

PIF P039-188-2012 Revised

**STAGE 2 ARCHAEOLOGICAL ASSESSMENT OF CHILDS PIT/QUARRY EXPANSION,  
CONCESSION 9 PART LOTS 14-16 & CONCESSION 10 LOTS 15-16  
MACAULAY TWP. (GEO), MUSKOKA DISTRICT, TOWN OF BRACEBRIDGE**

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September 15 2015

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In November 2012 the Fowler Construction Company Ltd., of Bracebridge, contracted Kinickinick Heritage Consulting, to carry out a Stage 2 archaeological assessment, according to the *Standards and Guidelines for Consultant Archaeologists* of the areas of archaeological potential in the expansion area of the Childs Pit/Quarry. The expansion area is located between the Muskoka River and the Bonnie Lake Road, about 10 km from the town of Bracebridge. The proposed expansion area is approximately 150 ha and borders the licensed operation.

According to standard and guidelines, a Stage 2 property assessment provides an overview of archaeological resources in order to evaluate cultural heritage value and interest through documentation of all archaeological resources on the property. The Childs Pit/Quarry documentation is based upon a test pit survey of all areas previously determined in the Stage 1 predictive model to have archaeological potential.

Muskoka District, in which the study area lies, is underlain by the Pre-Cambrian igneous rock of the Canadian Shield. Although there are some glacio-lacustrine deposits and a thin veneer of glacial drift, the terrain is essentially “bedrock driven” and in most places it is difficult, rugged, country to traverse.

The period of maximum extent of Lake Algonquin, during the Kirkfield Outlet Phase, 11,200 BP, and the subsequent Main Lake Algonquin Phase, during the Fenelon Falls Outlet about 10,800 BP, corresponds with the Palaeo-Indian period throughout the Great Lakes Basin. The maximum extent of Kirkfield Phase Lake Algonquin in Bracebridge has been pegged at 293 m asl and, based on the projections compiled by the Geological Survey of Canada, it is reasonable to assume that there was a lower relic shoreline at 287 m asl during the Fenelon Falls Outlet Phase.

Areas of archaeological potential exist in a 150 m buffer around primary areas of archaeological interest, namely the glacial Lake Algonquin relic strand, and for 50 m around secondary areas of archaeological interest, namely the borders of two water features and a hilltop in concession 10.

These areas of archaeological potential were subjected to Stage 2 archaeological assessment to determine if archaeological material is present or not. The high potential areas, indicated by red and black bands in Figure 8, were test pitted at 5 m intervals, while the areas of moderate pre-contact and historical potential, indicated by the yellow bands in Figure 8, were test pitted at 10 m intervals.

Shallowly buried bedrock, located immediately under a dense root mat, was commonly encountered and lead to “shovel refusal” throughout the areas tested. There were other areas where standing water and organic terrain. Under these patchy environmental conditions, the consultant often used cluster testing by concentrating test pits on terraces, benches, and shallow depressions where test pits *could* be excavated and by spacing them less than 5 m apart. Nevertheless, a standard survey grid was maintained whenever possible. Where sandy lake deposits did exist in these pockets, the parent material was only 5 cm below the surface and true soil development was not observed anywhere.

The crew found no archaeological material. The consultant concludes that the proposed expansion of Childs Pit/Quarry will not impact or affect any archaeological material or cultural heritage resources. Based on the negative results of the field assessment, the consultant recommends clearance of heritage concern in regards to the expansion of the Childs Pit/Quarry.

**Project Personnel**

Project Supervisor/Field Director/Report Writer: Ken Swayze (P039)

Field Crew: Ken Swayze; Don Webb; Tom Ballantine

Start/Finish Dates of Fieldwork: November 8-9, 12-13 2012

Conditions During Survey: Seasonal conditions did not interfere with fieldwork.

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### 1.0 Development Context

In November 2012 the Fowler Construction Company Ltd., of Bracebridge, contracted Ken Swayze, of Kinickinick Heritage Consulting, to carry out a Stage 2 archaeological assessment, according to the *Standards and Guidelines for Consultant Archaeologists* (OMCT&S 2011), in Bracebridge (Figures 1 and 3) where an expansion to an existing pit/quarry is in the pre-submission planning phase (Figure 2). The fieldwork, which occurred during the pre-submission phase, was triggered by the *Aggregate Act* and stems from the recommendations of a Stage 1 assessment of the property (Swayze 2012). The expansion area is located between the Muskoka River and the Bonnie Lake Road, about 10 km from the town of Bracebridge (Figure 4). The proposed expansion area is approximately 150 ha and borders the licensed operation on the north and west sides. Approximately 13 ha is estimated to have archaeological potential

According to standard and guidelines, a Stage 2 property assessment provides an overview of archaeological resources in order to evaluate cultural heritage value and interest through documentation of all archaeological resources on the property. The Childs Pit/Quarry documentation is based upon a test pit survey of all areas previously determined in the Stage 1 predictive model to have archaeological potential.

In order to help develop an investigation strategy for this large study area, a property inspection was carried out on April 24-25 2012. The entire property and its periphery were inspected by means of random spot checks to identify or verify the presence or absence of features of archaeological potential, particularly small pockets that may possess a higher degree of potential than surrounding areas of low potential, such as an area of raised topography in the north end of the property near a now-dry, or intermittent, wetland. The thick re-growth of saplings on this recently logged landform did not make photographic documentation feasible. Another area of slightly elevated terrain, indicated on the contour map about the middle of the property, proved to be imperceptible. Because of the dense vegetation in such areas, photographic documentation was not feasible.

Muskoka District, in which the study area lies, is underlain by the Pre-Cambrian igneous rock of the Canadian Shield (Chapman 1975). Although there are some glacio-lacustrine deposits and a thin veneer of glacial drift, the terrain is essentially “bedrock driven” and in most places it is difficult, rugged, country to traverse.

In terms of the conditions of the property as found, the expansion area is divided in half, north to south, by a road allowance, which serves in Concession 10 as part of the

roadway between the excavation floor and the entrance at the Bonnie Lake Road but is unopened in Concession 9. There is a hydro corridor, approximately 1.5 km diagonally across Lot 14 in Concessions 9, which has about 2 ha in area. Sage Creek Valley is the most characteristic feature of the study area terrain. It runs east to west along the southern boundary of the expansion area, from the Bonnie Lake Road almost to the Muskoka River, above a deep ravine valley created by a steep rock escarpment, or fault-line. Sage Creek falls about 30 m, from 295 m asl at the Bonnie Lake Road to 265 m where it leaves lot 14. Overall, the expansion area has over 50 m of relief, from 285 m at the edge of the Sage Creek Valley to 336 m on a hill in Lot 16 Concession 10. The land rises in a series of benches from Sage Creek to the northeast corner and is characterized by bedrock knobs alternating with shallow areas of organic terrain (Figure 10).

In addition to Sage Creek, there are two small inland swamps, one in the middle of Lot 16 Concession 10 at the base of a hill and another in the northwest corner in Lot 15 Concession 10. Elsewhere, there are short intermittent streams that align with the northeast-southwest lineation of the landscape. Those in Concession 9 flow into Sage Creek; while those in Concession 10 run directly into the Muskoka River. The drainage of the expansion area is either excessive, where bedrock is exposed or close to the surface, or slow, where organic terrain occupies depressions in the surface of the bedrock. Where there are pockets of glacio-lacustrine deposits and shallow drift, shallow podzolic soil has developed.

