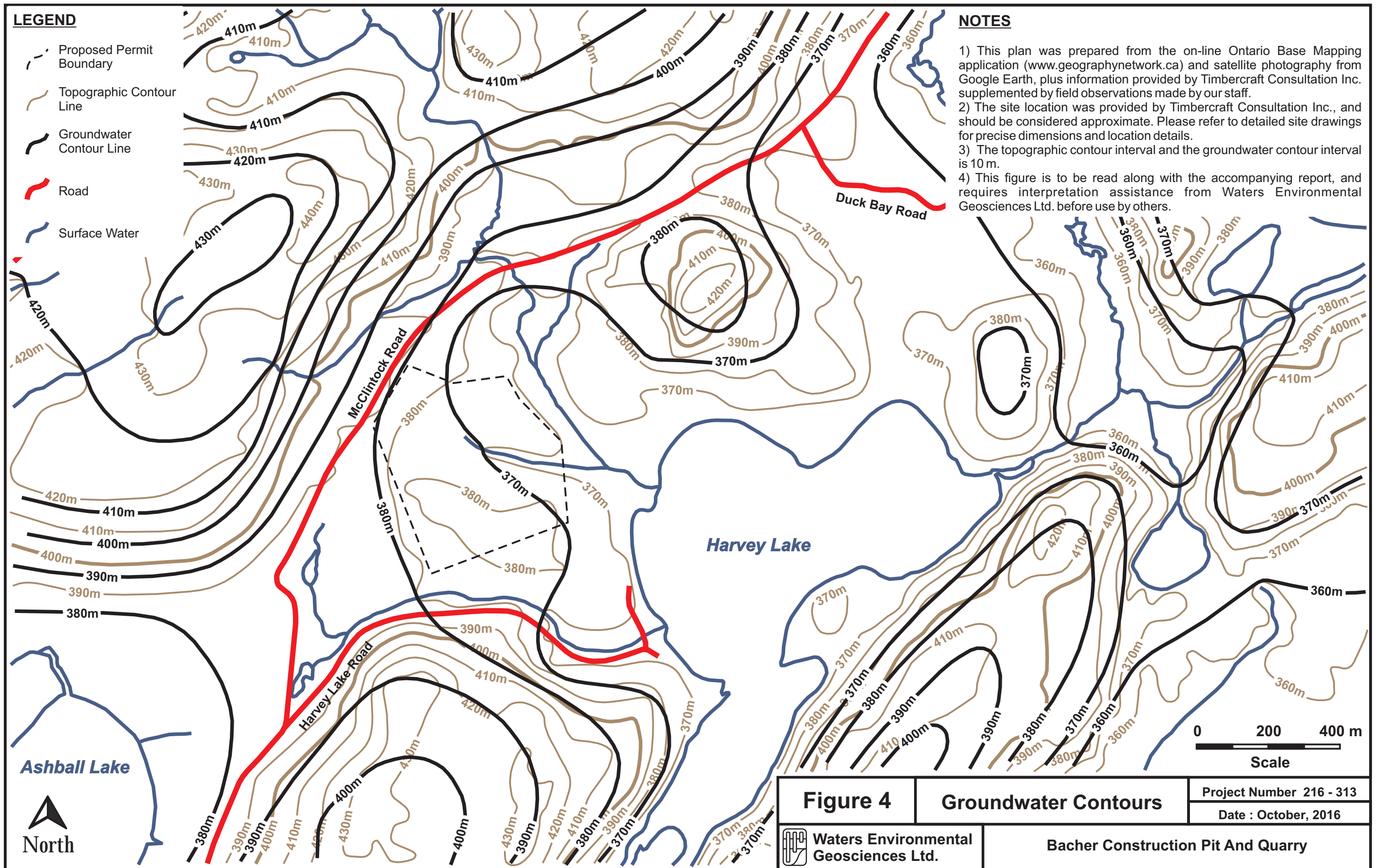
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Bacher Construction Pit And Quarry





Existing Pit Facing South From The Entrance Road



Existing Pit Facing East

Photoset 1

General Site Features

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Bacher Construction Pit And Quarry