APPENDIX F

YELLOWKNIFE GOLD PROJECT

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ARCHAEOLOGICAL ASSESSMENTS, 2004

February, 2005

Tyhee NWT Corp

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ARCHAEOLOGICAL ASSESSMENTS, 2004

TYHEE NWT CORP

YELLOWKNIFE GOLD PROJECT

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Edmonton, Alberta

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EXECUTIVE SUMMARY

In July 2004, on behalf of Tyhee NWT Corp., Points West Heritage Consulting Ltd. completed archaeological assessments relative to proposed mining developments. This project is near the historic Discovery Mine, abandoned in 1969. It is located approximately 85 km north of Yellowknife, Northwest Territories. The original Discovery Mine is situated on Giauque Lake, but the two current proposed developments are on Winter Lake, known as the Discovery property (a short distance west of Giauque Lake) and on Nicholas Lake to the northeast, approximately 12 km apart. Both properties have previously excavated exploratory declines proposed to be reopened and developed.

Archaeological assessments were conducted of specific proposed development areas identified on a conceptual plan received from EBA Engineering in June 2004. Planned facility locations are fairly preliminary, therefore, archaeological fieldwork was aimed at providing a combination of impact assessments of those more firmly defined developments as well as overview assessments of possible development areas. The latter were meant to provide indications of archaeological potential and to identify specific locations where fieldwork may be required. Impact assessments consisted of pedestrian surveys together with shovel testing where necessary. Overview assessments were completed using low and slow aerial overflights, as well as pedestrian surveys of selected portions.

Ground reconnaissance was conducted in the vicinity surrounding the proposed mine on the Discovery property, the entire perimeter of Round Lake (the proposed tailings pond), a possible waste rock storage area west of the mine site, as well as selected portions of the terrain surrounding the Nicholas mine site. Several transects were also walked over a large, broad, rocky ridge extending west from the old Discovery Mine townsite, past the current camp location to the north end of Narrow Lake. Old mining debris and various structural remains associated with the past mining activities were found scattered over this ridge. An esker identified as a possible gravel source southwest of Giauque Lake was also walked. A broad exposed area at the south end was shovel tested, and an old gravel borrow at the north end contained extensive exposures that were closely inspected.

Low level helicopter overflights were completed of the general route for a road between Discovery and Nicholas Lake properties as well as the northern two-thirds of the old winter road between Discovery property and Yellowknife. This provided a good indication of terrain suggestive of archaeological potential where ground reconnaissance will be necessary when routes are finalized. These landforms generally consist of elevated terrain near the larger water bodies.

Heritage resources found in 2004 were all associated with past mining activities, with one possible exception. Some camp remains found on the south side of Round Lake may relate to aboriginal hunting activities, but this site did not appear to contain any evidence suggestive of a date older than 50 years. Additional archaeological assessments will be required when locations of all ancillary developments have been finalized.

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF PHOTOGRAPHS

1.0 INTRODUCTION

As a sub-contractor to EBA Engineering Consultants Ltd., Points West Heritage Consulting Ltd. completed archaeological assessments relative to proposed mining developments known as the Yellowknife Gold Project (YGP). This project is located north of Yellowknife, Northwest Territories (NWT) and consists of two properties in close proximity. The work was conducted under Northwest Territories archaeologist's permit 2004-961, directed by Gabriella Prager. The field crew were comprised of Carol Rushworth of Points West, Noel Doctor of the Yellowknives Dene First Nation and Darren Rabesca representing the Dogrib Treaty 11 Council.

1.1 Project Description

The YGP is located approximately 85 km north of Yellowknife (Figure 1). It is near the old Discovery Mine, situated on the west side of Giauque Lake, which was in production between 1949 and 1969. One of the two proposed developments, known as the Discovery property, is on Winter Lake, a short distance west of Giauque Lake; the other is on Nicholas Lake, approximately 12 km to the northeast (Figure 2). Both properties have previously excavated exploratory shafts that are proposed to be reopened and developed. A winter road route used during the operation of the original Discovery Mine extends approximately 80 km from the north end of Yellowknife Bay to Discovery Mine (Figure 3); this route may be revived. Additional facilities that are currently proposed include a camp, tailings pond, plant site, waste rock storage area, one or more all-weather roads, and borrow pits.

For the purposes of the environmental studies, the Local Study Area (LSA) for the baseline study was defined as a 10 x 10 km square centered on the Ormsby portal and a 4 by 4 km square centered on the Nicholas Lake portal, with a corridor joining these two locations (EBA 2004). In order to place archaeological study results in proper context, available data from a larger region centered on Great Slave Lake must be considered, as will be described. For archaeological impact assessment, a smaller LSA within the defined boundaries will be appropriate.

Legend

Local Study Area

Winter Road

Note: Road Route is Approximate

Scale 1:4,344,316

0 10 20 40 60 80 100 Kilometers

UTM Z12 NAD83

Yellowknife Gold Project

Project Location

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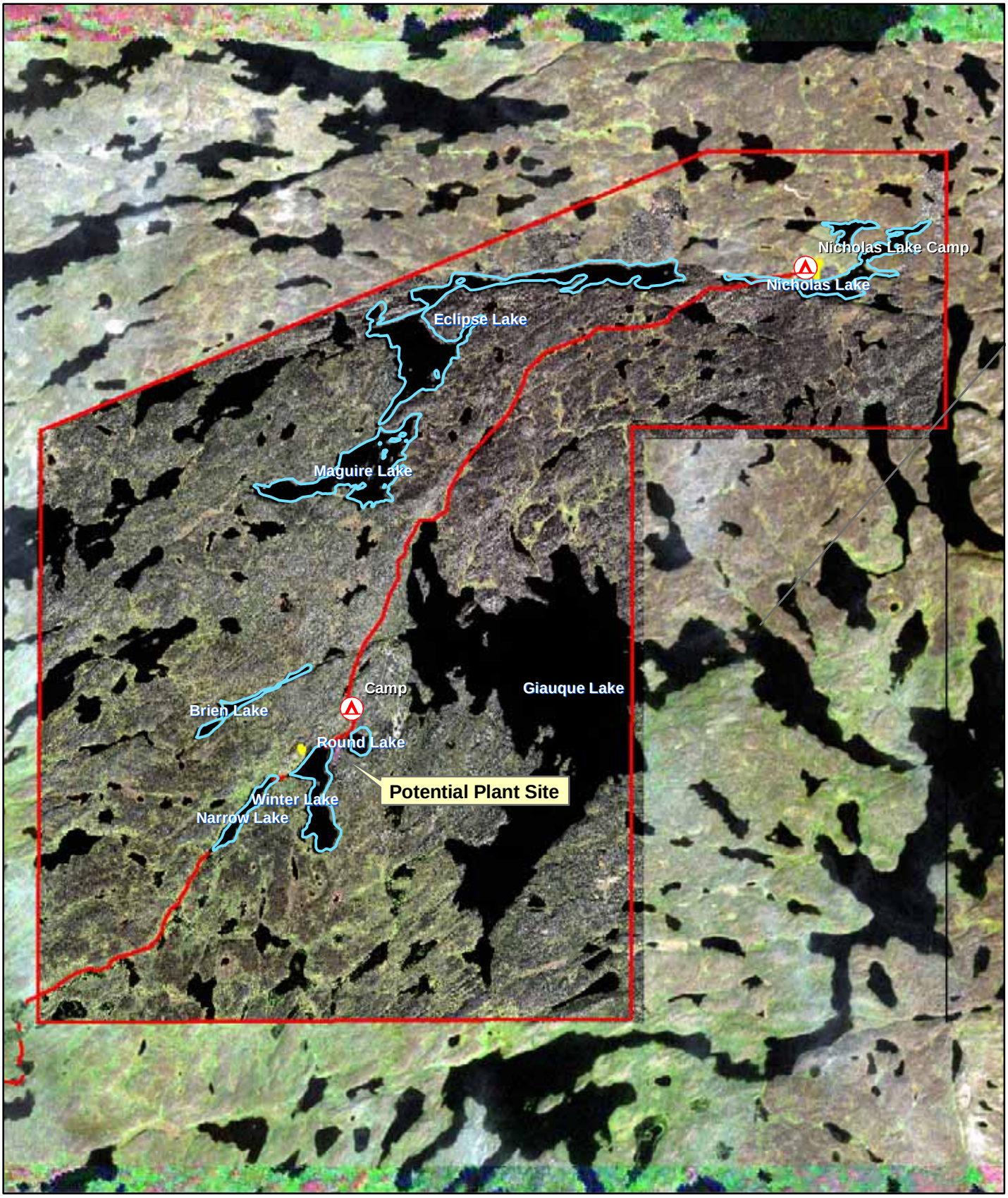
Figure 1

Figure1.mxd



Legend

Local Study Area

Winter Road

Note: Road Route is Approximate

Scale 1:90,000

0 0.20.4 0.8 1.2 1.6 2 Kilometers

UTM Z12 NAD83

Yellowknife Gold Project

Local Study Area

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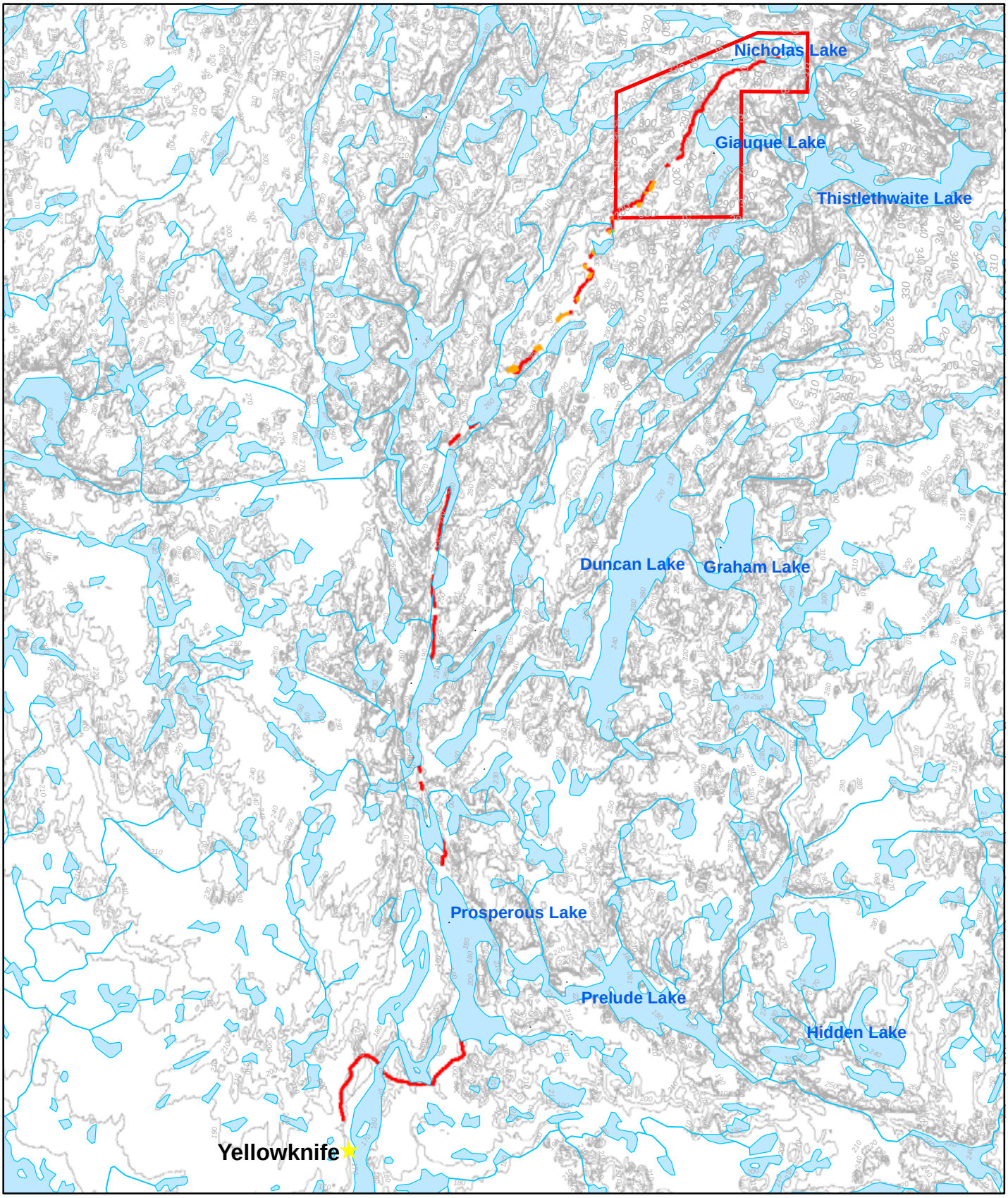
Figure 2

Figure2_Study_Areas.mxd



Legend

- Local Study Area
- Winter Road
- Archaeological Potential

Note: Road Route is Approximate

Scale 1:425,000

0 1 2 4 6 8 10 Kilometers

UTM Z12 NAD83

Base Data Source: GeoBase

Yellowknife Gold Project

Yellowknife to Local Study Area

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Figure 3

Figure4-13-2_tyhee_arch_winterroad.mxd

Due to the preliminary nature of the facilities planning phase, the archaeological fieldwork consisted of two strategies: 1. inventory and impact assessment of those portions of the proposed development that could be considered relatively finalized; and, 2. overview assessments to provide some indication of archaeological potential of areas where facilities may occur. In the latter cases, full inventory and impact assessments will be necessary of selected portions when locations have been finalized.

This report first presents background information necessary for understanding past human use of the area. Then, archaeological investigations conducted in 2004 are described, and results are discussed in the context of the background data. Expectations for heritage resources in the area based on this combination of background information and preliminary field assessments are incorporated into recommendations for future studies.

2.0 BACKGROUND DATA

In order to place archaeological study results in proper context, consideration of data from a larger regional area is necessary. This is because past people utilizing this region lived a necessarily highly mobile hunting and gathering lifestyle, covering large ranges in pursuit of animal resources. Furthermore, past climate and vegetation varied considerably which, in turn, governed the movements of wildlife. These factors are highly relevant when dealing with past people who relied upon natural resources for their survival.

2.1 Environment

The YGP study area lies within the Bear Slave Upland of the northwestern Canadian Shield (Dyke and Dredge 1989). The world's oldest rocks are found on the Shield north of Great Slave Lake (EBA 2004). Topography is described as a strongly rolling plain, with frequent exposed outcrops of bedrock ridges and knolls and occasional discontinuous esker deposits of sand and gravels. Numerous lakes occur in frequent depressions scattered across the landscape.

Consideration of past environments relevant to human occupation of the central Barrenlands begins approximately 8,000 years ago, when it is generally thought that the massive Laurentide ice sheet that covered much of northern North America had receded from virtually all of the Great Slave Lake region (Dyke and Dredge 1989:206); disappearance of the ice sheet is thought to have been complete across the north by 7,000 years ago (Craig 1964). In early post-glacial times, a large glacial lake encompassed the Great Bear/Great Slave lakes basin (Craig 1964:29).

Since deglaciation, there have been several periods of climatic fluctuation with associated changes in vegetation limits. Unfortunately, virtually no paleoclimatic or palynological research has been conducted in the Great Slave Lake region (cf. Wood 1977:53); past studies have focused on the Mackenzie basin to the west and the Hudson's Bay region to the east, both of which have very different glacial and post-glacial histories. Given this situation, some extrapolation as to the general nature of past climate and vegetation in the region is necessary, since these conditions are of critical importance to past human uses of the area. This is particularly important in this region, so close to the northern edge of the forest. Major changes in climate would affect the position of the treeline and composition of the forests, thereby determining animal ranges, particularly migratory animals such as caribou, which served as a critical resource for human survival in this region for millennia.

Immediately following retreat of the ice sheet, the climate of the north was warming; this climatic change is hypothesized to have been particularly rapid in central northern regions (Anderson et al. 1989:527). A maximum warm phase in various parts of the north is postulated at different times between approximately 6,000 and 3,500 years B.P. (before present) with temperatures warmer than today (Wood 1977:62). Megafossil evidence from east of Great Slave Lake suggests expansion of the forest around 5,000 to 6,000 years B.P. (Richie and Hare 1971). Bird cites evidence of the treeline at least 280 km north of present day in the Dubawnt region to the northeast (Bird 1967:30). This is thought to have been followed by a period of cooling beginning around 4,000 years B.P., culminating in major ice expansion in the northern Arctic about 2000 years ago (ibid.) and a consequent retreat of the northern forest limit to approach modern day conditions. Minor fluctuations of climate have occurred over the past 1,500 to 2,000 years. A warm phase is seen about 800 to 900 years B.P. (Bird 1967:31), although Wood suggests warming for the full period between 1,500 to 900 years B.P. (Wood 1977:62). This was followed by cooling to a "Little Ice Age" identified for the first half of the 1800s (MacDonald et al. 1998:200) and subsequent warming to present day levels.

There has been little study of past vegetation community composition within the northern boreal forest edge. In the immediate vicinity of Great Slave Lake, there has been only one pollen study, near the east arm. The results of that study have been interpreted to indicate a relatively simple, three stage record of succession (Richie 1989: 511). Contrary to the Mackenzie area where initial post-glacial vegetation is thought to have been heath tundra, in the Great Slave Lake region, there appears to have been an immediate influx of spruce and birch following retreat of the glacial ice prior to 7,000 years B.P. This is postulated to indicate a faster pollen migration rate than rate of disintegration of the ice sheet (ibid.). An influx of alder is seen about 6700 years B.P. and a gradual establishment of spruce, pine, birch and alder mixed forest composition similar to modern vegetation by 5,500 years B.P. In spite of documented, albeit less severe, climatic variations in the past 4,000 years, some suggest the northern limit of the treeline appears to have been relatively stable over the period (MacDonald et al.