## 2.0 Historical Context

Muskoka District was made available for settlement in the 1860s and a number of settlers took up land in the proposed expansion area. Many of these were still present in the 1880s when Belden's *Historical Atlas of Muskoka District* (Figure 5) was prepared. The study area was settled by: J. Clerihue, in Lot 14 Concession 9; J. Smith in Lots 15 & 16 Concession 10. Charles Pickerel in Lot 15 Concession 9; and E. Neff in Lot 16 Concession 9 (Figure 5).

Aerial photographs HA333-91 taken in 1929, shows that the land throughout the expansion area was at that time partly cleared pasture (Figure 6); however, the only homestead visible is in Lot 17 Concession 9, which is outside the area to be licensed.

The 1929 imagery does not show an open road allowance between lots 15 & 16 but, nevertheless, 19<sup>th</sup> century settlers may have used this route to access their lots.

The Muskoka master plan identifies South Shield Farming as one of the historical themes that characterizes the district. Farming on the shield was a marginal existence at best and usually a seasonal occupation. The original impetus for farming was the Free Land Grant Act but farming was soon abandoned by most who tried it. Nevertheless, some form of beef ranch operation persisted here into the 20<sup>th</sup> century, for the 1929 imagery shows considerable cleared land and a well developed farmstead on Sage Creek beside the Bonnie Lake Road. The Forest Industry is another historical

theme in Muskoka and the Childs Pit/Quarry expansion area was logged in the mid-19<sup>th</sup> century and has been cut over many times since, in some places, in recent decades. Although densely forested the study area probably has little resemblance to the pristine forest that existed prior to 1860.

The present-day land use is woodlot and the property is a popular place for deer-hunting in season. The area of elevated terrain in the north end of the property (which has been identified as having archaeological potential due to possible use as a look-out) was logged sometime in the recent past and was found to be thickly overgrown with saplings that inhibited photographic documentation.

### 3.0 Archaeological Context

This section considers the known and recorded archaeological sites in the immediate vicinity of the study area as well as previous research and a discussion of the early postglacial period in the Huron-Georgian Bay Basin.

#### 3.1 Known and Recorded Sites in the Vicinity

Charles Borden (1952) designed a site registration system that is used throughout Canada. A “Borden Block” is a co-ordinate system that uses upper and lower case letters and is ten degrees latitude (long) by ten degrees longitude (wide). Canadian archaeologists refer to “Borden Blocks” and “Borden Numbers” and “Bordenize” sites when they register them. Sites within a Borden Block are numbered sequentially.

The study area is in the BgGt Borden Block and, according to the OMCT&S site database, there are no archaeological sites recorded within 1 km of Childs Pit/Quarry; however, Archaeological Services Inc. registered three small sites at High Falls (ASI 1994 v.2:58-59) about three km from the study area eroding from the riverbank immediately above the falls. BgGt-1 consists of seven flakes of high quality chert; BgGt-2 had four flakes of chert debitage. BgGt-3 produced 50 chipped stone tools and 38 fragments of calcined faunal bone.

Archaeological Services Inc. prepared a master plan of the archaeological resources of Muskoka District in 1994 (ASI 1994 v.2:66) that provides a discussion of background research, traditional land use and a “windshield” archaeological survey. In volume 2 ASI notes that the Sage Creek gap in the Algonquin strand—where the study area is situated—has high Palaeo-Indian potential.

#### 3.2 Surficial Geology and Soils

The following account references the dates of geological episodes to cultural time periods in order to underline the effect these processes had upon the relative attractiveness of the property for human use, either for habitation or specific resource exploitation activities. The cultural periods referred to, and their approximate dates before present (BP) are: Palaeo-Indian 11,500-10,000 BP; Early Archaic 10,000-

6,000 BP; Middle Archaic 6,000-4,500 BP; Late Archaic 4,500-2,500 BP; Woodland 2,500 BP-1,600 AD and Historic 1600-1900 AD. The consultant refers to a chronological framework established by Chapman 1975; and Lewis and Anderson 1989. Dates are expressed here as either 'years ago', or 'BP', which means Before Present (the 'present' being 1950 AD.)

The most significant and dramatic effect of deglaciation, in the Great Lakes Basin was the creation of long-lived glacial lakes during the late Pleistocene, which rose much higher than the modern day shorelines, and a series of post-glacial lakes that occupied a much smaller part of the modern Huron-Georgian Bay basin. The potential for early postglacial period archaeological material is recognized by the Muskoka master plan (ASI 1994 v.1:29, 36) The early high-level lakes occurred because of the great volume of melt-water received annually from great Lake Agassiz that occupied the long-grass prairie. The shallow lakes below modern levels occurred because Lake Agassiz meltwater was diverted down the Mississippi River for several millennia

The period of maximum extent of Lake Algonquin, during the Kirkfield Outlet Phase, 11,200 BP and the subsequent Main Lake Algonquin Phase (during the Fenelon Falls Outlet about 10,800 BP) corresponds with the Palaeo-Indian period throughout the Great Lakes Basin. During the Fenelon Falls phase, a series of outlet sills in Algonquin Park and the Nipissing-Mattawa Lowlands were breached by Lake Algonquin with the result that the Main Phase was at least six metres lower. The maximum extent of Kirkfield Lake Algonquin in the Bracebridge has been pegged by Chapman (1975) at 293 m asl and, based on the projections compiled by the Geological Survey of Canada (Lewis and Anderson 1989), it is reasonable to assume that there was a lower relic shoreline at 287 m asl during the Fenelon Falls Outlet. Archaeological Services Inc., on the other hand, put the relic strand at 310 m asl, although they do not cite a geological reference for this elevation at that location. If one considers that the early pro-glacial level of Lake Algonquin is poorly known, it is likely that all terrain in Sage Creek valet from 287 to 310 m asl once a relic shore, if only for a relatively brief period of time.

#### 4.0 Archaeological Potential

Areas of archaeological potential exist in a 150 m buffer around primary areas of archaeological interest (such as the shorelines of lakes and rivers) and for 50 m around secondary areas of archaeological interest (like the shorelines of streams, wetlands, and intermittent creeks and landforms like lookouts, rock-faces, or sources of suitable rocks for tool manufacture). Areas of archaeological interest in the expansion area are illustrated in Figure 8.

There is one area of pre-contact archaeological interest based on a primary water source; five based on secondary watercourses; and two based on landforms. In addition, there is potential for historical archaeological material in the unopened road allowance.



The areas of archaeological interest are:

1. The Lake Algonquin Relic Shoreline at 293 m asl, has archaeological potential for 150 m above this elevation. The first 50 m, which is indicated by a red band (about 1.2 ha) in Figure 8, has high potential; while from 50-150 m, indicated by a yellow band (about 4.1 ha), the terrain has moderate potential.
2. Three Sage Creek Intermittent Stream Tributaries flow into Sage Creek on a seasonal basis. They have high archaeological potential (about 5.5 ha) for 50 m on each side.
3. Two Swamps and an Intermittent Stream are tributaries of the Muskoka River and have high archaeological potential (about 8 ha) for 50 m around, indicated by a black band in Figure 8. There are no environmental buffers or setbacks around these water bodies because they will be removed during extraction.
4. Two Hilltop Lookouts exist on heights of land: one in Lot 16 Concession 10 overlooking a swampy wetland; the other in Lot 15 Concession 9 overlooking Sage Creek and the Lake Algonquin Relic Shore.
5. The unopened road allowance has potential (about 2 ha) for 19<sup>th</sup> century archaeological material. Historical archaeological potential is indicated in Figure 8 by a green buffer.

These areas of interest are 23.1 ha, which is 15.4 % of the total expansion area, 12.6% tested at 5 m intervals and 2.7% at 10 m. The remainder of the property, 126.9 ha or 84.6% of the expansion area is low archaeological potential and was not tested.

The *Standards and Guidelines* make provisions for alternate strategies in the assessment of rugged rocky terrain of the Canadian Shield, such as the Childs Quarry/Pit expansion area. In areas where thick root mats occur over bedrock, it may not be feasible to excavate test pits with a shovel; rather, based on professional judgment, it may be more useful to use alternate strategies, provided the rationale for all variation from standards is documented in the Stage 2 report (OMCL 2011:35). In areas where archaeological potential occur on terraces, or patches of sand, the field director should use a “cluster sample” technique, while maintaining a standard survey grid as closely as possible. The provisions in the standards and guidelines allow the project archaeologist to decide that a Stage 2 survey is not required in locales that are (but not limited to): being permanently wet; being exposed bedrock; or characterized by steep slopes (greater than 20 degrees).

### *STAGE 2 TEST PIT SURVEY*

#### 5.0 Fieldwork Methods, Procedures and Observations

The areas of archaeological potential shown in Figure 8 were subjected to Stage 2 archaeological assessment to determine if archaeological material was present or not. The high potential areas (about 19 ha or 12.6% of study area), indicated by red and black bands in Figure 8, were test pitted at 5 m intervals, while the areas of moderate

pre-contact, indicated by the yellow bands (about 4.1 ha, or 2.7% of study area), were test pitted at 10 m intervals. Historical potential, indicated by green along the unopened road allowance (about 2 ha, or 1.2% of study area), was tested at 5 m intervals (see Figure 8). In total about 23.1 ha or 15.4% of the study area was assessed. The areas assessed are those that were indicated in the Stage 1 report (Swayze 2015)

The work was supervised and directed in the field by the consultant, assisted by Don Webb and Tom Ballantine. The work was carried out on November 8, 9, 12, and 13 2012. The weather conditions on the 9<sup>th</sup> and 10<sup>th</sup> were mild and sunny, while there was rain on the afternoon of the 12<sup>th</sup> that curtailed work when it became heavy. The morning of the 13<sup>th</sup> was sunny and mild and although there was a dusting of snow that melted within a few hours and did not interfere with normal test pit excavation. Mr. James Gordon, of Fowlers Construction Company, gave permission to the consultant to enter the property for the purpose of the assessment and to collect any artifacts encountered.

The Stage 2 assessment method used was test pit survey at 5 or 10 m intervals where conditions allowed. Test pits were about 30 cm in diameter and were excavated by hand with a shovel and masonry trowel to parent material, which occurred at 10 to 20 cm below the surface. The back dirt was passed through a 6 mm mesh and the contents of the screen were inspected for artifacts and the soil profile was checked to see if it revealed artifacts or cultural features (such as fire hearths or pits). Test pits were back filled after assessment.

The Stage 1 assessment (Swayze 2015) recommended testing 19 ha at 5 m intervals and 4.1 ha at 10 m intervals although because of the rugged bedrock-driven nature of the terrain it recommended that the field director employ “Cluster testing” if it improved overall test pit density. As such, favourable microenvironments received enhanced testing at less than five metre interval, to make up for stretches where “shovel refusal” was ubiquitous.

The existing aggregate operation has not disturbed any part of the study area. No differences were noted in the study area from observations made during previous site visit. As noted in the revised Stage 1 report, the slightly elevated area in the centre portion of the property is not a prominent or discrete look-out feature and was not tested.

Shallowly buried bedrock, located immediately under a dense root mat, was commonly encountered (Figure 16a) and lead to “shovel refusal” throughout the areas tested. There were other areas where standing water (Figure 15) and organic terrain (Figure 14d). Under these patchy environmental conditions the consultant often used cluster testing by concentrating test pits on terraces, benches, and shallow depressions where test pits *could* be excavated and by spacing them less than 5 m apart. Nevertheless, a standard survey grid was maintained whenever possible. Where sandy

lake deposits did exist in these pockets, the parent material was only 5 cm below the surface. True soil development was not observed anywhere.

Although second growth hardwood forest conditions existed along the Sage Creek escarpment, the stumps of earlier logging episodes were noted everywhere, including rotten pine stumps from the original forest. Throughout the areas of potential related to glacial Lake Algonquin on the west side of Sage Creek valley, the landform is a steep escarpment, often quite precipitous (Figures 14b, 14c, 17b). The actual Lake Algonquin waterline, at 293 m asl according to Chapman (1975), where it could be discerned, was a narrow flat sandy bench hemmed in at the foot of the escarpment—not an environment that a postglacial hunter-gatherer would consider a safe landing for small water craft or a safe place to inhabit. At one place at the base of the escarpment in lot 14 concession 9 one could see a lower bench that perhaps was created during the Fenelon Falls Outlet phase of Lake Algonquin. Nevertheless, there are numerous lookouts and vantage points along the top of the escarpment, where one can imagine that a hunter might have studied the land and water in all directions while working on and making hunting equipment. A lookout or hilltop above 300 m asl in lot 15 concession 9 was a good example of terrain that meets all the criteria listed by Storck (1982) as ideal conditions for Palaeo-Indian hunters (Figure 17). Despite these appealing characteristics, not one of the test pits excavated there contained artifacts or revealed cultural features.

On November 8<sup>th</sup> the archaeology crew assessed the areas of high and moderate potential within 150 m of the relic Lake Algonquin strand located in lot 14 concession 9 up to and including both sides of the hydro corridor. No artifacts or cultural features were discovered. On November 9<sup>th</sup> and 12<sup>th</sup> the crew assessed the areas of potential in lots 15 and 16 concession 9, including the unopened road allowance. This area of historical potential, indicated in green in Figure 8, was never developed as a roadway and there was no visible path that marked it; nor is a path visible on the historic aerial imagery. To follow the 20 m wide allowance, the consultant took a compass bearing at the road. For most of its length, the road allowance passed through mixed deciduous and coniferous forest with patchy drainage varying from excessive to poor. Once again, no artifacts or cultural features were noted.

On November 13<sup>th</sup> the crew assessed the borders of two inland water features and the higher ground in lots 15 and 16 concession 10. Although, the borders of the secondary water features have, in theory, have high archaeological potential it was observed that in fact they consisted largely of rock and muskeg and had low potential. Nevertheless they were assessed at 5 m intervals, or less, by digging test pit clusters where possible. As before, no artifacts or cultural features were encountered. The hilltop in concession 10 was not as appealing as the lookout feature along the Lake Algonquin strand. The slope increase was gradual and there were no well-defined lookouts. This area has been recently logged and is now growing back in thick. No disturbance

## 6.0 Record of Finds

The crew found no archaeological material.