1998:202); however, others see northward shifting of the northern forest limit before 900 year B.P. and a subsequent retreat back to modern positions (Wood 1977:62).

This study area occurs in the modern boreal forest–tundra transition zone. Depending on the specific site growing conditions, current vegetation commonly consists of open, stunted stands of black spruce and tamarack (with alder and willow), with varying quantities of white spruce, trembling aspen, birch and balsam poplar. Ground cover generally varies with moisture content of the substrate to include dwarf birch, willow, various shrubs, cottongrass, lichen and moss (EBA 2004). Important berry crops include cranberries and blueberries.

This area contains a range of wildlife. Species normally found here include barrenground caribou, moose, grizzly and black bear, snowshoe hare, fox, wolf, beaver, muskrat, ptarmigan, raven, grouse, and a variety of waterfowl. Fish species common in the region's lakes and rivers include northern pike, whitefish, walleye, lake trout, sucker and Arctic grayling.

The barrenground caribou was of primary importance to past inhabitants of the Great Slave Lake region and, therefore, some discussion of its biology is warranted. The study area is within or at the southern edge of the winter range of the Bathurst herd (Brotton and Wall 1997; Williams and Fournier 1996). Wintering within this area from November to March, caribou are dispersed in small groups or individually and range widely. In late March and April, the caribou begin to migrate north toward the summer calving grounds, and migrate back to the wintering grounds in September and October (Brotton and Wall 1997:6). It appears that, depending on the year, caribou may or may not winter as far south as the north shore of Great Slave Lake (ibid.). It is unclear how much variation may have occurred in the caribou range at various times in the past, but it is reasonable to suspect that there were significant periodic changes, depending on severity of climate and forage availability. Given these factors together with the fact that the study area is at the current southern limit of winter range, it can be concluded that dependability of caribou as a winter subsistence resource in this region would have been variable throughout the past.

2.2 Human History

The Great Slave Lake region was historically utilized by members of three groups of Northeastern Athapaskan speakers. Early explorers and ethnographers identified these groups as the Chipewyan (also referred to as Northern Indians or Caribou Eaters), the Dogrib Indians, and the Yellowknives or Copper Indians (Hearne 1911). All three groups occupied the forest-tundra eco-tone to varying degrees, and all were nomadic hunter-gatherers, focused primarily on hunting barrenground caribou (Smith 1981:271, Helm 1981:291, Gillespie 1981:285). Consequently, the seasonal round and lifestyles were generally similar.

The Chipewyan people, historically referred to as Caribou Eaters or Northern Indians, generally ranged east and southeast of Great Slave Lake. Due to a general lack of furbearers in their territory, the Northern Indians were never as closely tied to the fur trade as southern aboriginal groups; therefore, they (together with the Yellowknives and Dogrib) were relatively late in adopting many European goods. In later times, some members of this group moved south, into the boreal forest proper, and changed their focus to hunting woodland caribou and moose. This faction then also became more closely associated with the fur trade, since furbearers were more frequent in their new range (Smith 1981).

The Yellowknives and Dogrib people were said to occupy the lands north and northwest of Great Slave Lake (Helm 1981). These two groups habitually frequented the vicinity of the study area with overlapping ranges. Yellowknives or Copper Indians were so named because they were known to make use of copper for their implements (Gillespie 1981). They are, therefore, generally considered to have ranged as far north as Great Bear Lake and the Coppermine River. However, two other place names suggest the existence of copper in other areas around Great Slave Lake: the Taltson River, on the southeast side of Great Slave Lake, was said to have been called "Tall chu dezza," translated as Red Knife River (Fidler 1791:521). In addition, a fur trade fort established by the Northwest Company on the southwest shore of the lake around 1806 was called Red Knife Fort (Keith 2001:16). The reason for these names does not appear to have been recorded.

It is clear from all accounts that survival in this harsh land was very difficult. In general, survival for all three aboriginal groups was largely dependent on the barrenground caribou. Consequently, their travels were governed by the movements of the caribou. This dependence is illustrated by Warburton Pike: "*We had met no Indians, and so had no means of hearing the news of the caribou, which forms the one topic of interest among the Dog-Rib and Yellow Knife tribes who hunt in this part of the country*" (1892:30). All aboriginal inhabitants followed a similar nomadic lifestyle moving with the caribou, north onto the Barrenlands in the summer and south into the forest fringes in the winter. Anthropological studies have suggested that each group was closely tied to one of the major caribou herds (Smith 1971; Gordon 1996). They were intimately familiar with their specific individual herd's movements, spending winters in the animals' winter foraging areas and intercepting them at strategic locations along the spring and fall migration routes. Hunting techniques consisted of communal use of chutes and pounds, as well as surrounding the animals in the water at favored crossing locations and shooting them from canoes. The spring hunt was often the feast after a late winter period of famine. Death by starvation was not uncommon in this region, and historic journals contain frequent references to starvation. For example, in 1811, Northwest Company fur

trader W. F. Wentzel, stationed on the Mackenzie River, wrote:

> *"All my men are dead of starvation. . . . all my Indians have starved more or less; from one small band only, I received news yesterday evening that five were dead of hunger*" (Yerbury 1986:80).

The fall hunt provided the best quality hides, and this was the time women focused on making clothing and moccasins. Fish also comprised an important component of the diet and were taken throughout the year, by nets in summer and ice fishing in winter. Large quantities of both caribou meat and fish were dried throughout the summer and fall to provide winter provisions.

There are virtually no references in historic documents to use of plant resources as food, with the exception of berries. Various trees and plants provided important components of the tool kits and undoubtedly were used for medicinal purposes.

Prior to arrival of European goods, aboriginal tool kits in the Great Slave region were constructed using readily available wood, bone, antler and, to a lesser degree, stone materials. They comprised implements necessary for exploiting and processing the region's natural resources, with particular emphasis on hunting. Spears and bows and arrows were made of combinations of wood and bone, and arrows were tipped with stone, copper, or bone. Hunting constructions such as deadfall traps, chutes and pounds were built of wood materials. Snares used for smaller animals and fish nets were made of sinew from animals and twine of roots, while fish hooks were usually bone or antler. Implements for processing meat were made largely of bone, with stone used for cutting edges. Birch bark, where available, was used for canoes and containers; snowshoes and toboggans were made of wood. Clothing was made of hides, with caribou providing the best quality hides in late summer and fall. Dwellings were generally tipis of wood poles and hide covers and had open hearths in the centres.

Early explorer, fur trader and adventurer documents recorded several travel routes used by local native people to move from Great Slave Lake to various points in the Barrenlands and boreal forest. Since the early explorers were guided by local inhabitants, those aboriginal routes were used during early explorations. Because the names of many of the lakes and rivers have changed since their recording in the early journals, it is somewhat difficult to definitively trace some portions of some of the routes.

Those routes that appear to have been the main ones used by aboriginal people were:

1. From the end of the west arm, along the Mackenzie River, first explored fully by Alexander Mackenzie in 1789 (Mackenzie 1970).

2. Along the Slave River south toward Lake Athabasca. This was the main travel route between the two lakes, Athabasca and Great Slave, used by aboriginal people and Euro-Canadians.

3. From the end of the east arm, toward Artillery Lake and points north. This route was taken by early explorers George Back (1833), the Anderson and Stewart expedition (1855) and by Warburton Pike in 1892, after whom the first main portage was named.

4. From the end of the north arm, toward Lac La Martre (using the Marian River) and Great Bear Lake, via two routes. One of these was the Dogrib trail called the *Idaà* Trail (Andrews and Zoe 1997), which followed the Snare River drainage.

Several other routes heading north from the east arm were apparently used less frequently, for example, two routes described by Pike (1892). Only one alternate route was recorded departing from the north arm of Great Slave Lake. That route followed along the Yellowknife River and a series of lakes to Pointe Lake and on to the Coppermine River. This is the closest travel route to the present study area, and it was taken by the first Franklin expedition in 1820 (Franklin 1969), guided by a Yellowknife Indian (Akaitcho). Franklin noted that the Indians considered this to be a more direct route to Coppermine River and that the "rein-deer" (caribou) would be found in that vicinity earlier in the season (Franklin 1969:204); Akaitcho suggested that this was not their usual preferred route (ibid.).

Euro-Canadian explorations in the central Barrenlands began with Samuel Hearne who, in 1771-72, traveled from Hudson's Bay to Coppermine River (Hearne 1911). He passed through the Great Slave Lake region, north and east of the lake. There is some uncertainty as to his exact travel route, but he does not appear to have traversed the specific area of interest, near the northern arm of the lake; rather, he apparently approached the lake further east and traveled around the east arm toward the southeast side (ibid.). Over the next several decades, fur traders conducted some explorations in the general Slave Lake area, for example, Peter Fidler in 1791; Sir Alexander Mackenzie, in 1789; and W.F. Wentzel in 1819-20.

The next explorer to pass through the general region of the study area was Sir John Franklin on his first trip to the Arctic coast in the period 1819-22 (Franklin 1969, 1995). He traveled along the Yellowknife River, portaging through a series of lakes toward Great Bear Lake. On his second trip in 1825-27, he followed the Mackenzie River from the western arm of Great Slave Lake (Franklin 1828). In 1833, George Back was commissioned to travel to the Arctic coast along a route reported to lead from Great Slave Lake to an unexplored portion of the coast (Back 1970). He headed north along the Hoarfrost River and returned along the Lockhart River, both of which he reported to be virtually unnavigable near the lake (ibid.).

Following Franklin's disappearance on his last expedition in 1845-48, several searching expeditions passed through Great Slave Lake. One led by John Richardson followed the 1825 route along the Mackenzie River (Richardson 1851). In 1855, Stewart and Anderson followed a route to the Arctic Coast leaving from the east arm of the lake, thus,

a considerable distance east of the current study area (Barr 1999). None of these later expeditions appear to have followed Franklin's first route along the Yellowknife River.

The fur trade forts built on Great Slave Lake were concentrated in the southern portion of the lake. The earliest fort was Slave Fort, established near the Slave River delta on the southern side of the lake in 1786 by Cuthbert Grant on behalf of independent traders represented by Peter Pond. The Hudson Bay Company built Fort Resolution in 1815 near the same location. This fort, although moved several times, has been in existence near the Slave River ever since and has developed into a community.

On the north arm of Great Slave Lake, the North West Company built a trading house as early as 1789; Alexander Mackenzie mentioned the presence of Leroux's house on his journey through the north arm (Mackenzie 1970:231). Mountain Island Post, probably established in 1804 by the North West Company, was built on an island near the Yellowknife River. It was mentioned in Alexander Henry Jr.'s 1805 journal and Mackenzie's (nephew of Sir Alexander) 1805-1806 journal (Keith 2001:42, 218). The first Fort Providence (a North West Company post) was located on the mainland shore of Yellowknife Bay near the Yellowknife River in 1820, when Franklin stopped there, but there is some question as to when and by whom it was built (Smythe 1968:283). It was closed in 1823, two years after amalgamation of the Hudson's Bay and North West Companies (Perry and Clark 1971). This should not be confused with a later Fort Providence, which was built on the west arm, first by Oblate missionaries in 1861 (McCarthy 1995:50), and followed in 1868 by the Hudson's Bay Company. Hudson's Bay Company documentary records for the southern Fort Providence date to 1870-1907 (HBC Archives B.333), and Frank Russell's scientific expedition stopped there in 1892 (Russell 1898:131). In 1833, Fort Reliance was established on the east arm, to support George Back's expedition to the Arctic coast (Back 1970). This was also used in 1855 by the Anderson and Stewart expedition (Barr 1999). Around 1850, Fort Rae was built by the Hudson's Bay Company on an island near the west end of the north arm and operated until 1906 (Usher 1971:53). Frank Russell also visited Fort Rae and described its location as well as the remains of a couple of the old fort sites (Russell 1998:69). Trading stores run by various companies were established near the mouth of the Yellowknife River and along the north arm of the lake throughout the later fur trade period (Usher 1971).

Oblate missionaries arrived in Great Slave Lake in 1852, visiting from their establishment at Fort Chipewyan on Lake Athabasca (McCarthy 1995:40). A mission house was built at Fort Resolution in 1856 (ibid:42). Despite opposition by the Hudson's Bay Company (largely due to the difficulties of obtaining sufficient provisions for survival [ibid:37]), other mission houses were soon built at Big Island, at Fort Simpson and Good Hope down the Mackenzie. Similar to the fur trade rivalries, the arrival of Anglican missionaries in the late 1850s prompted a leapfrogging race to be the first to reach new groups of native people in the Slave Lake/Mackenzie region, and missions rapidly sprang up along the Mackenzie drainage system in the subsequent decade

(ibid:50). Fort Rae was regularly visited by missionaries beginning in 1859 and by 1872, a mission house was built, called St. Michael's mission (McCarthy 1995:42, 210).

Because of the marginal conditions for large scale agriculture, there was not a great influx of farmers to the region. Rather, it was the discovery of mineral resources than began settlement. A flurry of exploration occurred around Great Slave Lake during the late Gold Rush period in the 1890s. In 1899, a Geological Survey of Canada geologist noted "… at Fort Resolution, we met considerable numbers of men returning from prospecting around Great Slave Lake, after having failed to find any indications of the precious metals or of any kind of ores or other minerals of economic value." (Bell 1900:104). Interestingly enough, the same geologist also reported that mining operations in this region would be virtually impossible; besides the problems of climate, distance to markets and no local labour pool, it was his opinion that there was very little likelihood of any rich deposits of precious metals (ibid:109).

Continued exploration proved the error of that pessimistic view, and several mines were opened in the Great Slave Lake region in the 1930s and 1940s. A number are of direct relevance to this study. Within the local study area, gold on Giauque Lake was found and staked in 1944. The Discovery Mine opened in 1949 and production continued until 1969. A sizeable townsite developed over the life of the mine, and virtually all the buildings are still standing.

A number of other exploration and prospecting camps were scattered over the general region in the 1940s (Silke, personal communication, 2004). Those most relevant to this study occur along a band approximating the winter road route, with camps noted on Johnston Lake, Goodwin Lake, Morris Lake, Narrow Lake, Winter Lake and Giauque Lake (Silke 2004b). Of particular interest within the LSA is a camp located at the north end of Narrow Lake, identified as LaSalle Yellowknife Gold Mines Ltd. occupied in 1949-50 (ibid.).

At the south end of the winter road, near Yellowknife, are several mines both operating and abandoned. The Giant Mine claim was staked in 1933, on the shore of Yellowknife Bay, and the mine began production in 1948. Con Mine claim was staked in 1935 and production began in 1938. The Ptarmigan claim was staked in 1936, but only produced gold in 1941-42; the original buildings were demolished in 1969-70 (Silke 2004a), but several periods of more recent prospecting/mining activity have occurred. By 1936, a boom town had sprung up near these mines, and Yellowknife was born.

2.3 Previous Archaeological Investigations

There have been no previous archaeological studies completed within the local study area encompassing the Ormsby/Discovery mine site. With regard to the Nicholas Lake local study area, a brief investigation was conducted by Chris Hanks in 1989. He examined an esker series north of the mine site and recorded three archaeological sites (KhPf-1, 2, 3), approximately 3 to 5 km northwest of the Nicholas Lake camp. These sites are described as small lithic scatters, representing waste materials from making stone tools.

In the vicinity of Yellowknife, there are 21 recorded archaeological sites, in spite of a lack of detailed systematic archaeological survey. Nine of these are along Yellowknife Bay, and eight are within Yellowknife, some found in association with one of the mines. Twelve of these sites are pre-contact lithic or stone tool remains, five are grave sites, two are historic sites (fort and mission), while the rest are miscellaneous historic remains. Directly relevant to the winter road are four sites that are between Yellowknife and Prosperous Lake, three of which are prehistoric lithic remains (KdPg-1,2; ZAVR 23), and one is a wooden water line associated with the old Ptarmigan mine (ZAVR 37). These sites indicate that the Yellowknife Bay area was well used in the past and that there was at least some diffusion along associated drainage systems.

During the 1950s, 1960s, and 1970s, various archaeological surveys conducted within the general Great Slave Lake region (Cinq-Mars and Martijn 1981; Noble 1971; Gordon 1975) were aimed at gathering information about the prehistory of the region in order to construct an initial culture historical framework. Numerous archaeological sites were recorded during these surveys, indicating an almost continuous utilization of the region over the past 7000 years (Noble 1981). Although not directly relevant to this project area, these studies provide an interpretative framework within which subsequent study results can be placed.

2.4 Culture History

This term refers to the sequence of different past cultural groups as indicated by changes in styles of tools and contents of tool kits. A broad regional perspective is required in order to place any pre-contact archaeological remains discovered in a proper context. The sequence presented below is based largely on five years of studies by William Noble during 1966-69, 1970, 1971, within the general Great Slave Lake drainage region (Noble 1981).

It is generally believed that the central portion of the NWT was first occupied by people approximately 7,000 years ago (Noble 1981:97). This is referred to as the Northern Plano Tradition, and representations in this region have been called the Acasta Lake Complex. Twelve sites attributed to this complex occur in a band from the north arm of Great Slave Lake toward the Arctic coast, east of Great Bear Lake. This is along or generally paralleling the *Idaà* Trail (Andrews and Zoe 1997), one of the alternate routes

to the Barrenlands known from historic records and traditional knowledge. Large lanceolate, leaf shaped, side notched and stemmed projectile points recovered in these sites indicate a spearing method of hunting; bone remains found in these sites include caribou, bear, various small mammals, birds and fish. Other items include quartzite stone knives, fleshers and tools indicative of working bone or wood. Pit hearths are frequent at the Acasta Lake type site (Noble 1981).