## 7.0 Analysis and Conclusion

The consultant concludes that the proposed expansion of Childs Pit/Quarry will not impact or affect any archaeological material or cultural heritage resources.

## 8.0 Recommendations

Based on the negative results of the field assessment, the consultant recommends clearance of heritage concern in regards to the expansion of the Childs Pit/Quarry.

## 9.0 Advice on Compliance with Legislation

### Standards

1. Advice on compliance with legislation is not part of the archaeological record. However, for the benefit of the proponent and approval authority in the land use planning and development process, the report must include the standard statements:
  - a. This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
  - b. It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological reports referred to in Section 65.1 of the *Ontario Heritage Act*.
  - c. Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48

(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

- d. The *Cemeteries Act*, R.S.O. 1990 c.C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002,c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Small Business and Consumer Services.
2. Reports recommending further archaeological fieldwork or protection for one or more archaeological sites must include the following standard statement: “Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.”

## 10.0 References

Archaeological Services Inc.

1994 “Report of the Master Plan of Archaeological Resources of the District Municipality of Muskoka and the Wahta Mohawks. Volume 1 Background Research; Volume 2 Traditional Use Study and Archaeological Survey; Volume 3 Conservation and Management Guidelines” Report on file with OMTCS, Toronto.

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Storck, Peter,

1982 “Palaeo-Indian Settlement Patterns Associated with the Strandline of Glacial Lake Algonquin in Southern Ontario” *Canadian Journal of Archaeology* 6:1-31.

Swayze, Ken

2015 “PIF P039-178-2012 revised A Stage 1 Archaeological Assessment of Childs Pit/Quarry Expansion, Concession 9 part Lots 14-16 & Concession 10 Lots 15-16 Macaulay twp (Geo.) Town of Bracebridge, Muskoka District” Report on file with Ministry of Tourism Culture and Sport, Toronto.

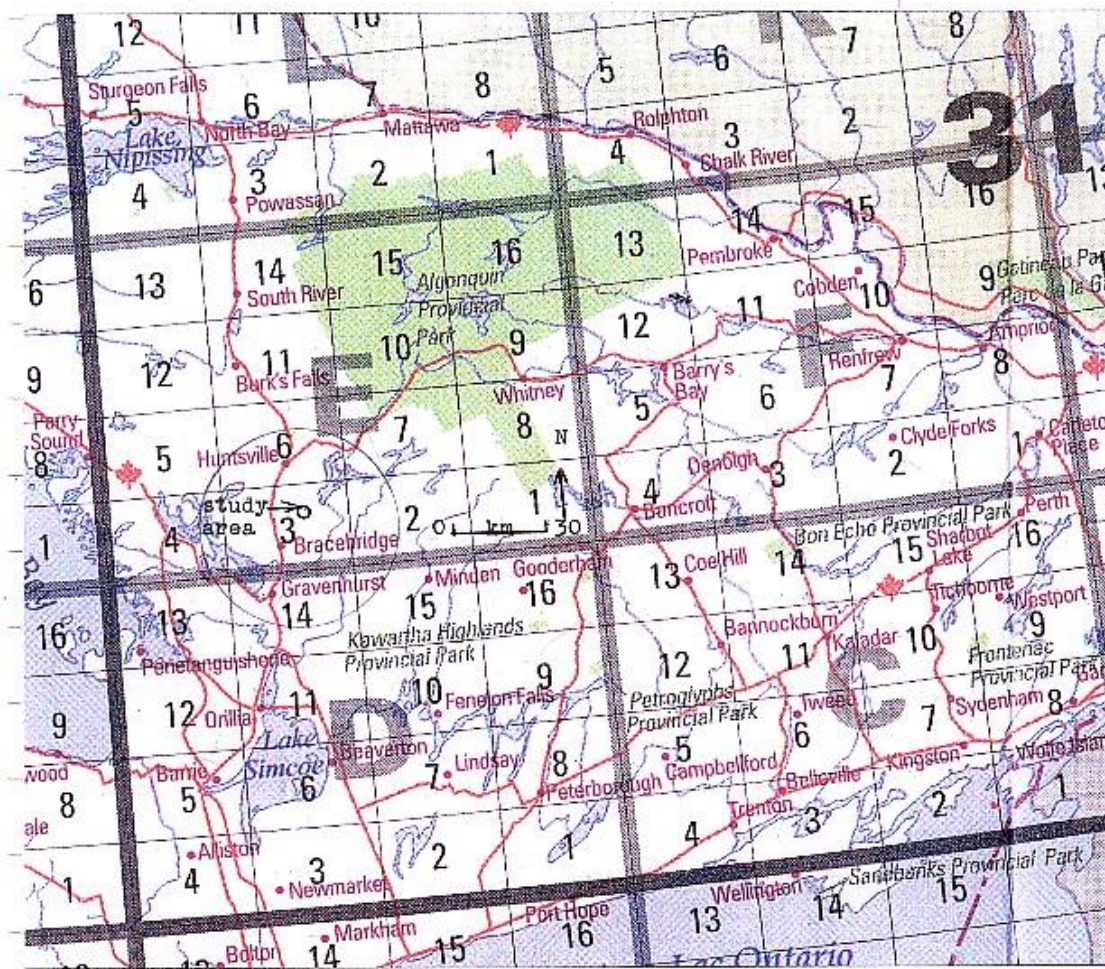


Figure 1: Regional location of study area



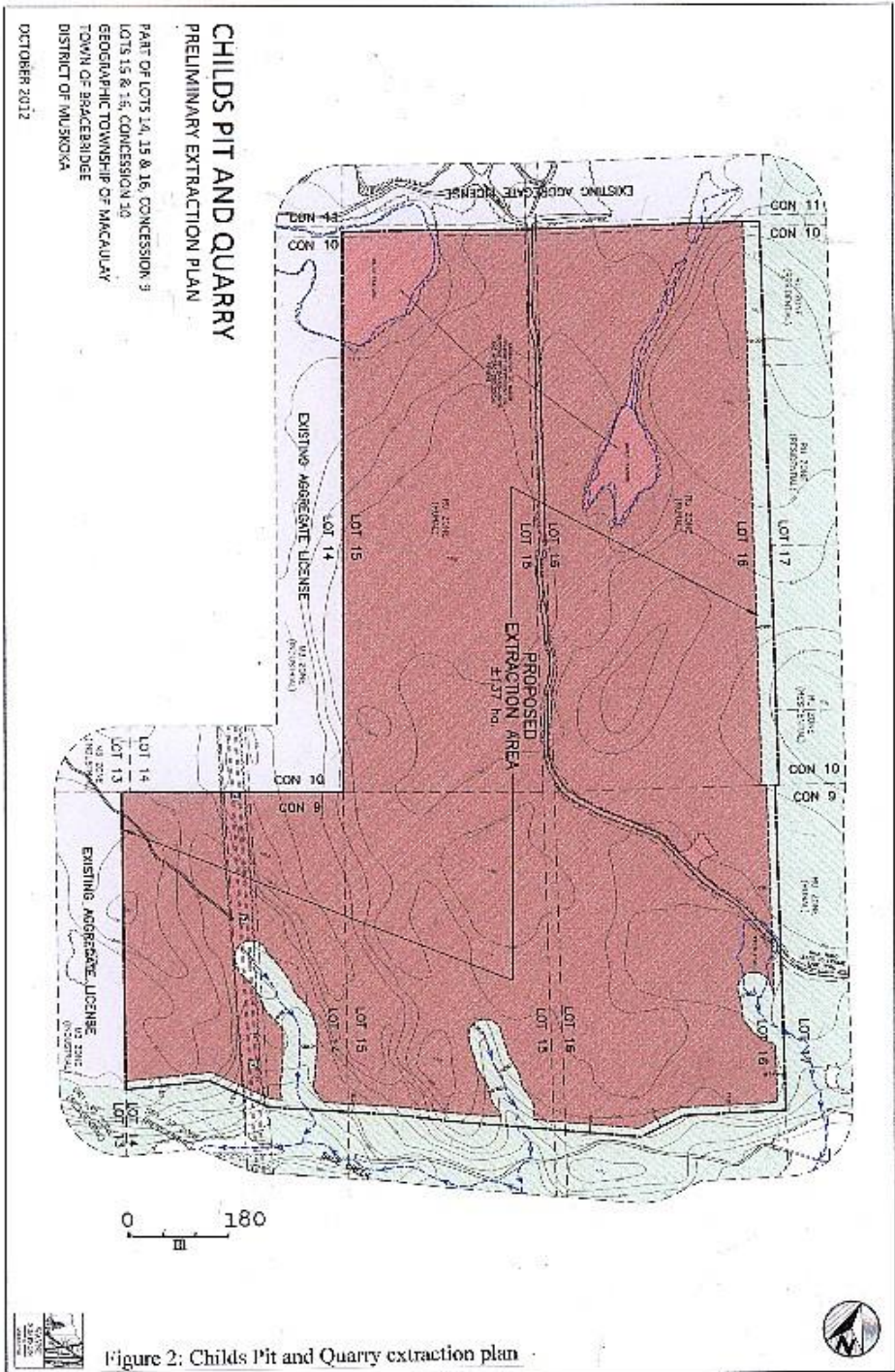


Figure 2: Childs Pit and Quarry extraction plan



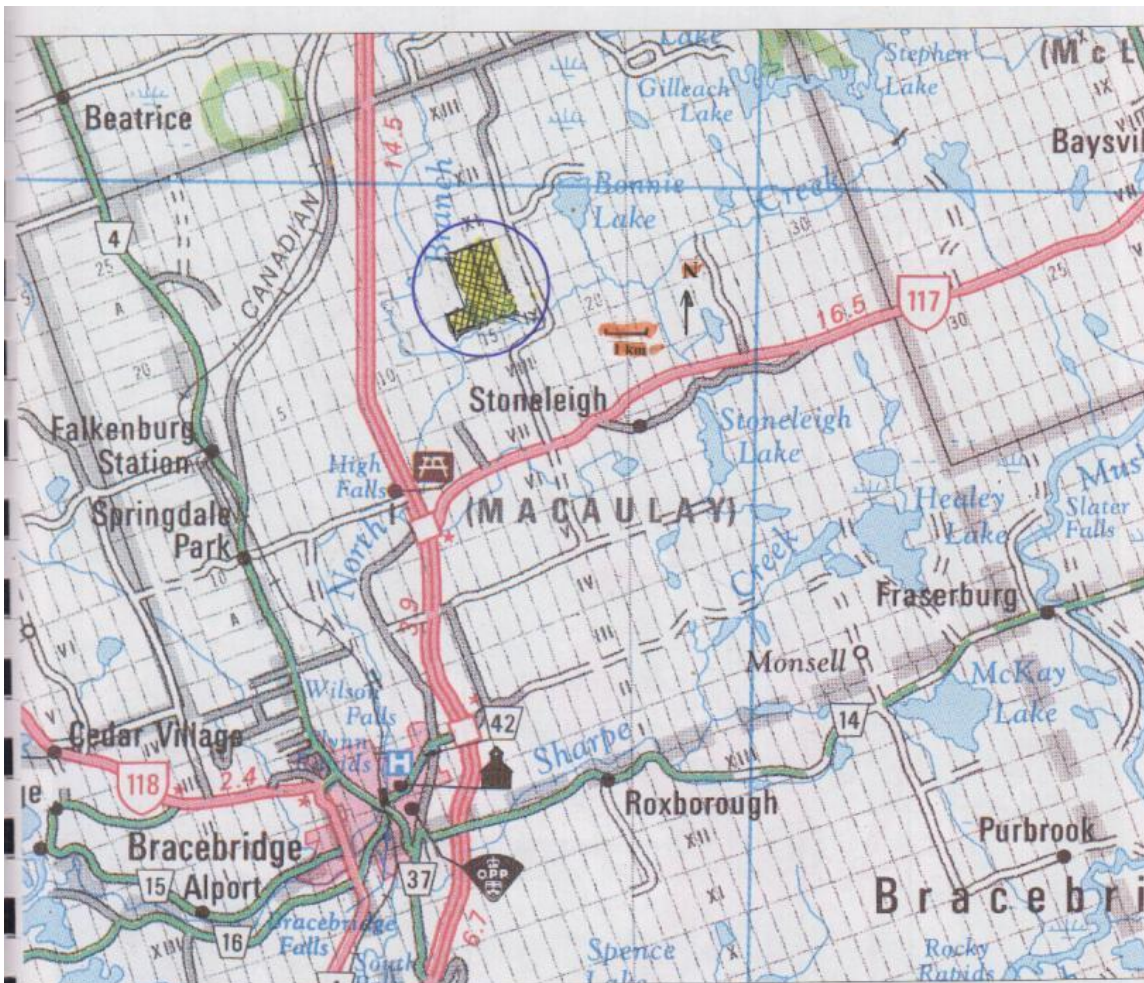