The period between 6,500 to 5,000 years B.P. is poorly known in the Great Slave Lake region. This may suggest that this region was little used during that period, most likely because of changes in caribou migration routes due to climatic variations. Between 5,000 years and 1,800 years B.P., several representations similar to cultural phases recognized on the northern Plains appeared in the eastern Great Slave Lake region, as far north as Artillery Lake. Noble has identified these as Artillery Lake Complex (5000 years to 4500 years B.P.), Oxbow Complex (4500 years to 3500 years B.P.), Caribou Island Complex (3500-3000 years B.P.), and Pelican Lake Complex (2000 years to 1800 years B.P.). The tool kits are characterized by small stemmed, side-notched or lanceolate points, small scrapers and knives, all made of quartzite (Noble 1981:99). These phases occur in components that are few, small and sparse.

While these Northern Plains type manifestations were moving in from the south, a version of the Arctic Small Tool Paleo-Eskimo Tradition was moving down from the north. Noble named this central Barrenlands representation the Canadian Tundra Tradition (1981:100). This is dated 3,300 years to 2,600 years B.P. It is identified as a caribou hunting strategy specifically adapted to the tundra-taiga eco-zone at the boreal forest edges. The tool kit of this tradition has been found to contain small, thin quartzite and chert bifaces, knives, burins, and microblades. Noble divided this tradition into three complexes: Rocknest Lake (3,300 yeas to 3,100 years B.P.) is the northernmost manifestation; Aurora River Complex (3,100 years to 2,800 years B.P.) is the most widespread representation; and Timber Point Complex (2,800 years to 2,600 years B.P.) is a locally limited version found at Artillery Lake and Snare Lake.

The Taltheilei Shale Tradition (2,500 years to 200 years B.P.) is identified by Noble as the ancestral Athapaskan tradition, found throughout much of the historic Yellowknife-Chipewyan range (1981:102). The major characteristic of this tradition is predominate use of grey siliceous shale from outcrops on eastern Great Slave Lake for tool making, although quartzite is also frequent. Nobel identified ten complexes, based on different elevations of beaches on eastern Great Slave Lake. Since he stated that changes in artifact styles throughout this period were few and very slow, it is clear that the definition of these complexes is tied to the dates of beaches (earliest being on the highest beaches), rather than any major changes in tool styles. Common throughout are short, stemmed lanceolate shale points, often with ground edges. Relative quantities of shale versus quartzite tools vary throughout. During the period around 2,200 years ago, occasional copper tools were included; stemming on points gradually disappeared while side notching gradually appeared. Infrequent faunal remains indicate a caribou hunting focus,

together with exploitation of various mammals, birds and fish; this assemblage is indicative of a typical boreal forest subsistence pattern (Noble 1981:104). The latest manifestation, called the Reliance Complex (220 to 160 years B.P.), includes the appearance of various European trade goods.

2.5 Heritage Resource Expectations

2.5.1 Site Distribution

The primary determining factor in site location was clearly the location of caribou, the critical subsistence base for past inhabitants of this region. Caribou wintered in the Great Slave Lake region and congregated every spring to travel to calving grounds in the Barrenlands, and returned in fall to disperse and winter in the boreal forest. Therefore, people moved with the caribou, in winter dispersing in the boreal forest and in spring and fall, moving north to the Barrenlands to intercept the herds along their migration routes, and often congregating at favoured water crossings. Some research suggests that individual bands were directly connected to one specific caribou herd, focusing on exploiting only one herd. The Chipewyan, or Caribou Eaters, have been associated with the Beverly and Kaminuriak herds east of Great Slave Lake, while the Dogrib and Yellowknives have been associated with the Bathurst herd, ranging north of Great Slave Lake (Smith 1975). Gordon even goes so far as to suggest that this association between groups of people and specific caribou herds is evident in the archaeological record as far back as 8,000 years ago:

> *The observations of Smith were echoed in the results of my studies of Pre-Dorset toolkits. Sites were distributed within each of the four major Barrenland caribou ranges and* ***not between them.*** (Gordon 1996:1; emphasis mine)

It should be noted that very little systematic archaeological survey has been conducted within the central Barrenlands; thus, this apparent association in the distant past may be partly due to the locations of archaeological investigations. Although this is an intriguing theory, it must remain a hypothesis until sufficient research throughout the Barrenlands has been conducted, not only in terms of archaeological site discovery, but also on historical caribou distributions.

Major travel routes in this region were approximately north-south (ranging between NE-SW to NW-SE), following the trends of main drainages and landscape features. Even if canoes were not used and, thus, a navigable water course was not necessary, the drainage channels and adjacent terrain provided readily identifiable landmarks which would permit repeated use of the same route, whether on foot or on water.

It is clear from all historic and ethnographic accounts that there were several major and minor routes native people habitually used to travel from Great Slave Lake into the

adjacent forests and Barrenlands. A problem often mentioned in the historic accounts was that many of the drainages entering the northern portions of Great Slave Lake had lengthy stretches that were not navigable in canoes, particularly near the outlets (for example, see Back 1970:113). Consequently, not all drainages were used as travel routes.

The routes that appear to have been used most frequently to travel north from Great Slave Lake were:

1. from the southwest arm along the Mackenzie River;
2. from the east arm toward Artillery Lake; and
3. from the north arm toward Great Bear Lake.

For this northern arm of the lake, both historic documents and recorded archaeological site distributions indicate that the primary routes led north and northwest from the west end of the arm, along the Snare and Marian rivers toward Great Bear Lake and Lac La Martre.

Other minor routes close to the present area of interest that were recorded include one heading north along the Yellowknife River. Franklin reported that his native guides advised use of the Yellowknife River route from Fort Providence for specific provision reasons, that is, the caribou could be expected in that area earlier in the spring; he noted that it was not the normally preferred route (Franklin 1969:204). That statement illustrates the intimate knowledge and degree of adaptability of local inhabitants to the caribou range and movements.

A short distance east of the study area, the McCrea River drainage running northeast-southwest through Duncan Lake could have provided a connection to the Yellowknife drainage, and access to Thistlethwaite and Giauque lakes as well as points north. It is not known whether this section is navigable or whether adjacent terrain would permit land travel; topographic maps show frequent rapids. No mention of use of that potential route was found in historic documents, but it could have provided an alternative in earlier times.

It is certainly possible that some east-west travel may have been necessary on occasion. From examination of topographic maps, the closest possible east-west corridor that could have been used appears to be a branch of the McCrea River drainage, a considerable distance north of the study area. This could possibly have provided an approximately continuous travel route between Dry Bones Lake and the Yellowknife River drainage via Nardin Lake. No use of this was recorded in the historic documents examined, but that may only imply that no Euro-Canadian who wrote journals traveled that route. Aboriginal people ranged much more widely across the region and used many more travel routes.

In summary, it appears that the LSA falls between main travel routes recorded historically and, therefore, may not have been heavily utilized. However, since this area is within the winter range of the Bathurst caribou herd, it is probable that people occasionally passed through the area. Although the LSA is hypothesized to contain relatively few archaeological sites, compared to adjacent areas, it is still possible that some sites are present. Archaeological sites in this area would most likely be found on elevated terrain features (for example, ridges, benches, bedrock outcrops) adjacent to water courses or water bodies. Such terrain features near good caribou crossing locations were of particular importance. Elevated landscape features were preferred for several reasons:

1. drier camp locations than lower ground which is often muskeg in this area;
2. good lookouts for game and people; and
3. in summer, better chance for wind to aid in reducing mosquitoes and black flies.

Since fishing was also an important subsistence activity in times of need, elevated terrain around the edges of lakes would offer some potential for sites. Eskers extending for some length were preferred travel routes for caribou and for people. Consequently, there is good potential for archaeological sites on such features.

Along the winter road route, the highest potential for archaeological sites can be expected to occur in the southern section along the Yellowknife drainage system, which was known to aboriginal people at the time of initial contact with Euro-Canadians as a travel route used at least occasionally. Franklin recorded that his aboriginal guide told him that this route was used when they needed to intercept caribou early in the spring, although the route from the west end of the north arm was preferred (Franklin 1995:27). North of the point at which the route deviates from the Yellowknife River (above Clan and Johnston lakes), the potential for sites would be expected to gradually fall off, to be rated as moderate near and within the LSA.

2.6 Physical Remains

From the ethnographic research, it is apparent that most implements used by past inhabitants of the study area were probably made of wood and bone with only a few stone components, due to the latter's lesser availability. Consequently, much of the tool kit would deteriorate relatively rapidly and only a few pieces of stone would survive over long periods of time. Since dwellings were reported to consist of wooden frames covered by caribou skins held down with rocks, physical remains would probably consist only of the circle of rocks. Hearths should be identifiable. In this area, sites would likely be small, since they would result from family groups searching for individual or small groups of caribou that would have dispersed in the forest.

Most early explorers recorded that burials were not used prior to the coming of missionaries. Bodies were traditionally left on the ground, often covered with skins, and

certain goods were sometimes left near the body (Hearne 1911:323). Under those conditions, human remains would not survive long. Therefore, it is highly unlikely that burials predating the late 1800s would be found.

In summary, the main types of sites to be expected in this study area are small, short term hunting and fishing camps. These sites could date as old as 7,000 years ago. They would be distributed on elevated terrain features near current or extinct water bodies. Such sites could contain stone circles, hearths, cut timber in the case of more recent sites, and stone tools and/or remains of their manufacture. Because people were probably typically traveling in small groups in the forest hunting occasional dispersed animals, sites within the forest fringe are unlikely to contain evidence of repeated or long term use or use by large groups. More recent sites dating to the mining period as well as traditional hunting can also be expected.

3.0 ARCHAEOLOGICAL INVESTIGATIONS COMPLETED

Archaeological field assessments were based on proposed development locations as indicated on a conceptual plan map dated July 7, 2004 (Figure 4). This was a draft proposal subject to revisions and refinements; consequently, it provided only a general preliminary indication of areas where development might occur.

The facilities that were examined to the level of inventory and impact assessments are:

1. two mine sites at Winter Lake and Nicholas Lake;
2. tailings area immediately surrounding Round Lake;
3. waste rock storage area west of Winter Lake;
4. part of a potential plant site on the northeast side of Winter Lake; and
5. a possible borrow source on the southern end of an esker east of Winter Lake.

Preliminary archaeological assessments were conducted of:

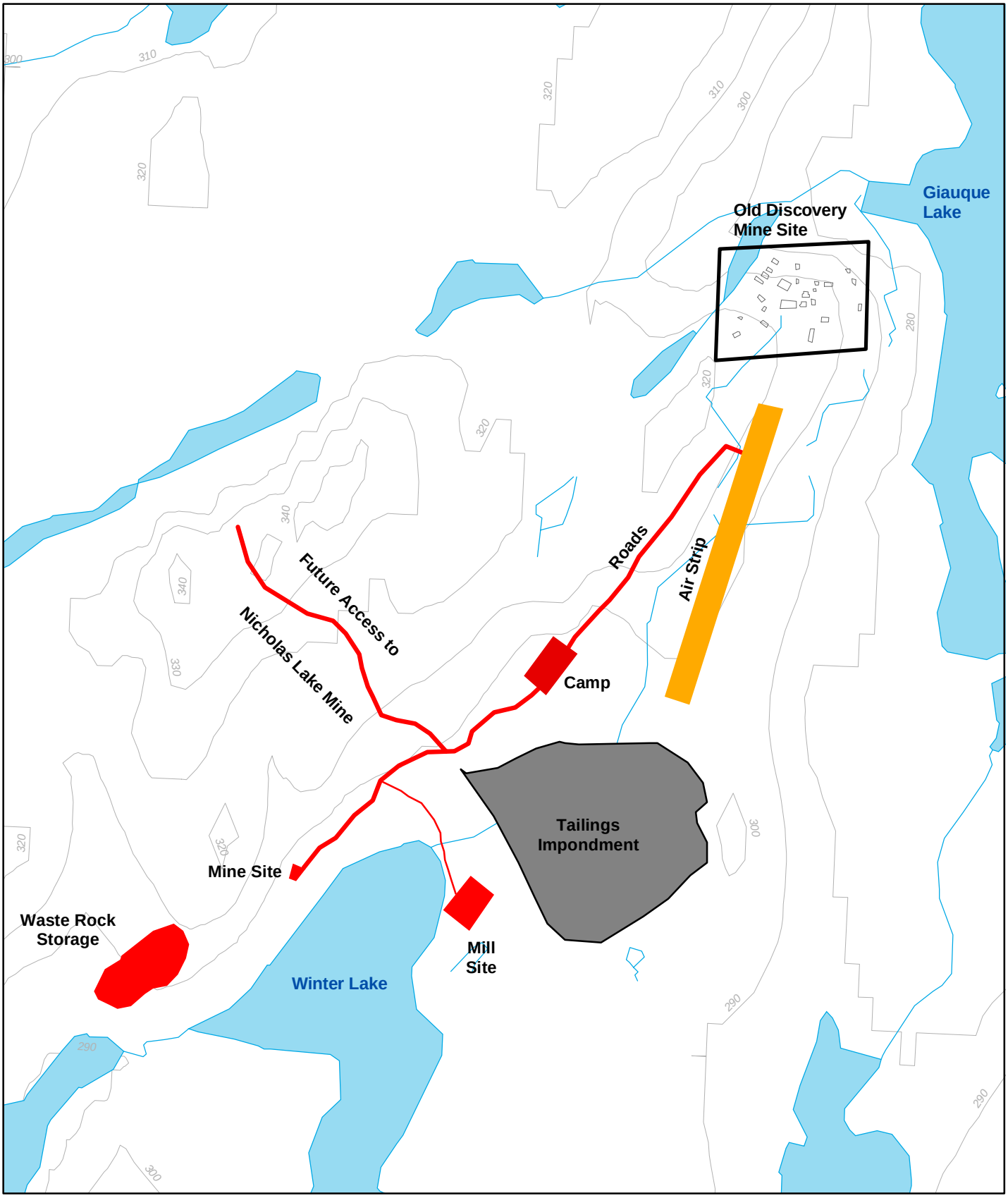
1. the full length of an esker along the southwest side of Giauque Lake, east of Winter Lake identified as a possible borrow source;

2. general vicinity of a road between the Discovery deposit and the Nicholas Lake deposit; and

3. winter road to Yellowknife.

4.0 GENERAL METHODS

Ground reconnaissance was conducted of specific development areas (Figure 5) as depicted on the conceptual plan. The ground reconnaissance was completed by the four member field crew walking closely spaced transects (ranging between 10 m to 25 m apart), looking for any evidence of past human activity, examining all surface exposures, and completing shovel tests where considered necessary. Shovel testing was done where archaeological potential was considered good and where subsurface exposures were nonexistent or insufficient to permit proper assessment. Spacing of shovel tests was dependent on the size and potential of the area tested, and varied between 3 m and 20 m apart. Shovel tests were approximately 40 cm square and depth varied with deposits, but the tests generally extended to bedrock or glacial till.



Legend

Lakes and Rivers

Scale 1:15,000

0 0.045 0.09 0.18 0.27 0.36 0.45 Kilometers

UTM Z12 NAD83

Yellowknife Gold Project

Conceptual Plan for Mine and Mill, June 2004

Tyhee NWT Corp

EBA ENGINEERING CONSULTANTS LTD.

February, 2005

Figure 4

Figure4-13-2_tyhee_arch_winterroad.mxd

351000 356000 361000

7020000 7015000 7010000 7005000

Nicholas Lake Portal

Nicholas Lake Camp

Eclipse Lake

Nicholas Lake

Maguire Lake

Potential Camp Site

Giauque Lake

Brien Lake

Round Lake

Ormsby Portal

Narrow Lake

Winter Lake

Potential Plant Site

Legend

- Local Study Area
- Ground Reconnaissance
- Camp
- Portal
- Plant Site

N W E S

Scale 1:65,000

0 250500 1,000 1,500 2,000 2,500 Meters

UTM Z12 NAD83

Yellowknife Gold Project

Archaeological Investigations 2004

Tyhee NWT Corp

EBA ENGINEERING CONSULTANTS LTD.

February, 2005

Figure 5

Figure5_arch_studyarea.mxd

In several areas with obvious shallow deposits, larger areas of moss were scraped back to expose thin layers of soil, usually on bedrock. Depth of shovel tests ranged between 5 cm and 50 cm below surface. Sediments removed from the shovel tests were sorted by hand and carefully examined. For all remains of past human activity, basic recording was completed, including description of remains, Global Positioning System (GPS) readings and photographs were taken. Only those sites considered to be over 50 years old and not related to industrial pursuits were mapped and recorded in sufficient detail for preparation of site forms for submission to the territorial inventory.

4.1 Ground Reconnaissance

Ground level assessments were conducted of those areas where ground disturbance was probable in development locations that were fairly certain. These focused on the vicinities of the two mine portals at Discovery Mine and Nicholas Lake. At Discovery, pedestrian survey was conducted between the Ormsby portal and the existing camp, the Winter Lake shore adjacent to the portal, and the area west of the portal to Narrow Lake (Figure 5). At Nicholas Lake, the bedrock ridge between the lake and the portal/camp area was covered by pedestrian survey.

4.2 Discovery/Ormsby

Ground reconnaissance was completed on the following:

1. The elevated bedrock ridge between the old Discovery Mine site and extending to its southern extent in the vicinity of Narrow Lake. This passes over the current Ormsby portal.