Figure 3: Geographic location of Childs Pit/Quarry Expansion



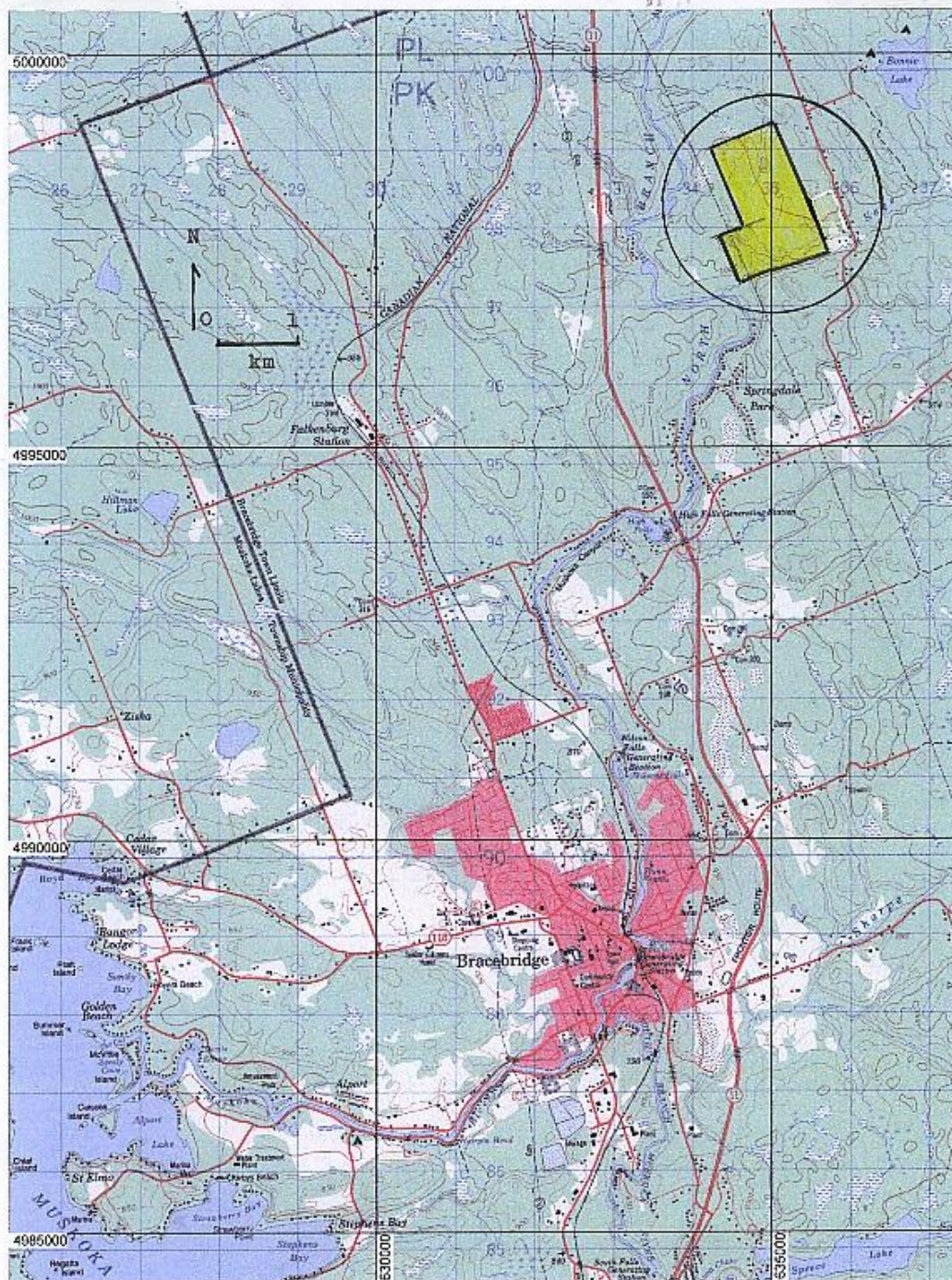


Figure 4: Drainage, topography, infrastructure of the study area vicinity



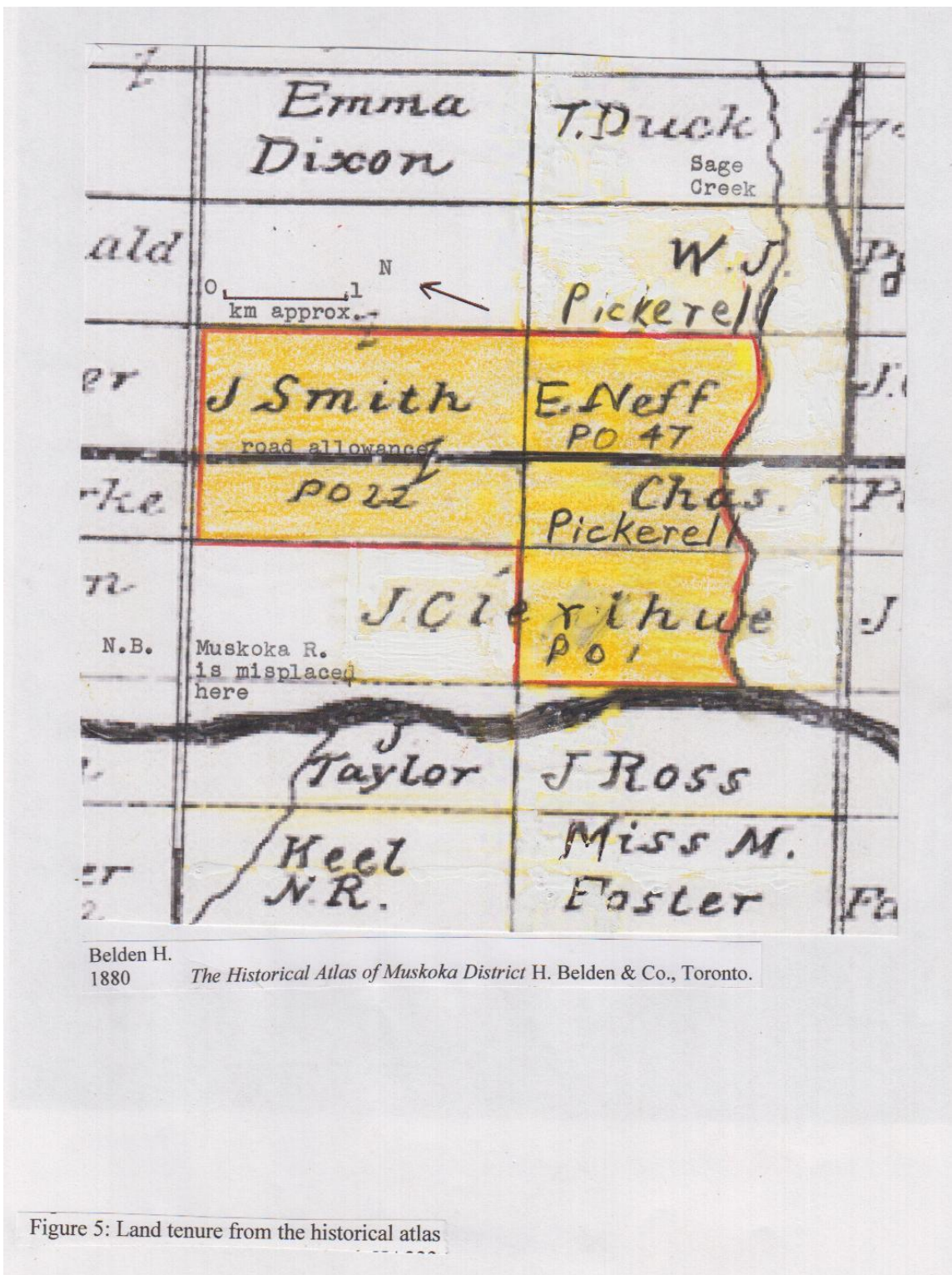