2. An approximate location for a waste rock dump west of the portal, as identified on the conceptual plan.

3. The northwest shoreline of Winter Lake.

4. The entire perimeter of Round Lake which is to serve as the tailings pond.

5. An approximate location for the proposed mill.

6. An esker between Winter and Giauque lakes.

The bedrock ridge between Discovery Mine and Narrow Lake is very irregular and undulating. Portions of the eastern half are several hundred metres wide, while near the Ormsby portal, it is less than 100 m wide. The majority is bedrock outcrop, with some dips containing soil. Vegetation is sparse in the western section; some portions of the eastern half contain enough soil to support scattered stands of spruce, pine, birch and alder. In general, subsurface exposures were frequent enough to permit a good

proportion of the ridge to be examined closely. In addition, near the east end, heavy equipment excavation had occurred which increased subsurface exposure. Transects were spaced approximately 25 m apart. This coverage required three passes for the broader, eastern portion.

The conceptual plan indicated a possible waste rock dump site northwest of the mine site near the north end of Narrow Lake (Figure 4). A short distance west of the Ormsby portal, the highest part of the bedrock ridge ends and a lower bench of bedrock occurs. This has been heavily disturbed by large equipment, thereby providing frequent subsurface exposures that were closely inspected. Pedestrian survey extended from that outcrop toward the north, where the terrain is lower, into the area identified as the waste rock dump. This is characterized by low bedrock outcrop and low lying wet ground with little relief. Frequent heavy equipment tracks provided good subsurface exposures that were carefully inspected.

The northwest shoreline of Winter Lake is bordered by low, sloping wet ground, with frequent bedrock outcrops and boulders, rising to one or two discontinuous, irregular terraces. Due to the slope, the elevated ground is dry enough to support spruce forest, which is relatively thick in places. Just east of the portal, there are irregular bedrock exposures on increased slope, below which are two terrace remnants. This section was covered with regularly spaced transects between the existing road and the lakeshore (Figure 5). Shovel testing was done at four locations, wherever some approximately level benching with soil deposition occurred. At the south end, some cat tracks offered good subsurface exposures that were carefully examined. A total of 14 shovel tests were completed, with depths averaging 20 cm to 25 cm below surface. Where the lakeshore turns east, adjacent ground becomes boggy, black spruce. Since potential for archaeological sites was judged low at that point, transects continued north to examine slightly elevated bedrock outcrops (Figure 5). At about 300 m from the lake, several sections of moss between exposed low bedrock outcrops were scraped to permit subsurface examination.

It should be noted that the actual area required for the tailings pond was not known at the time of fieldwork. Because potential for archaeological sites could be expected to be highest close to the lake, ground reconnaissance focused on covering a band approximately 100 m wide immediately adjacent to the lakeshore. However, elevated terrain such as old strandlines or terraces would also have good potential for sites and may be found at some distance from the existing lake outline.

Pedestrian transects spaced 10 m to 20 m apart encircled the perimeter of Round Lake (Figure 5). The terrain was generally low lying, level to sloping gently up away from the lake. Occasional small, low bedrock outcrops were scattered around the lake. Exposures along several cat tracks on the south and southeast sides of the lake were inspected. At six locations distributed around the east, south and southwest sides of the lake, a total of 42 shovel tests were completed; in several areas where bedrock was evident just under

the surface, larger areas were exposed by scraping back moss cover. At each location, these subsurface tests were spaced between 3 m and 10 m apart, and they were situated from within 1 m of the lake shore to 100 m from the shore, the latter to examine several north-south trending, low, short, bedrock ridges. Tests generally averaged around 20 cm to 25 cm deep, but several stopped at bedrock at 10 cm while a few extended to 40 cm to 50 cm below surface in sandy deposits.

For the plant/mill site, the location depicted on the conceptual plan (Figure 4) was indicated to be a preliminary location, and the size of the area to be disturbed was not known (Dave Webb, personal communication, July 23, 2004). Unfortunately, this was not known until after the field assessment was in progress. Consequently, the size and location of the plant site were estimated using contours on the conceptual plan. The corners of the area assessed (approximately 60 m by 60 m) were flagged with yellow/black stripped flagging. Transects spaced approximately 10 m apart were walked, criss-crossing the area assessed. Shovel tests were placed every 10 m to 20 m as systematically as permitted by the terrain, for a total of 44 tests within the area examined. Soil was generally found to be between 5 cm and 25 cm deep; in the shallow tests, bedrock was hit and in the deeper tests, permafrost was encountered, although several tests did extend 40 cm to 50 cm before reaching permafrost. Pedestrian survey was also completed to view the general vicinities of two possible road routes to the plant site, one from the shore of Winter Lake, as depicted on the conceptual plan and one from the vicinity of Round Lake (Dave Webb, personal communication, July 23, 2004), in order to assess archaeological potential.

At the request of Dave Webb, an esker identified as a possible borrow source was examined, by both low level helicopter overflight and pedestrian survey. It is situated between Winter and Giauque lakes, about 3 km east of the Ormsby portal. This esker extends toward the southwest from the southwest side of Giauque Lake for approximately 3.5 km. The entire length was walked and scattered, infrequent subsurface exposures were inspected. Shovel testing was conducted at the southwest end (Photo 1) since that was the portion identified as the area of most interest (Dave Webb, personal communication, July, 2004). A large gravel deposit a short distance west of the northeast end of the esker was previously borrowed, leaving a considerable pit that provided excellent subsurface exposures for examination (Photo 2). In the southern 400 m, a total of 77 subsurface tests were completed in seven selected locations. In each locality tested, shovel tests were spaced between 5 m to 10 m apart and, where bedrock was close to the surface, were accompanied by exposures of larger surface area through scraping back of moss cover. The tests extended between 10 cm and 55 cm below surface. It should be noted that flagging was hung along this esker to mark the route taken and does not relate to any specific assessments.

4.3 Nicholas Lake

Archaeological investigations of the Nicholas Lake exploration area comprised pedestrian survey and low level helicopter overflight of the camp and portal area as well as an overflight of the elevated ridge along the north side of the lake. Ground reconnaissance consisted of traverses across the height of the bedrock ridge south of the portal and camp as well as a low bedrock outcrop to the northeast of the portal and one west of camp (Figure 5). A total of 20 shovel tests and subsurface scrapings were completed in a few areas where there was sufficient soil, with particular attention given to any locations affording a view over the lake. However, in most areas, the soils were very shallow over bedrock.

Photo 1 – Testing at southwest end of esker east of Winter Lake (view west).

Photo 2 – Portion of gravel pit, north end of esker complex, near Giauque Lake (view south).

4.4 Archaeological Potential Assessments

As noted previously, for those areas where the planning was too preliminary to permit definitive identification of development boundaries, the potential for archaeological remains was assessed in order to determine where additional work might be required. To accomplish this, low level helicopter overflights were conducted of:

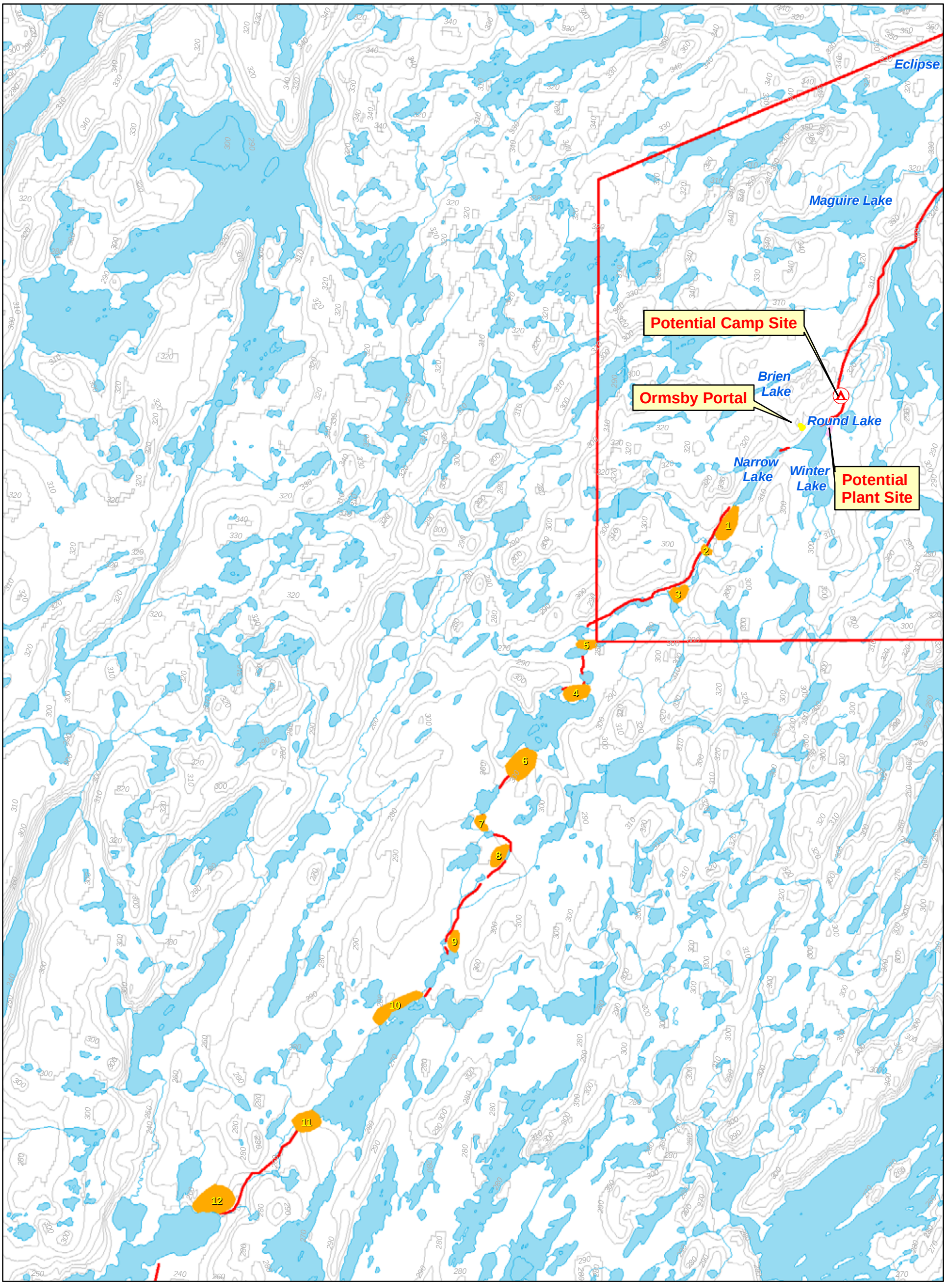
1. the bedrock ridge along the northern shore of Nicholas Lake;

2. an esker complex north of the Nicholas Lake mine, since this may be a potential gravel source, and there are three previously recorded archaeological sites on that terrain feature;

3. the general vicinity of a possible road route between Discovery and Nicholas Lake mines, as identified by Dave Webb (personal communication, July, 2004); and

4. the northern portion of the existing winter road route to Yellowknife (Figure 6).

There was insufficient helicopter time available to fly the entire winter road route to Yellowknife, therefore, the assessment of the archaeological potential of southern portion of the road was based only on map examination and documentary research.



Legend

- Local Study Area
- Winter Road
- Archaeological Potential

N
W E
S

Scale 1:80,000
0 0.5 1
Kilometers
UTM Z12 NAD83

Note: Road Route is Approximate

Yellowknife Gold Project

Northern Portion of Road Route Assessed

Tyhee NWT Corp	EBA ENGINEERING CONSULTANTS LTD. eba
February, 2005	Figure 6

Figure6

5.0 ARCHAEOLOGICAL INVESTIGATION RESULTS

No pre-contact archaeological sites were recorded in any of the areas subjected to detailed ground reconnaissance. Considerable evidence of the prospecting activity that has occurred over the past 60 years was observed. This included scattered debris and several small campsites.

5.1 Discovery/Ormsby

The large, high ridge between Discovery Mine and Narrow Lake is a broad, irregular bedrock outcrop. This ridge has an old transmission line right-of-way that extended to the old Discovery Mine, with some of the towers still standing and some collapsed. Physical evidence of past prospecting activities is frequent, and much historic debris is scattered about. Between the existing camp and the Ormsby portal, two concentrations of prospector garbage were found. Southwest of camp an old looking wooden box held together with wire and staples was found. A little further west along the ridge was a small camp containing a hearth, scattered tin can debris, wooden core box fragments and cut wood (Photo 3). Northeast of the camp, near Discovery Mine, considerable quantities of mining debris were observed. On the lower, southern portion of the landform is a partial line of support structures (some fragmented or fallen) that were approximately 1.25 m to 1.75 m high (Photo 4); the line is still traceable for at least 250 m. It may represent an old water line. Pockets of historic garbage (including an old wooden chair) can be found scattered over this end of the ridge.

In the vicinity of the waste rock dump area west of Ormsby portal and north of Winter Lake, the ground has been heavily disturbed by track vehicles. The northern portion is low lying bedrock and muskeg, the southern portion is a bedrock outcrop somewhat lower than the large ridge. On the south side of the bedrock outcrop, about 5 m above Winter Lake, an old prospector's camp was found in thick bush. The remains included a gas powered fridge, bed frame, lots of cans, and burned wooden remains. This has been tentatively identified as an exploration camp occupied by LaSalle Yellowknife Gold Mines Ltd. in 1949-50 (Silke 2004b).

Photo 3 – Prospecting camp on ridge northeast of Ormsby portal (view northeast).

Photo 4 – Line of wooden support structures near old Discovery Mine (view north).

The northwest shore of Winter Lake is characterized by a low, sloping wet shoreline, rising to one or two rocky terraces of variable width. At least two boat pull-outs were found, one near the portal and one a couple of hundred metres south. These are characterized by smooth, low, relatively flat bedrock slabs, and scattered nails and cans were found nearby. Most of the rest of the shoreline was too wet to permit landing a boat. No other remains of past human activities were found.

The Round Lake shoreline is only slightly elevated above the water level, generally about one half metre, and much of it is heavily vegetated. Several old cat tracks occur on the southern sides of the lake. One site found at the south end of Round Lake may relate to aboriginal hunting activity (Photo 5). It is located approximately 75 m from the water's edge and about 10 m from a cat trail, which probably represents a winter road since it enters the water. Remains observed at this site include a stove hanging in a tree, a shaped hide stretching stick (identified for muskrat hides by our local field assistants), several long cut and pointed poles probably for a shelter, tin cans, snuff lid, and a wooden plank with nails. It does not contain any evidence suggestive of a greater than 50 year age. On the other side of the cat trail were more modern looking garbage deposits, suggesting another, more recent use of the area.

The plant site is on a level to gently sloping large ridge elevated about 100 m above Winter Lake. It is covered by mature spruce forest, with some alder and birch, thick moss ground cover and kinnikinnick and Labrador tea (Photo 6). Periodic outcrops of bedrock occur and between these, depth of soil is variable. No evidence of past people was observed or uncovered in testing. However, because this is an elevated landform overlooking a lake with good potential for past human use, it should be reassessed when the exact location of the plant site is identified, and any portions not included in this season's field investigations should be subjected to the same level of examination.

With the exception of the south end, the esker extending southwest from Giauque Lake was found to be variably broad, undulating and rocky. The northeast end is substantially elevated, probably close to 75 m, while the southwest end is only about one half metre above the surrounding muskeg. No evidence of past human activity was observed on the esker itself, with the exception of a large survey tripod.

Photo 5 – Campsite on south side of Round Lake (view northwest).

6a – Muskrat hide stretching tool.

6b – Stove hanging in tree (view east).

6.0 NICHOLAS LAKE

The bedrock ridge adjacent to the north side of Nicholas Lake is very irregular, high and rocky (Photo 7). It is characterized by "humpy" bedrock outcrops with frequent boulders; depressed areas between bedrock with sufficient soil deposition are covered by thick stands of young spruce and pine. There are few level areas of a size sufficient to permit setting up a camp (Photo 8), and the terrain is generally too irregular to be appealing as a preferred travel route. No remains of human activity (besides mining and prospecting) were observed.

6.1 Archaeological Potential Assessments

A possible road route between Nicholas Lake and Discovery mine was examined by low level helicopter flights over terrain along the southeast sides of Eclipse and Maguire lakes. This area is characterized by large, broad bedrock outcrops with undulating surface. In general, potential for archaeological sites can be considered relatively low, except near the lakes, where potential could be rated moderate. The bedrock ridge along the north side of Nicholas Lake is also very high, broad and irregular (Photo 9). This terrain would not be particularly appealing for human use, due to the height above water, the lack of resources and difficulty of travel over the rough surface. Consequently, the archaeological potential of this particular landform is judged to be comparatively low.

Eskers are generally considered to have high potential for archaeological sites. This is particularly true of eskers forming part of a long, relatively continuous travel route; small, isolated esker segments have lower potential. Both of the closest eskers to the study area are not part of a long, continuous route, therefore, potential for archaeological remains would be considered less. However, there are three previously recorded sites on the esker complex north of Nicholas Lake (not subjected to ground reconnaissance this season). No archaeological remains were found during the assessment of the south end of the esker near Winter Lake (which is quite low), nor in the visual assessment of the existing gravel pit at the north end of the esker complex. The latter, being near Giauque Lake, would be considered to have good potential for archaeological remains, and it is quite possible that previous quarrying activities removed archaeological evidence. The portion of the esker between the north and south ends is frequently rocky and irregular, with some broad sections. In general, it is suggestive of lower potential for archaeological sites than either of the two ends.

Photo 7 – Testing at proposed plant/mill site (view northeast).

Photo 8 – Nicholas Lake ridge near portal/camp (view southeast).

No previous systematic archaeological assessment has been conducted of the winter road between Yellowknife and the Discovery Mine (Figure 3). Although it has been used in the past, if any upgrading or route revision is anticipated, locations of any archaeological remains should be determined to avoid future disturbance. The southern section is along the Yellowknife River drainage system. Documentary records indicate that this was a well known historic and aboriginal travel route, albeit possibly not a preferred route during all times. It is clear that some people have used this route periodically in the past. Between the south end of Prosperous Lake and Yellowknife, four archaeological sites have been recorded. Consequently, potential for archaeological remains is considered high on elevated land features or beaches in that portion of the road route along the Yellowknife River drainage.

The northern portion of the winter road to Yellowknife was viewed by low level helicopter (Figure 5). It is mostly on water or swamp that is often bordered by low lying ground. At some of the lake edges, bedrock outcrops and a couple of sections of sand and gravel beach deposits were observed. Those areas would have moderate to high potential for archaeological sites. The majority of the route in low and wet areas would be rated as low potential.

Photo 9 – Ridge on north side of Nicholas Lake (view west).

7.0 CONCLUSIONS

Documentary research suggests that the YGP study area lies between past preferred travel routes from Great Slave Lake to various points north. This suggests less intensive use of the area, although it is within current caribou winter range and some use would be expected. Field investigations conducted this season appear to lend support to this general premise. No archaeological sites were recorded, but considerable quantities of remains related to past prospecting and mining were observed. Although some archaeological sites should be anticipated in this area, they will likely be occasional, small, short term hunting or fishing camps. Such sites are expected to be located on elevated ground adjacent to lakeshores or on eskers. A higher potential for archaeological remains is suggested for the southern portion of the winter road to Yellowknife, where past use of the Yellowknife River drainage has been well recorded. Consequently, a greater quantity and variety of archaeological resources are to be expected on elevated benches, terraces and beaches crossed by or adjacent to that portion of the road.

Assuming no changes in the proposed development footprint, archaeological field assessments are considered complete for the area immediately around the Ormsby portal; the area immediately around the Nicholas Lake portal, and the area immediately surrounding the perimeter of Round Lake; however; additional archaeological surveys may be required on some ancillary infrastructure following feasibility and detailed engineering studies.

Several areas were identified as having good potential for archaeological resources in the northern portion of the winter road to Yellowknife subjected to helicopter overflight. Based on documentary research and the existence of several recorded sites in the vicinity, the southern portion is suggestive of better archaeological potential.

Once all archaeological resources within proposed development areas have been identified, they will be assessed for scientific and cultural significance. Mitigation measures for each site can then be developed, based on the individual site content and significance, and the type and proximity of impact anticipated. In general, sites within the development footprint will require some form of data recovery. Sites in close proximity will require monitoring and possible application of protective measures or data recovery, where judged necessary.

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Tyhee NWT Corp

YELLOWKNIFE GOLD PROJECT

2005 ARCHAEOLOGICAL INVESTIGATIONS FINAL REPORT

May 2006

CREATING AND DELIVERING BETTER SOLUTIONS

POINTS WEST HERITAGE CONSULTING LTD.

eba

TYHEE NWT CORP.
YELLOWKNIFE GOLD PROJECT
2005 ARCHAEOLOGICAL INVESTIGATIONS
FINAL REPORT

NWT ARCHAEOLOGIST'S PERMIT 2005-967

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May 19, 2006

MANAGEMENT SUMMARY

In June, 2005, Points West Heritage Consulting Ltd. conducted archaeological assessments on behalf of Tyhee NWT Corp. at their proposed Yellowknife Gold Project (YGP). The YGP is located approximately 80 km north of Yellowknife near the historic Discovery Mine that was abandoned in 1969. The proposed Yellowknife Gold Project is located in the vicinity of Winter Lake, about 3 km southwest of the historic Discovery Mine, with a possible future development at Nicholas Lake, approximately 12 km to the northeast.

Results of investigations completed in 2004 were reported and filed under NWT archaeologist's permit 2004-961. The 2005 archaeological assessments were conducted of specific proposed development components identified on plans received in June, 2005. These consisted of:

1. A proposed tailings containment area and associated facilities at Winter Lake;
2. Potential all weather road route to Nicholas Lake;
3. Existing winter road route from Yellowknife;
4. Alternative locations for processing plant and camp;
5. Preliminary assessment of a possible esker airstrip.

The specific mine area at Winter Lake was examined in 2004. Assessments were completed by a combination of low and slow helicopter overflights and surveys on foot of selected portions of each development area judged to have some potential for archaeological resources. Shovel testing was conducted wherever the terrain suggested some archaeological potential and subsurface exposures were insufficient.

Heritage resources found in 2005 were hunting camps dating less than 50 years of age. Three such camps were found on Winter Lake: two on the east shore of the lake and one on the island in Winter Lake. One additional camp was observed on Prosperous Lake, on the lake shore a short distance east of the road route. Miscellaneous structural remains and debris related to exploration, mining and gravel extraction were also encountered. Because these remains are all comparatively recent, no further work is recommended.

No archaeological remains were found. It should be emphasized that these conclusions refer only to archaeological resources, defined as physical remains older than 50 years. Based on results of the investigations completed to date, the potential for archaeological sites in the specific areas to be affected by the mine and camp facilities is rated as low. Much of the area covered by the development of the Yellowknife Gold Project is characterized by low, waterlogged ground or rocky, irregular terrain, generally considered unappealing for human use. The major terrain features with archaeological potential in this vicinity are eskers but these are of limited extent within the presently proposed project development area. If final plans include use of eskers for borrow or other purposes, additional field assessment will be necessary. Within the remainder of the presently proposed development area, it is considered unlikely to encounter archaeological resources and further investigations of project facilities as currently proposed are not recommended.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PHOTOGRAPHS

INTRODUCTION

On behalf of Tyhee NWT Corp., Points West Heritage Consulting Ltd. completed a second year of archaeological assessments relative to proposed mineral development of its Yellowknife Gold Project. This project is located north of Yellowknife and consists of two properties in close proximity. The work was conducted under Northwest Territories archaeologist's permit 2005-967, directed by Gabriella Prager. The field crew comprised Carol Rushworth of Points West and Noel Doctor of the Yellowknives Dene First Nation.

Project Description

The Tyhee Yellowknife Gold project (YGP) is located approximately 80 km north of Yellowknife (Figure 1). It is approximately 3 km southwest of the old Discovery Mine, situated on the west side of Giauque Lake, which was in production between 1949 and 1969. One of the two proposed developments, known as the Ormsby zone, is on Winter Lake, a short distance west of Giauque Lake; the other is on Nicholas Lake, approximately 12 km to the northeast (Figure 2). Both properties have previously excavated exploratory shafts for which development is proposed, with the Ormsby zone providing the current focus of proposed development. A winter road route that was used during the operation of the original Discovery Mine extends approximately 85 km from the north end of Yellowknife Bay to Discovery Mine (Figure 3); it is proposed to redevelop this route to support this development. Additional facilities that are currently proposed include a camp, tailings pond, processing plant, explosives magazine, waste rock storage area, and one or more all-weather roads within the project area.

For the purposes of the general environmental studies, the Local Study Area (LSA) for the baseline study was defined as a 10 x 10 km square centered on the Ormsby portal and a 4 x 4 km square centered on the Nicolas Lake portal, with a corridor joining these two locations (EBA 2004). However, for archaeological impact assessment, a smaller LSA within the defined boundaries is more appropriate since effects on archaeological sites are of limited spatial extent. Therefore, the actual project footprint with a surrounding 1 km buffer zone is considered a sufficient for the archaeological LSA. In order to place archaeological study results in proper context, available documentary data was gathered from a larger region extending north within the treeline from the shores of Great Slave Lake. This was necessary because past people living in this area were highly mobile hunters and gatherers and used a large territory in order to obtain sufficient resources to survive.

LEGEND

Local Study Area

Winter Road

Base data sources:

Canadian Layers: DMTI Spatial Inc. for ESRI, 2002

YELLOWKNIFE GOLD PROJECT

Project Location

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:5,000,000 (50 25 0 50 100 Kilometres)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-001.mxd		DATE: May 16, 2006
JOB NO: 1740180	REVISION NO: 2	Figure 1
OFFICE: EBA-VANC	DRAWN: BGP / CHECK: GP	

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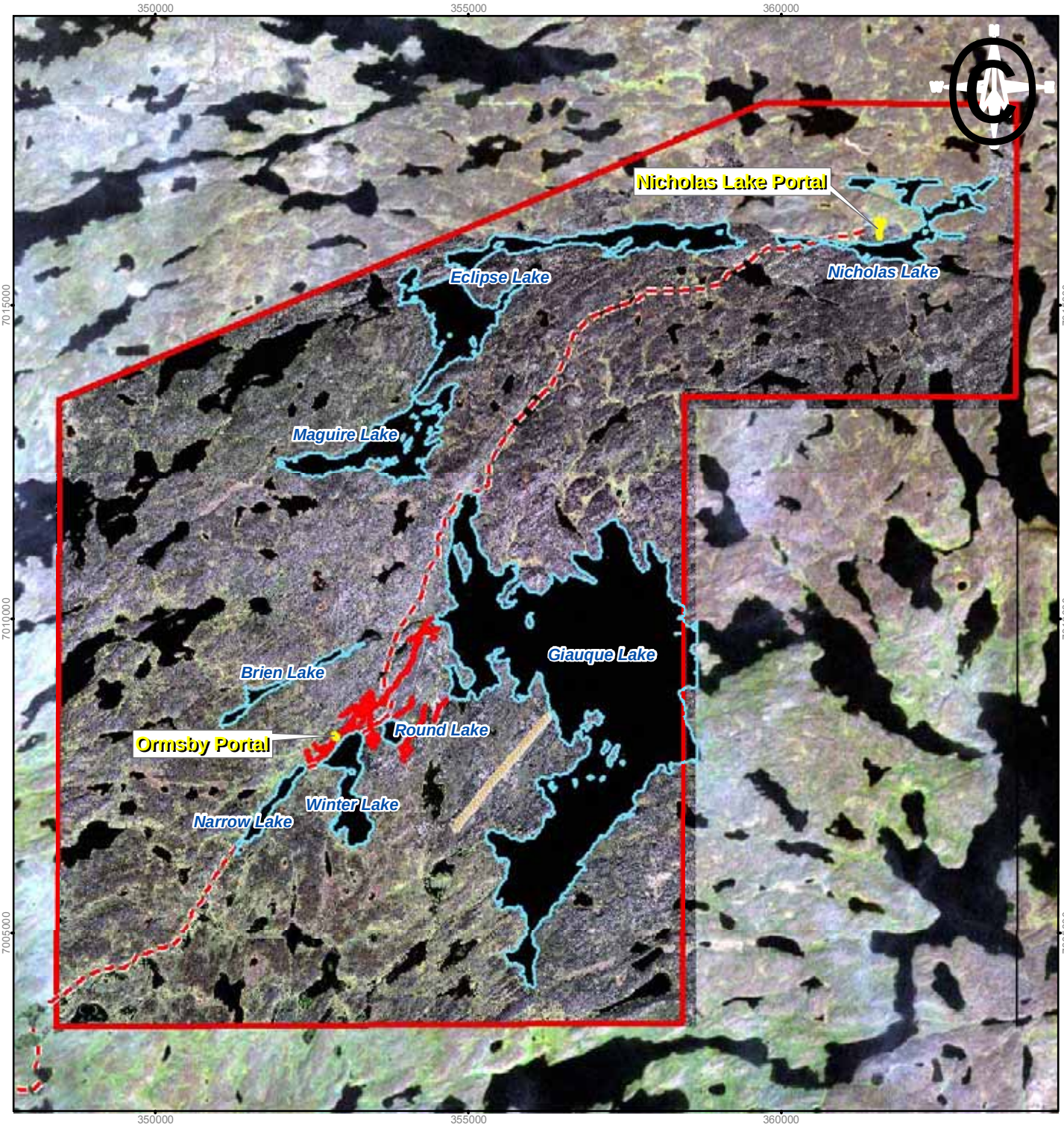

LEGEND

- Local Study Area
- Winter Road
- Proposed Footprint
- Portal
- Approximate Esker Location

Base data sources:

Imagery Source: IKONOS (July 27th and August 2nd 2004. Landsat TM (August 11th 2001)
Water Features: Extracted from IKONOS imagery

YELLOWKNIFE GOLD PROJECT

Project Study Area

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:90,000 (0 0.5 1 2 3 Kilometers)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-002.mxd		DATE: May 24, 2006
JOB NO: 1740180	REVISION NO: 4	Figure 2
OFFICE: EBA-VANC	DRAWN: BGP / CHECK: GP	

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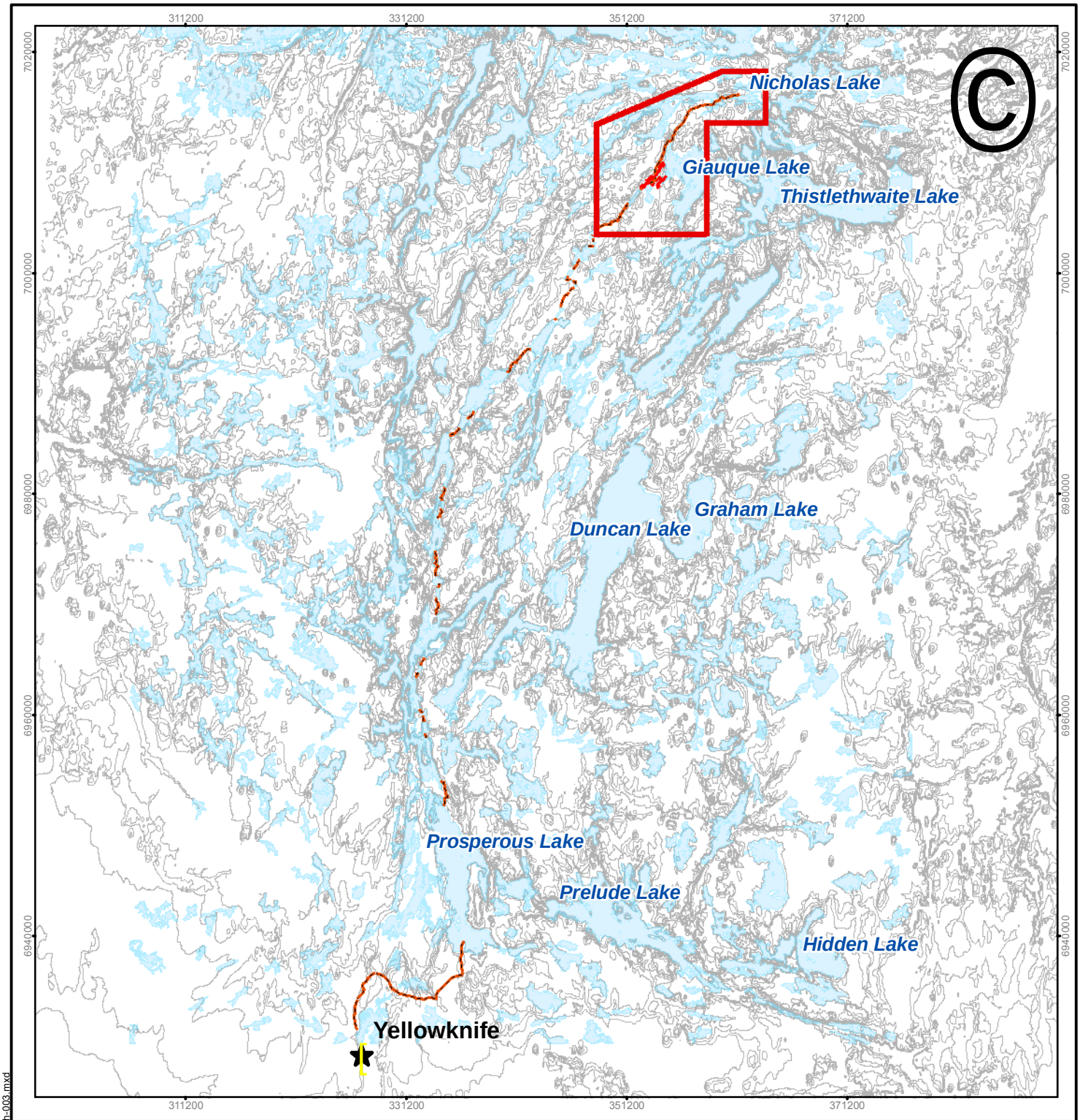

LEGEND

- Local Study Area
- Proposed Footprint
- Winter Road

Base data sources:

Water Features: Extracted from IKONOS imagery

YELLOWKNIFE GOLD PROJECT

Yellowknife to Study Area Winter Road

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:500,000 (0 2.5 5 10 15 20 Kilometers)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-003.mxd		DATE: May 24, 2006
JOB NO: 1740180	REVISION NO: 3	Figure 3
OFFICE: EBA-VANC	DRAWN: BGP / CHECK: GP	

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Archaeological Background

Since archaeological sites are protected by legislation in the Northwest Territories (NWT), archaeological studies should be conducted in advance of any activity that might disturb the ground surface. Such activities include but are not limited to excavation associated with mines, pipelines, gravel or fill extraction; construction such as buildings, erection of camps; road building, including winter roads; mineral exploration related activities such as building of drill pads; inundation by dams or tailings deposition. For the YGP, the developments that will affect the ground surface and, consequently, could affect any archaeological sites that may be present include processing plant and camp construction, development of a tailings containment area, development of waste rock storage areas, road construction and use (winter and all season roads), and borrow sources.