Figure 5: Land tenure from the historical atlas





Figure 6: Historical aerial photograph HA333:90-93 taken in 1929



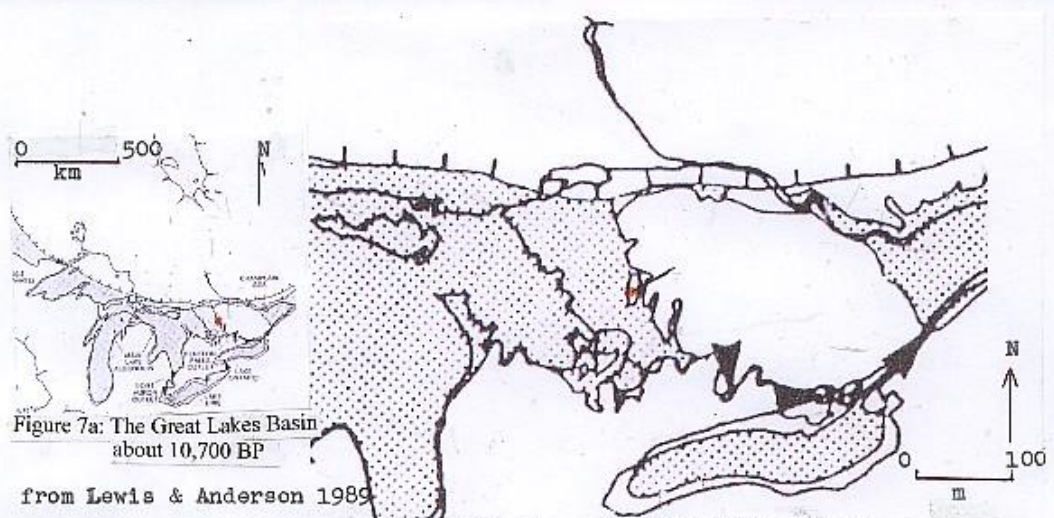
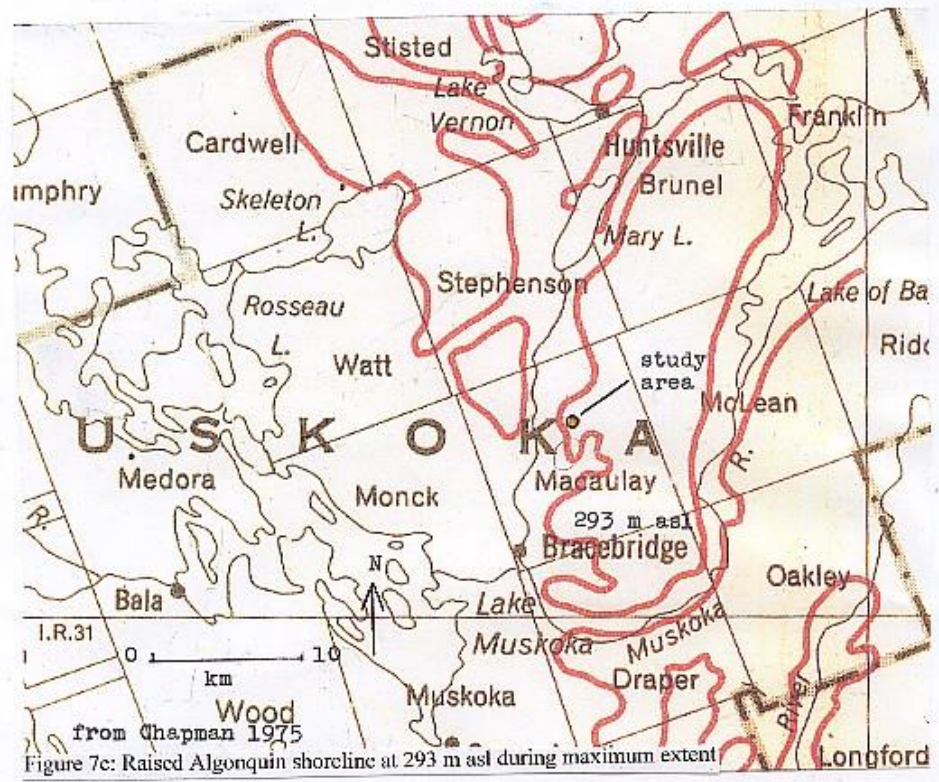