There are several stages of archaeological investigations; not all are required for all projects or project phases. Each stage is completed only if and when necessary due to the inherent destructive aspects of the more advanced phases of archaeological investigative techniques. Any archaeological work involving ground reconnaissance in the NWT must be conducted under a valid archaeologist permit. Such permits are granted to individuals with certain required qualifications upon submission of detailed research plans.

An archaeological overview assessment is the preliminary stage of archaeological studies and should be conducted early in the planning process. The objective of an overview assessment is to compile and evaluate relevant aspects of the existing biophysical and heritage knowledge of the study area. Such research assists in the determination of archaeological potential and the scope of future investigations. Preliminary field reconnaissance (PFR) may be conducted in conjunction with an overview assessment, usually to assess terrain.

Archaeological field reconnaissance may be conducted as part of an overview assessment (PFR) or as part of the archaeological inventory stage. Depending on the planning stage and type of development and the location and terrain characteristics of the project area, reconnaissance may be limited to visual (often aerial) examination (PFR) or may involve more detailed ground inspection. Preliminary field reconnaissance is used to determine if there is sufficient archaeological potential to justify further investigation and the scope such work may require. This level of field reconnaissance can also assist in project planning to identify preferred routes or locations when alternates are identified or to warn of major archaeological issues.

Archaeological inventory or detailed archaeological ground reconnaissance is conducted to identify archaeological sites within a development area. Inventory generally involves surveying a specific area using intensive systematic pedestrian transects to locate and define archaeological sites. It may also include subsurface testing to find or further define sites. The intensity of the inventory varies depending on terrain and archaeological potential and the level of development

planning. Inventory must be conducted under favorable weather conditions (that is, no snow cover or frozen ground).

Once an archaeological site has been identified, site assessment is necessary to determine site size and content and ascertain whether it could be impacted by the development as proposed. Data regarding site size, content and complexity are necessary to estimate significance of each site which provides the basis for recommendations of suitable site specific mitigation measures. Because site assessment can be time consuming and often requires subsurface testing, which is destructive in itself, it is preferable to assess in detail only those sites that can not be avoided and/or protected.

Mitigation refers to actions that will ameliorate adverse impacts to archaeological resources. Possible mitigation measures include avoidance through project redesign or relocation (of the entire development or specific components), protection through the erection of physical barriers or capping with protective materials, and scientific investigation and recovery of archaeological data, also known as systematic data recovery. Site avoidance is always the preferred mitigation measure. Systematic data recovery commonly consists of subsurface excavation and/or surface collection. Because this can be destructive, it is only recommended for sites definitely under threat of disturbance. Detailed archaeological analysis and reporting is an integral part of mitigation. Mitigation plans must be prepared in consultation with the Government of the Northwest Territories and local First Nations associations, where appropriate.

As part of a mitigation program, surveillance and/or monitoring may be recommended, especially in areas where sites are to be avoided and/or protected or there is potential for deeply buried archaeological resources. Surveillance is conducted during the construction process to ensure that site protection and avoidance recommendations have been followed and that no unexpected remains are encountered. This is commonly advised in areas of high archaeological potential, particularly in close proximity to sites considered highly significant. Monitoring may be undertaken during the construction phase (where digging may uncover buried sites) and/or during the operations phase to assess indirect and/or long term effects.

During background research conducted for the YGP in 2004, all accessible and available sources of data were consulted in order to establish a necessary interpretative base of knowledge. The literature review comprised search of site data files for previously recorded archaeological sites held at the Prince of Wales Northern Heritage Centre in Yellowknife, examination of reports on previous archaeological studies within the region, consultation of ethnographic studies, historic accounts, explorers' descriptions, and traditional knowledge documents available for the region. Published documents were obtained from the Circumpolar Institute library at the University of Alberta as well as the University's own libraries. The information gained from these documents was then used to assist in planning field investigative strategies.

Archaeological assessments in 2004 were the first conducted for the Yellowknife Gold project. The work completed in 2004 (see Prager 2005) comprised archaeological inventory and impact assessments of the Ormsby mine area consisting of the area between the current camp location along the presently used mine road and the bedrock ridge immediately northwest, the width of ground between the northwest Winter Lake shoreline and the mine road, a possible waste rock storage area to the west; and the entire perimeter of Round Lake. Preliminary overview/PFR assessments were conducted of a proposed processing plant location, a possible road route between Ormsby and Nicholas Lake, a possible borrow source at the south end of an esker east of Winter Lake, and the northern portion of the winter road to Yellowknife.

For the 2005 archaeological investigations, the objective was to complete full archaeological inventory and impact assessments of all project components for which proposed locations were currently identified. These comprised the Winter Lake tailings containment area and associated structures, processing plant and camp location alternatives, and the existing winter road route from Yellowknife. Although a road route between Ormsby and Nicholas Lake was not yet defined, it was requested by Tyhee that some attempt be made to assess as fully as possible a route as depicted on a map, supported by GPS locations of creek crossings. Finally, a preliminary assessment of a central section of the esker east of Winter Lake that could be used as an airstrip was aimed at determining future scope of work necessary should this possibility become a definite project component.

This report next presents the detailed background information gathered to provide an interpretative framework (Prager 2005). Then, archaeological investigations conducted this season are described and results are discussed in the context of the background data. The final section presents a summary, conclusions and recommendations.

BACKGROUND DATA

In order to place archaeological study results in proper context, consideration of data from a larger regional area is necessary. This is because past people utilizing this region lived a necessarily highly mobile hunting and gathering lifestyle, covering large ranges in pursuit of animal resources. Furthermore, past climate and vegetation varied considerably which, in turn, governed the movements of wildlife. These factors are highly relevant when dealing with past people who relied upon natural resources for their survival.

Environment

The YGP lies within the Bear Slave Upland of the northwestern Canadian Shield (Dyke and Dredge 1989). The world's oldest rocks are found on the Shield north of Great Slave Lake (EBA 2004). Topography is described as a strongly rolling plain, with frequent exposed outcrops of bedrock ridges and knolls and occasional discontinuous esker deposits of sand and gravels. Numerous water bodies occur in frequent depressions scattered across the landscape.

Consideration of past environments relevant to human occupation of the central Barrenlands begins approximately 8,000 years ago, when it is generally thought that the massive Laurentide ice sheet that covered much of northern North America had receded from virtually all of the Great Slave Lake region (Dyke and Dredge 1989:206); disappearance of the ice sheet is thought to have been complete across the north by 7,000 years ago (Craig 1964). In early post-glacial times, a large glacial lake encompassed the Great Bear/Great Slave lakes basin (Craig 1964:29).

Since deglaciation, there have been several periods of climatic fluctuation with associated changes in vegetation limits. Unfortunately, virtually no paleoclimatic or palynological research has been conducted in the Great Slave Lake region (cf. Wood 1977:53); past studies have focused on the Mackenzie basin to the west and the Hudson's Bay region to the east, both of which have very different glacial and post-glacial histories. Given this situation, some extrapolation as to the general nature of past climate and vegetation in the region is necessary, since these conditions are of critical importance to past human uses of the area. This is particularly important in this region, so close to the northern edge of the forest. Major changes in climate would affect the position of the tree line and composition of the forests, thereby determining animal ranges, particularly migratory animals such as caribou which served as a critical resource for human survival in this region for millennia.

Immediately following retreat of the ice sheet, the climate of the north was warming; this climatic change is hypothesized to have been particularly rapid in central northern regions (Anderson et al. 1989:527). A maximum warm phase in various parts of the north is postulated at different times between approximately 6,000 and 3,500 years B.P. (before present) with

temperatures warmer than today (Wood 1977:62). Megafossil evidence from east of Great Slave Lake suggests expansion of the forest around 5,000 to 6,000 years B.P. (Richie and Hare 1971), and Bird cites evidence of the tree line at least 280 km north of present day in the Dubawnt region to the northeast (Bird 1967:30). This is thought to have been followed by a period of cooling beginning around 4,000 years B.P., culminating in major ice expansion in the northern Arctic about 2000 years ago (ibid.) and a consequent retreat of the northern forest limit to approach modern day conditions. Minor fluctuations of climate have occurred over the past 1,500 to 2,000 years. A warm phase is seen about 800 to 900 years B.P. (Bird 1967:31), although Wood suggests warming for the full period between 1,500 to 900 years B.P. (Wood 1977:62). This was followed by cooling to a "Little Ice Age" identified for the first half of the 1800s (MacDonald et al. 1998:200) and subsequent warming to present day levels.

There has been little study of past vegetation community composition within the northern boreal forest edge. In the immediate vicinity of Great Slave Lake, there has been only one pollen study, near the east arm. The results of that study have been interpreted to indicate a relatively simple, three stage record of succession (Richie 1989: 511). Contrary to the Mackenzie area where initial post-glacial vegetation is thought to have been heath tundra, in the Great Slave Lake region, there appears to have been an immediate influx of spruce and birch following retreat of the glacial ice prior to 7,000 years B.P. This is postulated to indicate a faster pollen migration rate than rate of disintegration of the ice sheet (ibid.). An influx of alder is seen about 6700 years B.P. and a gradual establishment of spruce, pine, birch and alder mixed forest composition similar to modern vegetation by 5,500 years B.P. In spite of documented, albeit less severe, climatic variations in the past 4,000 years, some suggest the northern limit of the tree line appears to have been relatively stable over the period (MacDonald et al. 1998:202); however, others see northward shifting of the northern forest limit before 900 year B.P. and a subsequent retreat back to modern positions (Wood 1977:62).

This study area occurs in the modern boreal forest–tundra transition zone. Depending on the specific site growing conditions, current vegetation commonly consists of open, stunted stands of black spruce and tamarack (with alder and willow), with varying quantities of white spruce, trembling aspen, jack pine, birch and balsam poplar. Ground cover generally varies with moisture content of the substrate to include dwarf birch, willow, various shrubs, cottongrass, lichen and moss (EBA 2004). Important berry crops include cranberries and blueberries.

This area contains a variety of wildlife. Species normally found here include barren-ground caribou, moose, grizzly and black bear, snowshoe hare, fox, wolf, beaver, muskrat, ptarmigan, raven, grouse, and various waterfowl. Fish species common in the region's lakes and rivers include northern pike, whitefish, walleye, lake trout, sucker and Arctic grayling.

The barren-ground caribou was of primary importance to past inhabitants of the Great Slave Lake region and, therefore, some discussion of its biology is warranted. The study area is within

or at the southern edge of the winter range of the Bathurst herd (Brotton and Wall 1997; Williams and Fournier 1996). Wintering within this area from November to March, caribou are dispersed in small groups or individually and range widely. In late March and April, the caribou begin to migrate north toward the summer calving grounds, and migrate back to the wintering grounds in September and October (Brotton and Wall 1997:6). It appears that, depending on the year, caribou may or may not winter as far south as the north shore of Great Slave Lake (ibid.). There has apparently been little or no study of how much variation may have occurred in the caribou range at various times in the past, but it is reasonable to suspect that there were significant periodic changes, depending on severity of climate and forage availability. Given these factors together with the fact that the study area is at the current southern limit of winter range, it can be concluded that dependability of caribou as a winter subsistence resource in this region would have been variable throughout the past.

Human History

The Great Slave Lake region was historically utilized by members of three groups of Northeastern Athapaskan speakers. These were identified by early explorers and ethnographers as the Chipewyan (also referred to as Northern Indians or Caribou Eaters), the Dogrib Indians, and the Yellowknives, or Copper Indians (Hearne 1911). All three groups occupied the forest-tundra eco-tone to varying degrees, and all were nomadic hunter-gatherers, focused primarily on hunting barren-ground caribou (Smith 1981:271, Helm 1981:291, Gillespie 1981:285). Consequently, the seasonal round and lifestyles were generally similar.

The Chipewyan people, historically referred to as Caribou Eaters or Northern Indians, generally ranged east and southeast of Great Slave Lake. Due to a general lack of furbearers in their territory, the Northern Indians were never as closely tied to the fur trade as southern aboriginal groups and, therefore, they (together with the Yellowknives and Dogrib) were relatively late in adopting many European goods. In later times, some members of this group moved south, into the boreal forest proper, and changed their focus to hunting woodland caribou and moose. This faction then also became more closely associated with the fur trade, since furbearers were more frequent in their new range (Smith 1981).

The Yellowknives and Dogrib people were said to occupy the lands north and northwest of Great Slave Lake (Helm 1981). They are the two groups who habitually frequented the vicinity of the study area with overlapping ranges. Yellowknives or Copper Indians were so named because they were known to make use of copper for their implements (Gillespie 1981). They are, therefore, generally considered to have ranged as far north as Great Bear Lake and the Coppermine River. However, two other place names suggest the existence of copper in other areas around Great Slave Lake: the Taltson River, on the southeast side of the lake, was said to have been called “Tall chu dezza”, translated as Red Knife River (Fidler 1791:521). In addition, a fur trade fort established by the Northwest Company on the southwest shore of Great Slave

Lake around 1806 was called Red Knife Fort (Keith 2001:16). The reason for these names does not appear to have been recorded.

It is clear from all accounts that survival in this harsh land was very difficult. In general, survival for all three aboriginal groups was largely dependent on the barren-ground caribou and, consequently, their travels were governed by the movements of the caribou. This dependence is illustrated by Warburton Pike:

> *"We had met no Indians, and so had no means of hearing the news of the caribou, which forms the one topic of interest among the Dog-Rib and Yellow Knife tribes who hunt in this part of the country"* (1982:30).

All aboriginal inhabitants followed a similar nomadic lifestyle moving with the caribou, north onto the Barrenlands in the summer and south into the forest fringes in the winter. Anthropological studies have suggested that each group was closely tied to one of the major caribou herds (Smith 1971; Gordon 1996). They were intimately familiar with their specific individual herd's movements, spending winters in the animals' winter foraging areas and intercepting them at strategic locations along the spring and fall migration routes. Hunting techniques consisted of communal use of chutes and pounds, as well as surrounding the animals in the water at favored crossing locations and shooting them from canoes. The spring hunt was often the feast after a late winter period of famine. Death by starvation was not uncommon in this region, and historic journals contain frequent references to starvation. For example, in 1811, Northwest Company fur trader W. F. Wentzel, stationed on the Mackenzie River, wrote:

> *All my men are dead of starvation. . . . all my Indians have starved more or less; from one small band only, I received news yesterday evening that five were dead of hunger"* (Yerbury 1986:80).

The fall hunt provided the best quality hides, and this was the time women focused on making clothing and moccasins. Fish also formed an important component of the diet and were taken throughout the year, by nets in summer and ice fishing in winter. Large quantities of both caribou meat and fish were dried through the summer and fall to provide winter provisions.

There are virtually no references in historic documents to use of plant resources as food, with the exception of berries. Various trees and plants provided important components of the tool kits and undoubtedly were used for medicinal purposes.

Prior to arrival of European goods, aboriginal tool kits in the Great Slave region were constructed using readily available wood, bone, antler and, to a lesser degree, stone materials. They comprised implements necessary for exploiting and processing the region's natural resources, with particular emphasis on hunting. Spears and bows and arrows were made of combinations of wood and bone with arrows tipped with stone, copper, or bone. Hunting

constructions such as deadfall traps, chutes and pounds were built of wood materials. Snares used for smaller animals and fish nets were made of sinew from animals and twine of roots, while fish hooks were usually bone or antler. Implements for processing meat were made largely of bone, with stone used for cutting edges. Birch bark (where available) was used for canoes and containers; snowshoes and toboggans were made of wood. Clothing was, of course, made of hides with caribou providing the best quality hides in late summer/fall. Dwellings were generally tipis of wood poles and hide covers and had open hearths in the centres.

Early explorer, fur trader and adventurer documents recorded several travel routes used by local native people to move from Great Slave Lake to various points in the Barrenlands and boreal forest. Since the early explorers were guided by local inhabitants, those aboriginal routes were the ones taken during early explorations. Because the names of many of the lakes and rivers have changed since their recording in the early journals, it is somewhat difficult to definitively trace some portions of some of the routes.

Those routes that appear to have been the main ones used by aboriginal people were:

1. From the end of the west arm, along the Mackenzie River, first explored fully by Alexander Mackenzie in 1789 (Mackenzie 1970).
2. Along the Slave River south toward Lake Athabasca. This was the main travel route between the two lakes, Athabasca and Great Slave, used by aboriginal people and Euro-Canadians.
3. From the end of the east arm, toward Artillery Lake and points north. This route was taken by early explorers George Back (1833), the Anderson and Stewart expedition (1855) and by Warburton Pike in 1892, after whom the first main portage was named.
4. From the end of the north arm, toward Lac La Martre (using the Marian River) and Great Bear Lake, via two routes. One of these was the Dogrib trail called the *Idaà* Trail (Andrews and Zoe 1997) which followed the Snare River drainage.

Several other routes heading north from the east arm were apparently used less frequently (for example, two routes described by Pike [1892]), but only one alternate route was recorded that departed from the north arm of Great Slave Lake. That route followed along the Yellowknife River and a series of lakes to Pointe Lake and on to the Coppermine River. This is the closest travel route to the present study area, and it was taken by the first Franklin expedition in 1820 (Franklin 1969), guided by a Yellowknife Indian (Akaitcho). Franklin noted that the Indians considered this to be a more direct route to Coppermine River and that the "rein-deer" (caribou) would be found in that vicinity earlier in the season (Franklin 1969:204). But Akaitcho suggested that this was not their usual preferred route (ibid.).

Euro-Canadian explorations in the central Barrenlands began with Samuel Hearne who, in 1771-72, traveled from Hudson's Bay to Coppermine River (Hearne 1911). He passed through the

Great Slave Lake region, north and east of the lake. There is some uncertainty as to his exact travel route, but he does not appear to have traversed the specific area of interest, near the northern arm of the lake; rather, he apparently approached the lake further east and traveled around the east arm toward the southeast side (ibid.). Over the next several decades, fur traders conducted some explorations in the general Slave Lake area (for example, Peter Fidler [1791]; Sir Alexander Mackenzie [in 1789]; W.F. Wentzel [1819-20]).

The next explorer to pass through the general region of the study area was Sir John Franklin on his first trip to the Arctic coast in 1819-1822 (Franklin 1969, 1995). He traveled along the Yellowknife River, portaging through a series of lakes toward Great Bear Lake. On his second trip in 1825-27, he followed the Mackenzie River from the western arm of Great Slave Lake (Franklin 1828). In 1833, George Back was commissioned to travel to the Arctic coast along a route reported to lead from Great Slave Lake to an unexplored portion of the coast (Back 1970). He headed north along the Hoarfrost River and returned along the Lockhart River, both of which he reported to be virtually unnavigable near the lake (ibid.).

Following Franklin's disappearance on his last expedition in 1845-48, several searching expeditions passed through Great Slave Lake. One led by John Richardson followed the 1825 route along the Mackenzie River (Richardson 1851). In 1855, Stewart and Anderson followed a route to the Arctic Coast that initiated from the east arm of the lake, thus, considerable distance east of the current study area (Barr 1999). None of these later expeditions appear to have followed Franklin's first route along the Yellowknife River.

The fur trade forts built on Great Slave Lake were concentrated in the southern portion of the lake. The earliest fort was Slave Fort, established near the Slave River delta on the southern side of the lake in 1786 by Cuthbert Grant on behalf of independent traders represented by Peter Pond. The Hudson Bay Company built Fort Resolution in 1815 near the same location and that fort, although moved several times, has been in existence near the Slave River ever since and has developed into a community.

On the north arm of Great Slave Lake, the North West Company built a trading house as early as 1789 – Alexander Mackenzie mentioned the presence of Leroux's house on his journey through the north arm (Mackenzie 1970:231). Mountain Island Post, probably established in 1804 by the North West Company, was built on an island near the Yellowknife River. It was mentioned in Alexander Henry Jr.'s 1805 journal and Mackenzie's (nephew of Sir Alexander) 1805-1806 journal (Keith 2001:42, 218). The first Fort Providence (a North West Company post) was located on the mainland shore of Yellowknife Bay near the Yellowknife River in 1820, when Franklin stopped there, but there is some question as to when and by whom it was built (Smythe 1968:283). It was closed in 1823, two years after amalgamation of the Hudson's Bay and North West Companies (Perry and Clark 1971). This should not be confused with a later Fort Providence which was built on the west arm, first by Oblate missionaries in 1861 (McCarthy

1995:50) and followed in 1868 by the Hudson's Bay Company. Hudson's Bay Company documentary records for the southern Fort Providence date to 1870-1907 (HBC Archives nd.), and Frank Russell's scientific expedition stopped there in 1892 (Russell 1898:131). In 1833, Fort Reliance was established on the east arm, to support George Back's expedition to the Arctic coast (Back 1970). This was also used in 1855 by the Anderson and Stewart expedition (Barr 1999). Around 1850, Fort Rae was built by the Hudson's Bay Company on an island near the west end of the north arm and operated until 1906 (Usher 1971:53). Frank Russell also visited Fort Rae and described its location as well the remains of a couple of the old fort sites (Russell 1998:69). Trading stores run by various companies were established near the mouth of the Yellowknife River and along the north arm of the lake throughout the later fur trade period (Usher 1971).

Oblate missionaries arrived in Great Slave Lake in 1852, visiting from their establishment at Fort Chipewyan on Lake Athabasca (McCarthy 1995:40). A mission house was built at Fort Resolution in 1856 (ibid.:42). Despite opposition by the Hudson's Bay Company (largely due to the difficulties of obtaining sufficient provisions for survival [ibid.:37]), other mission houses were soon built at Big Island, at Fort Simpson and Good Hope down the Mackenzie. Similar to the fur trade rivalries, the arrival of Anglican missionaries in the late 1850s prompted a leapfrogging race to be the first to reach new groups of native people in the Slave Lake/Mackenzie region, and missions rapidly sprang up along the Mackenzie drainage system in the subsequent decade (ibid.:50). Fort Rae was regularly visited by missionaries beginning in 1859 and by 1872, a mission house was built, called St. Michael's mission (McCarthy 1995:42, 210).

Because of the marginal conditions for large scale agriculture, there was not a great influx of farmers to the region. Rather, it was the discovery of mineral resources than began settlement. A flurry of exploration occurred around Great Slave Lake during the late Gold Rush period in the 1890s. In 1899, a Geological Survey of Canada geologist noted

> *"… at Fort Resolution, we met considerable numbers of men returning from prospecting around Great Slave Lake, after having failed to find any indications of the precious metals or of any kind of ores or other minerals of economic value."* (Bell 1900:104)

Interestingly, the same geologist also reported that mining operations in this region would be virtually impossible – besides the problems of climate, distance to markets and no local labour pool, it was his opinion that there was very little likelihood of any rich deposits of precious metals (ibid.:109).

Continued exploration proved the error of that pessimistic view, and several mines were opened in the Great Slave Lake region in the 1930s and 1940s. A number are of direct relevance to this

study. Within the local study area, gold on Giauque Lake was found and staked in 1944. The Discovery Mine opened in 1949 and production continued until 1969. A sizeable townsite developed over the life of the mine, and virtually all the buildings were still standing and in comparatively good shape until the site was flattened by the Federal Government in 2005.

A number of other exploration and prospecting camps were scattered over the general region in the 1940s (Silke, personal communication, 2004). Those most relevant to this study occur along a band approximating the winter road route, with camps noted on Johnston Lake, Goodwin Lake, Morris Lake, Narrow Lake, Winter Lake and Giauque Lake (Silke 2004b). Of particular interest within the LSA is a camp at the north end of Narrow Lake identified as LaSalle Yellowknife Gold Mines Ltd. occupied in 1949-1950 (ibid.).

At the south end of the winter road, near Yellowknife, are several mines both operating and abandoned. The Giant Mine claim was staked in 1933, on the shore of Yellowknife Bay, and the mine began production in 1948. Con Mine claim was staked in 1935 and production began in 1938. The Ptarmigan claim was staked in 1936, but only produced gold in 1941-1942; the original buildings were demolished in 1969-70 (Silke 2004a), but several periods of more recent prospecting/mining activity have occurred. By 1936, a boom town had sprung up near these mines, and Yellowknife was born.

Previous Archaeological Investigations

Prior to 2004, there were no archaeological studies completed within the local study area encompassing the Ormsby mine site. One previous study was conducted by Chris Hanks in 1989 a short distance north of the Nicholas Lake local study area. He examined an esker series north of the mine site and recorded three archaeological sites (KhPf-1, 2, 3) approximately 3 to 5 km northwest of the Nicholas Lake camp. These sites are described as small lithic scatters, representing waste materials from making stone tools.

In the vicinity of Yellowknife, there are 21 recorded archaeological sites, in spite of a lack of detailed systematic archaeological survey. Nine of these are along Yellowknife Bay, and eight are within Yellowknife, some found in association with one of the mines. Twelve of these sites are pre-contact lithic or stone tool remains, five are grave sites, two are historic sites (fort and mission), while the rest are miscellaneous historic remains. Directly relevant to the winter road are four sites that are between Yellowknife and Prosperous Lake, three of which are prehistoric lithic remains (KdPg-1, 2; ZAVR 23), and one is a wooden water line associated with the old Ptarmigan mine (ZAVR 37). These sites indicate that the Yellowknife Bay area was well used in the past and that there was at least some diffusion along associated drainage systems.

During the 1950s, 60s, and 70s, various archaeological surveys conducted within the general Great Slave Lake region (Cinq-Mars and Martijn 1981; Noble 1971; Gordon 1975) were aimed

at gathering information about the prehistory of the region in order to construct an initial culture historical framework. Numerous archaeological sites were recorded during these surveys, indicating an almost continuous utilization of the region over the past 7000 years (Noble 1981). Although not directly relevant to this project area, these studies provide an interpretative framework within which subsequent study results can be placed.

Culture History

This term refers to the sequence of different past cultural groups as indicated by changes in styles of tools and contents of tool kits. A broad regional perspective is required in order to place any pre-contact archaeological remains discovered in a proper context. The sequence presented below is based largely on five years of studies by William Noble (1966-69, 1970, 1971) within the general Great Slave Lake drainage region (Noble 1981).

It is generally believed that the central portion of the Northwest Territories was first occupied by people approximately 7,000 years ago (Noble 1981:97). This is referred to as the Northern Plano Tradition, and representations in this region have been called the Acasta Lake Complex. Twelve sites attributed to this complex occur in a band from the north arm of Great Slave Lake toward the Arctic coast, east of Great Bear Lake. This is along or generally paralleling the *Idaà* Trail (Andrews and Zoe 1997), one of the alternate routes to the Barrenlands known from historic records and traditional knowledge. Large lanceolate, leaf shaped, side notched and stemmed projectile points recovered in these sites indicate a spearing method of hunting, and bone remains found in these sites include caribou, bear, various small mammals, birds and fish. Other items include quartzite stone knives, fleshers and tools indicative of working bone or wood. Pit hearths are frequent at the Acasta Lake type site (Noble 1981).

The period between 6,500 to 5,000 years B.P. is poorly known in the Great Slave Lake region. This may suggest that this region was little used during that period, most likely because of changes in caribou migration routes due to climatic variations. Between 5,000 and 1,800 years B.P., several representations similar to cultural phases recognized on the northern Plains appeared in the eastern Great Slave Lake region, as far north as Artillery Lake. Noble has identified these as Artillery Lake Complex (5000-4500 years B.P.), Oxbow Complex (4500-3500 years B.P.), Caribou Island Complex (3500-3000 years B.P.), and Pelican Lake Complex (2000-1800 years B.P.). The tool kits are characterized by small stemmed, side-notched or lanceolate points, small scrapers and knives, all made of quartzite (Noble 1981:99). These phases occur in components that are few, small and sparse.

While these Northern Plains type manifestations were moving in from the south, a version of the Arctic Small Tool Paleo-Eskimo Tradition was moving down from the north. Noble named this central Barrenlands representation the Canadian Tundra Tradition (1981:100). This is dated 3,300 to 2,600 years B.P. It is identified as a caribou hunting strategy specifically adapted to the

tundra-taiga eco-zone at the boreal forest edges. The tool kit of this tradition has been found to contain small, thin quartzite and chert bifaces, knives, burins, and microblades. Noble divided this tradition into three complexes: Rocknest Lake (3300-3100 years B.P.) - the northernmost manifestation; Aurora River Complex (3100-2800 years B.P.) – the most widespread representation; and Timber Point Complex (2800-2600 years B.P.) – a locally limited version found at Artillery Lake and Snare Lake.

The Taltheilei Shale Tradition (2500-200 years B.P.) is identified by Noble as the ancestral Athapaskan tradition, found throughout much of the historic Yellowknife-Chipewyan range (1981:102). The major characteristic of this tradition is predominate use of grey siliceous shale from outcrops on eastern Great Slave Lake for tool making, although quartzite is also frequent. Nobel identified 10 complexes, based on different elevations of beaches on eastern Great Slave Lake. Since he stated that changes in artifact styles throughout this period were few and very slow, it is clear that the definition of these complexes is tied to the dates of beaches (earliest being on the highest beaches), rather than any major changes in tool styles. Common throughout are short, stemmed lanceolate shale points, often with ground edges. Relative quantities of shale versus quartzite tools vary throughout. During the period around 2200 years ago, occasional copper tools were included; stemming on points gradually disappeared while side notching gradually appeared. Faunal remains found infrequently indicate caribou hunting focus, together with exploitation of various mammals, birds and fish, indicative of a typical boreal forest subsistence pattern (Noble 1981:104). The latest manifestation, called the Reliance Complex (220 to 160 years B.P.), includes the appearance of various European trade goods.

Heritage Resource Expectations

Site Distribution

The primary determining factor in site location was clearly the presence of caribou, the critical subsistence base for past inhabitants of this region. Caribou wintered in the Great Slave Lake region and congregated every spring to travel to calving grounds in the Barrenlands, and come back in fall to disperse and winter in the boreal forest. Therefore, people moved with them, in winter dispersing in the boreal forest and in spring and fall, moving north to the Barrenlands to intercept the herds along their migration routes, often congregating at favoured water crossings. Some research suggests that individual bands were directly connected to one specific caribou herd, in other words, they focused on exploiting only one herd. The Chipewyan, or Caribou Eaters, have been associated with the Beverly and Kaminuriak herds east of Great Slave Lake, while the Dogrib and Yellowknives have been associated with the Bathurst herd, ranging north of Great Slave Lake (Smith 1975). Brian Gordon even goes so far as to suggest that this association between groups of people and specific caribou herds is evident in the archaeological record as far back as 8,000 years ago:

> *The observations of Smith were echoed in the results of my studies of Pre-Dorset toolkits. Sites were distributed within each of the four major Barrenland caribou ranges and* ***not between them.*** (Gordon 1996:1; emphasis mine)

It should be noted that very little systematic archaeological survey has been conducted within the central Barrenlands, so this apparent association in the distant past may be partly due to the locations of archaeological investigations. Although this is an intriguing theory, it must remain a hypothesis until sufficient research throughout the Barrenlands has been conducted, not only in terms of archaeological site discovery, but also studies on historical caribou distributions.

Major travel routes in this region were approximately north-south (ranging between NE-SW to NW-SE), following the directions of main drainages and landscape features. Even if canoes were not used and, thus, a navigable water course was not necessary, the drainage channels and adjacent terrain provided readily identifiable landmarks which would permit repeated use of the same route, whether on foot or on water.

It is clear from all historic and ethnographic accounts that there were several major and minor routes native people habitually used to travel from Great Slave Lake into the adjacent forests and Barrenlands. A problem often mentioned in the historic accounts was that many of the drainages entering the northern portions of Great Slave Lake had lengthy stretches that were not navigable in canoes, particularly near the outlets (for example, see Back 1970:113). Consequently, not all drainages were used as travel routes.

The routes that appear to have been used most frequently to travel north from Great Slave Lake were: 1. from the southwest arm along the Mackenzie River; 2. from the east arm toward Artillery Lake; 3. from the north arm toward Great Bear Lake. For this northern arm of the lake, both historic documents and recorded archaeological sites distributions indicate that the primary routes led north and northwest from the west end of the arm, along the Snare and Marian rivers toward Great Bear Lake and Lac La Martre. Other minor routes close to the present area of interest that were recorded include one heading north along the Yellowknife River. Franklin reported that his native guides advised use of the Yellowknife River route from Fort Providence for specific provision reasons, that is, the caribou could be expected in that area earlier in the spring; he noted that it was not the normally preferred route (Franklin 1969:204). That statement illustrates the degree of adaptability of local inhabitants to the caribou range and movements.

A short distance east of the study area, the McCrea River drainage running northeast-southwest through Duncan Lake could have provided a connection to the Yellowknife drainage, and access to Thistlethwaite and Giauque lakes as well as points north. It is not known whether this section is navigable or whether adjacent terrain would permit land travel; topographic maps show frequent rapids. No mention of use of that potential route was found in historic documents, but it could have provided an alternative in earlier times.

It is certainly possible that some east-west travel may have been necessary on occasion. From examination of topographic maps, the closest possible east-west corridor that could have been used appears to be a branch of the McCrea River drainage, a considerable distance north of the study area. It appears that this could have provided an approximately continuous travel route between Dry Bones Lake and the Yellowknife River drainage via Nardin Lake. No use of this route was recorded in the historic documents examined, but that may only imply that no Euro-Canadian who wrote journals traveled that route. Aboriginal people ranged much more widely across the region and used many different travel routes.

In summary, it appears that the local study area falls between main travel routes recorded historically and, therefore, may not have been heavily utilized. However, since this area is within the winter range of the Bathurst caribou herd and people followed caribou, it is probable that people occasionally passed through the area. Although the LSA is hypothesized to contain relatively few archaeological sites, compared to adjacent areas, it is possible that some sites are present. Archaeological sites in this area would most likely be found on elevated terrain features (for example, ridges, benches, bedrock outcrops) adjacent to water courses or water bodies. Of particular importance, would be such terrain features near good caribou crossing locations. Elevated landscape features were preferred for several reasons: 1. drier camp locations than lower ground which is often muskeg in this area; 2. good lookouts for game and people; 3. in summer, better chance for wind to aid in reducing mosquitoes and black flies. Since fishing was also an important subsistence activity in times of need, elevated terrain around the edges of lakes would offer some potential for sites. Eskers extending for some length were preferred travel routes for caribou, thus, also for people. Consequently, there is good potential for archaeological sites on such features.

Along the winter road route, the highest potential for archaeological sites would be expected to occur in the southern section along the Yellowknife drainage system, which was known to aboriginal people at the time of initial contact with Euro-Canadians as a travel route used occasionally, albeit infrequently. Franklin recorded that his aboriginal guide told him that this route was used when they needed to intercept caribou early in the spring, although the route from the west end of the north arm was preferred (Franklin 1995:27). North of the point at which the route deviates from the Yellowknife River (above Clan and Johnston lakes), the potential for sites would be expected to gradually fall off, to be rated as moderate near and within the LSA.