Figure 7a: The Great Lakes Basin about 10,700 BP

from Lewis & Anderson 1989

Figure 7b: Glacial Lake Algonquin during the Fenelon Falls Outlet



from Chapman 1975

Figure 7c: Raised Algonquin shoreline at 293 m asl during maximum extent

Figure 7: Relation of the study area to Glacial Lake Algonquin

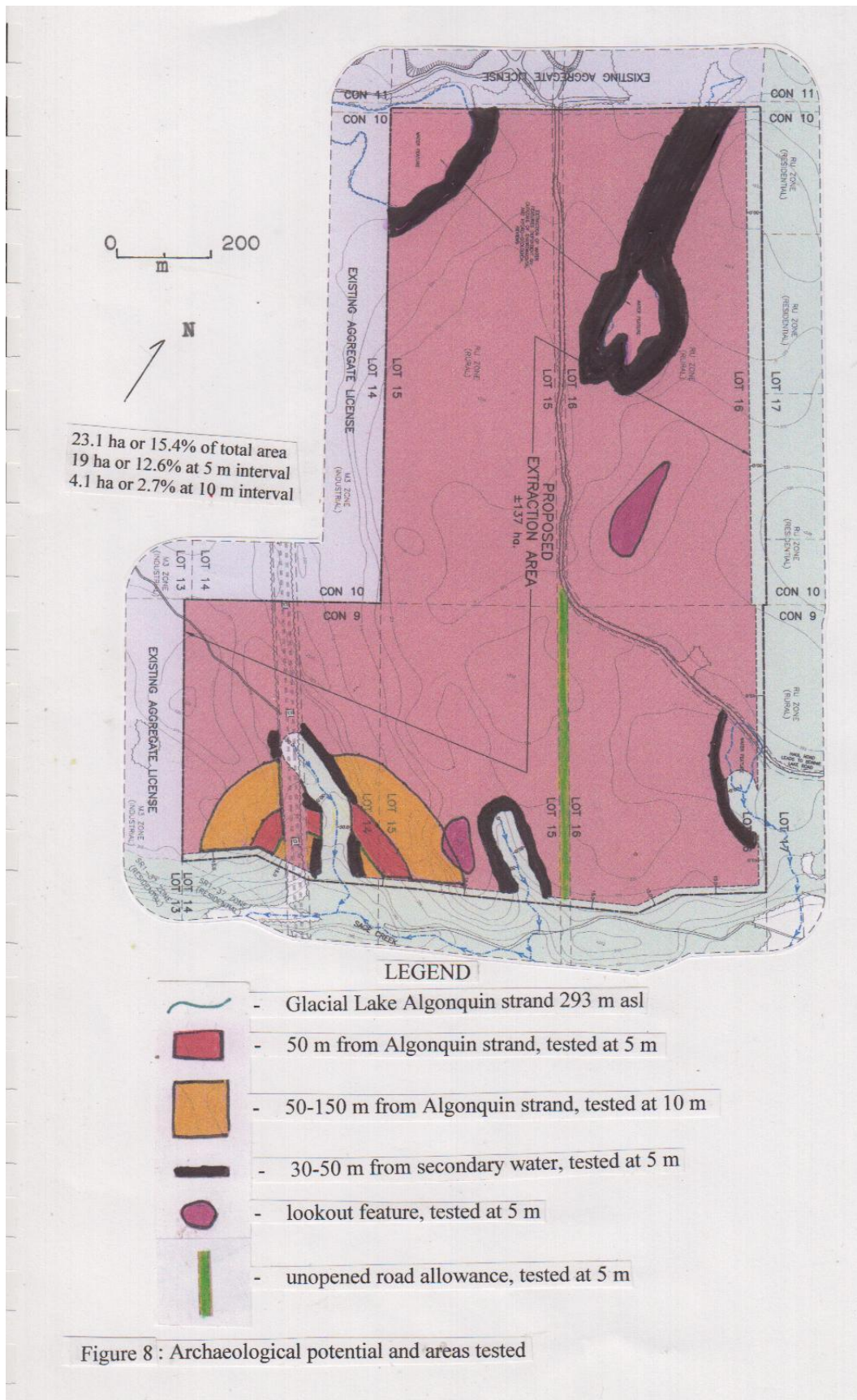


Figure 8 : Archaeological potential and areas tested



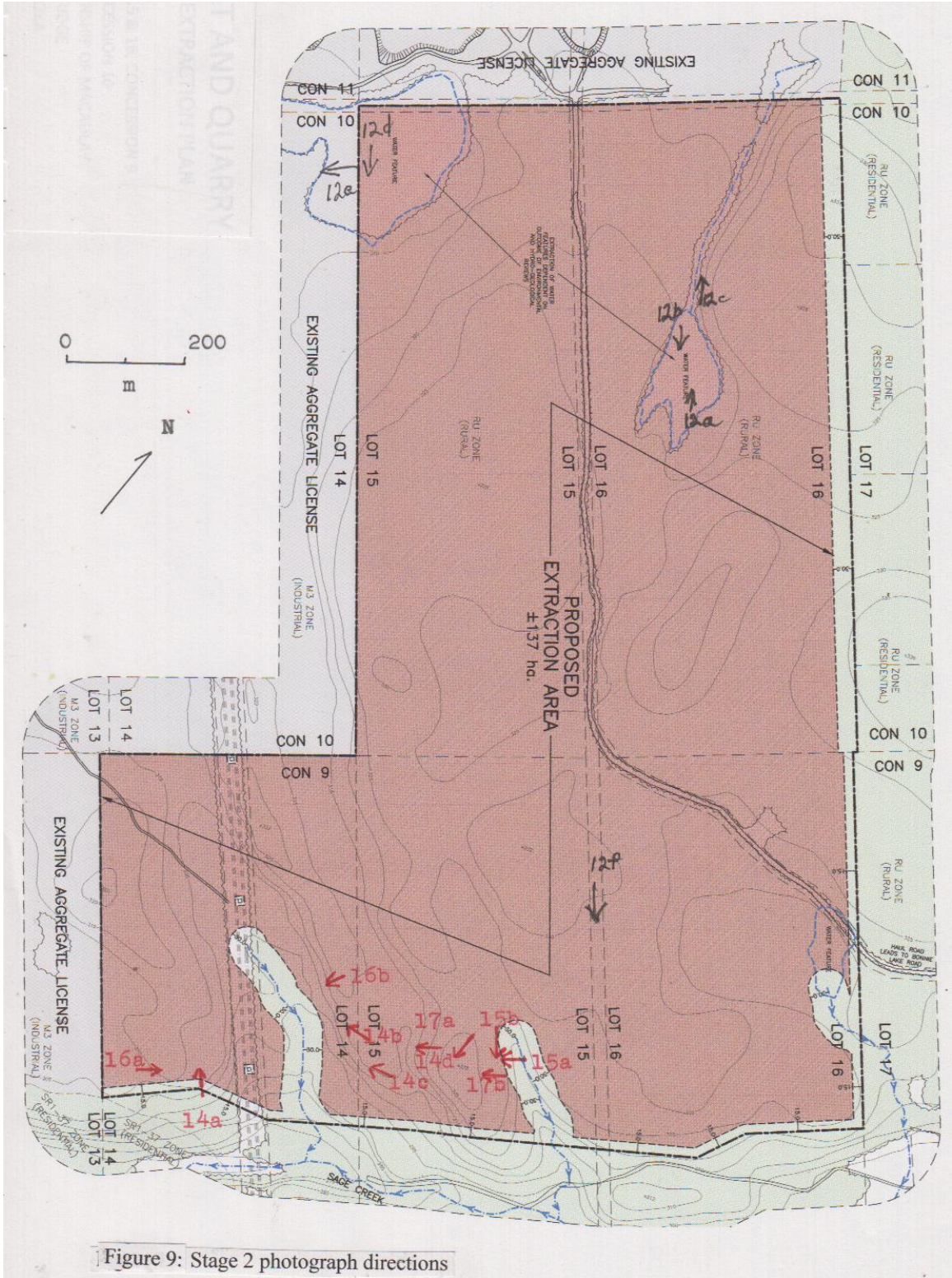


Figure 9: Stage 2 photograph directions



Figure 10a: L.17 C.9, view of buffer edge above W bank Sage Creek



Figure 10b: L16 C.9, escarpment W side Sage Creek

Figure 10: Photographs of Childs Pit/Quarry Expansion Area, April 2012





Figure 11a: L14 C9, Looking E up hydro corridor



Figure 11b: L14 C9, Looking W down hydro corridor

Figure 11: Photographs of Childs Pit/Quarry Expansion Area, April 2012



Photo 13. Wetland MAMM1-5 in north east portion of property (June 24, 2012).

Figure 12a: Looking N across wetland in the north-east



Photo 10. Wetland meadow community MAMM1-5 (June 24, 2012).

Figure 12b: Looking S across wetland in NE



Photo 11. Wetland MAMM1-5 in northeast portion of property (June 24, 2012).

Figure 12c: looking S at the banks of the intermittent stream in the NE



Photo 12. Fen FEOG1 (October 5, 2011).

Figure 12d: Looking S at the fen in the NW



Photo 14. Shrub Fen FESD1-4 (October 5, 2011).

Figure 12e: Looking W at shoreline of the fen.



Photo 2. Upland forest type ES 27.2 (November 3, 2011).

Figure 12f: Looking at terrain typical of the

Figure 12: Photographs of natural features from the natural environment report By Riverstone Environmental Solutions Inc. (2014)





Figure 13: Stage 2 photograph directions





Figure 13a: Looking north at lookout feature on the relic shore



Figure 13b: Photograph of sandy podzol soil typically encountered:

Figure 13: Photographs of Stage 2 conditions on the relic shoreline





Figure 14a: Looking NW at relic shoreline in lot 14 concession 9



Figure 14b: Looking SE at escarpment lot 14 concession 9



Figure 14c: Looking SE at escarpment in lot 15 concession 9



Figure 14d: Looking W at organic terrain in lot 15 concession 9

Figure 14: Photographs of Glacial Lake Algonquin shoreline, November 2012





Figure 15a: Looking W at area of standing water



Figure 15b: Looking S at area of standing water

Figure 15: Photographs of areas of standing water in the potential zone



Figure 16a: Looking E at typical terrain on the relic Lake Algonquin shore



Figure 16b: Looking W at a terrace on the Lake Algonquin relic shore

Figure 16: Photographs of the Lake Algonquin shore, November 2012





Figure 17a: Looking SE at a fossil island on the relic Lake Algonquin shore



Figure 17b: Looking S at the escarpment of the fossil island

Figure 17: Photographs a fossil island off the shore of Lake Algonquin