Physical Remains

From the ethnographic research, it is apparent that most implements used by past inhabitants of the study area were probably made of wood and bone with only a few stone components, due to the latter's lesser availability. Consequently, much of the tool kit would deteriorate relatively rapidly and only a few pieces of stone would survive over long periods of time. Since dwellings were reported to consist of wooden frames covered by caribou skins held down with rocks, physical remains would probably consist only of the circle of rocks. Hearths should be

identifiable. In this area, sites would likely be small, since they would result from family groups searching for individual or small groups of caribou dispersed in the forest.

Most early explorers recorded that the burial method of dealing with the remains of deceased persons was not used prior to the coming of missionaries. Bodies were traditionally left on the ground, often covered with skins, and certain goods were sometimes left near the body. Under those conditions, human remains would not survive long. Therefore, it is highly unlikely that human remains predating the late 1800s would be found. Burials dating to the 1900s may be possible, although it is expected that such would represent the rare occurrence of an isolated death on the trail.

In summary, the main types of sites to be expected in this study area are small, short term hunting and fishing camps. These sites could date as old as 7,000 years ago. They would be distributed on elevated terrain features near current or extinct water bodies. They could contain stone circles, hearths, cut timber in the case of more recent sites, and stone tools and/or remains of their manufacture. Because people were most likely traveling in small groups in the forest hunting occasional animals dispersed throughout the boreal forest, sites within the forest fringe are unlikely to contain evidence of repeated or long term use or use by large groups. More recent sites dating to the mining period as well as traditional hunting can also be expected.

ARCHAELOGICAL INVESTIGATIONS AND RESULTS

Archaeological field assessments were based on proposed development locations as depicted on maps received in June, 2005.

The facilities examined this season were:

- tailings containment area at Winter Lake including associated structures;
- alternative processing plant locations northeast and northwest of Winter Lake;
- alternative camp site locations north and west of Winter Lake;
- winter access route from Yellowknife;
- possible all weather road between the Ormsby deposit and the Nicholas Lake;
- a possible air strip on an esker along the southwest side of Giauque Lake, east of Winter Lake.

Ground level assessments were conducted wherever surface disturbance could be expected within those project components for which the locations were fairly well defined. This included some alternative locations for several facilities within the project area. The Ormsby mine area was assessed last season. All but the possible esker air strip were assessed to a full archaeological inventory and impact assessment level; the air strip location was subjected to a PFR to determine scope of further work that would be required if this became a certain project component.

Ground reconnaissance was completed by the three member field crew walking closely spaced transects ranging from 5 m to 25 m apart depending on the terrain and archaeological potential. Ground surfaces were carefully inspected, looking for any evidence of past human activity, examining any subsurface exposures, and completing shovel tests where deemed appropriate. Shovel testing was done where archaeological potential was considered good and where subsurface exposures were nonexistent or insufficient to permit proper assessment. Spacing of shovel tests was dependent on the size and potential of the area tested, and ranged between 3 m and 20 m apart. Shovel tests were approximately 40 cm square and depth varied with deposits, but the tests generally extended to bedrock or glacial till. In several areas with obviously shallow deposits, larger areas of surface vegetation were scraped back to expose thin layers of soil, usually on bedrock. Depth of shovel tests ranged between 5 cm and 30 cm below surface. Sediments removed from the shovel tests were sorted by hand and carefully examined, then replaced back into the test and covered over. For all remains of past human activity, basic recording was completed, including description of remains; GPS readings and photographs were taken. Only those sites considered to be over 50 years old and not related to industrial pursuits are mapped and recorded in sufficient detail for preparation of site forms for submission to the territorial inventory.

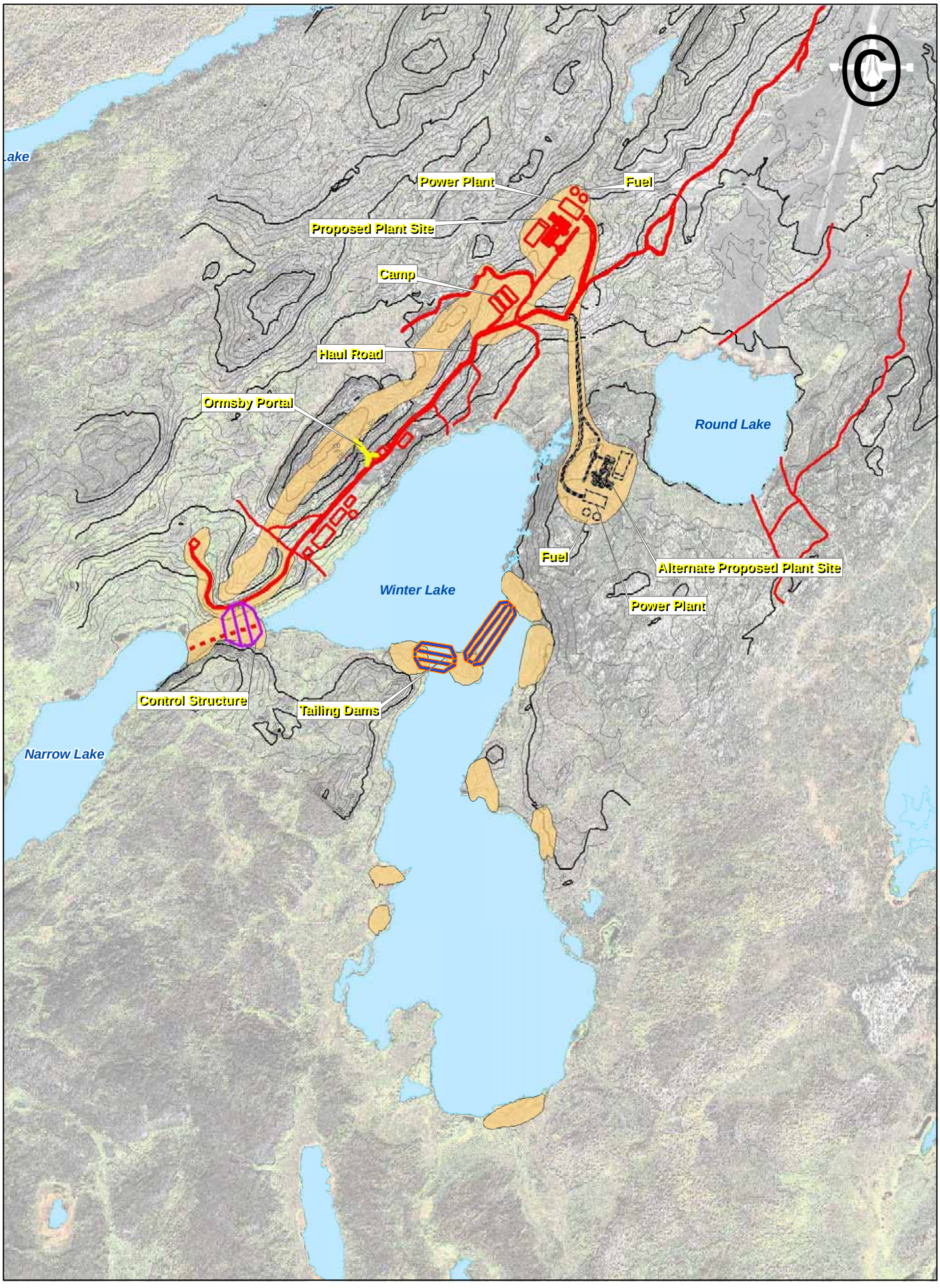
Alternative Processing Plant and Camp Facilities

The site plans used for this study showed several alternative locations for the camp, processing plant and power plant (Figure 4). These vicinities were assessed by the combination of general site investigations conducted in 2005 as well as 2004. This year, the elevated bedrock ridge between the camp and the mine was again subjected to pedestrian survey to make sure that it was covered thoroughly since it provided some archaeological potential, probably the best of any terrain features (outside of eskers) within the project study area. The surface of this ridge is irregular bedrock with thin sediment cover and scattered rocks and boulders. Visual assessments of the terrain between the existing camp and the mine resulted in no archaeological resources being observed, other than the scattered mining remains found on the bedrock ridge last year (see Prager 2005).

Examination of the alternative camp and plant locations to the north of Winter Lake, between the existing camp and Ormsby portal, found those areas to be heavily disturbed by bulldozer activity. These are in lower areas southeast of the ridge which is generally characterized by low lying muskeg, thus, archaeological potential is low. All exposed soil that had been turned over was closely inspected but no cultural remains were observed.

The alternative plant site east of Winter Lake (Figure 4) was visually assessed by a series of pedestrian traverses along the boundaries of the estimated extent and across the central area. This location is slightly northeast of the one tested last year (see Prager 2005) and is further from the upper terrain edge overlooking Winter Lake, in the interior of the landform. It is characterized by small bedrock outcrops, scattered boulders, and undulating, thick moss and lichen covered ground with frequent spruce trees, changing into black spruce bog toward the east (Photo 1). The combination of distance from any terrain edge or water body and the irregularity of the ground resulted in a rating of low potential for heritage resources. The visual assessment completed was judged sufficient work. The access road to this location from the existing main road was approximated and walked. This route crosses elevated irregular bedrock and then drops into periodically wet, black spruce muskeg and is generally judged low archaeological potential.

A proposed ancillary facility, the explosives magazine southwest of the mine, was also visually assessed and the approximate access route was walked. This is partly in the vicinity of the waste rock storage area examined in 2004 (see Prager 2005). The explosives magazine location is in low boggy ground with mostly spruce tree cover. The access route goes around an elevated bedrock outcrop, examined last year, to traverse generally low ground. There is no elevated terrain on the access route or within the magazine location, consequently, these facilities are situated in areas considered low archaeological potential.



LEGEND

- Winter Road Assessed
- Proposed Footprint
- Alternate Footprint
- Major Contours (10m)
- Minor Contours (2m)
- Ormsby Portal
- Control Structure
- Internal Dyke (Winter Lake)
- Archaeological Ground Reconnaissance Conducted

Base data sources:

Imagery Source: IKONOS (July 27th and August 2nd 2004.)
Landsat TM (August 11th 2001)

Water Features: Extracted from IKONOS imagery

NOTES

YELLOWKNIFE GOLD PROJECT

2005 Archaeological Reconnaissance of Proposed Project Facilities

PROJECTION: UTM Zone 12	DATUM: NAD83	EBA Engineering Consultants Ltd.
Scale: 1:10,000 (50 25 0 50 100 150 200 250 300 350 400 Meters)		
FILE No: B-Arch-004.mxd		DATE: May 19, 2006
JOB NO: 1740180	REVISION NO: 3	Figure 4
OFFICE: EBA-VANCOUVER	DRAWN: BGP / CHECK: GP	

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Photo 1. General vicinity of east alternative plant location (view south).

Photo 2. Winter Lake tailings containment area (view southeast).

Winter Lake Tailings Containment Area

The proposed Winter Lake tailings containment area was surveyed by a combination of aerial overflight, shoreline viewing by boat and ground reconnaissance. A pair of dams is proposed to cross the lake at the narrows in the northern third of the lake, in the area of an island (Figure 4). Two alternatives for the eastern dam were proposed, but since they are both within the tailings area to be assessed, it was not relevant to the archaeological survey design. A control structure is proposed at the western outlet toward Narrow Lake.

Helicopter overflight was completed of the full estimated extent of the tailings pond, based on the map received, using low and slow circles to identify possible areas of potential for heritage resources anywhere within the area to be flooded. An assessment of the shoreline was completed by cruising the full extent of the lake in a zodiac boat. Those areas identified as suggestive of some archaeological potential were then subjected to ground reconnaissance. These comprised all portions of the lakeshore that appeared to be somewhat elevated and, thus, presumably drier, as well as any bedrock outcrops within the estimated pond limits. The northwest side of the lake, adjacent to the Ormsby portal and road had been fully surveyed by pedestrian traverses last year (see Prager 2005).

The ground immediately surrounding the lake is characterized by a combination of low ground, often with wet sediments, a few limited areas of banks elevated ½ to 1 m, and some bedrock outcrops (Photo 2). The south portion is low and wet (with one small bedrock knoll some distance from the lakeshore) and increasingly higher terrain occurs towards the north. Bedrock outcrops occur adjacent to both the east and west sides, initially some distance back from the water but immediately adjacent in the northern third. The bedrock outcrops have irregular, undulating, rocky surfaces and, therefore, are not optimum site location features. This year, a total of eight sections of ground around the lake were surveyed by pedestrian transects (Figure 4). Theses areas included all bedrock outcrops within the estimated pond limits as well as any elevated bank sections that appeared relatively dry.

Three camps were located, all appearing to date within the past 10 to 30 years. These are situated at the eastern point where one alternative of the east dam is proposed, on the island which is also to form part of the dam and on a small point southeast of the proposed dam site. The first mentioned site has a brush tipi and outhouse, with some belongings still inside the tipi including a mattress and metal basin (Photo 3). Articles found at the site include a large piece of red carpet that appears to have been laid as a base for a canvas tent and lots of broken skidoo parts. Based on the expiry date of batteries found (1996), it is estimated that this site dates no older than 12 years.

The campsite on the island was found on the west side. It contains canvas tent fragments, aluminum pot, plate, dish, brown glass bottle fragments and cut wood poles (Photo 4). It likely

Photo 3. Winter Lake camp with brush tipi and tent platform in foreground (view south).

Photo 4. Camp remains on island in Winter Lake (view northwest).

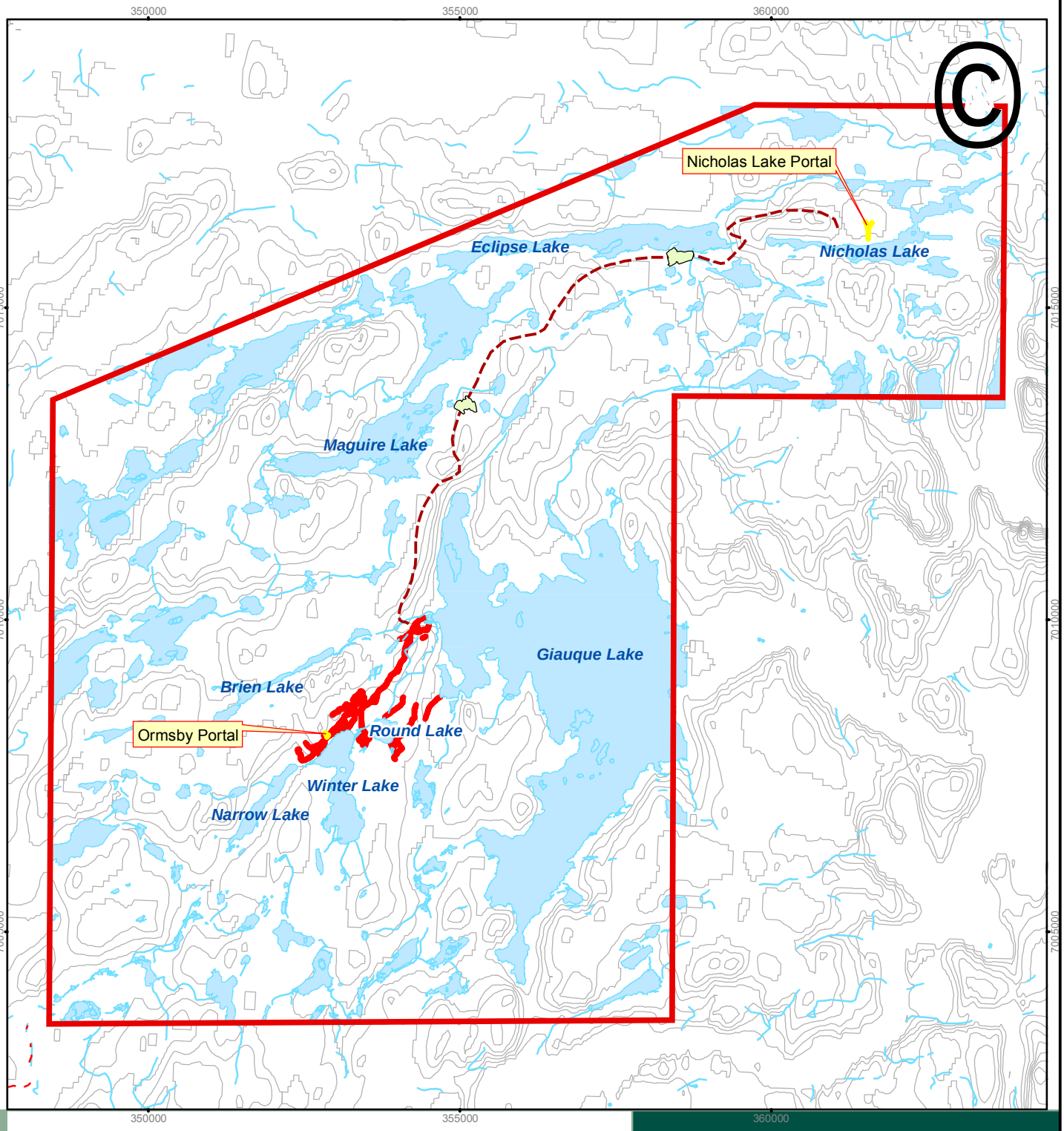
dates to within the past approximately 30 years. Along the north side of the island is an elevated, approximately level bank section of limited extent and this was tested with five shovel tests, extending between 10 cm and 30 cm below surface. No cultural remains were uncovered.

The third camp was located on the east side of the lake and was represented by a few tin cans, broken melamine plate and bowl, glass fragments from what may be a Coleman lantern, cut logs and a caribou pelvis (Photo 5). This site may date to within the past approximately 30 years. Some subsurface testing was conducted around the camp, flipping over sod in approximately a dozen locations and attempting several deeper shovel tests, but soil was quite water saturated. No remains were found other than the surface concentration.

The proposed control structure (dam) location at the outlet of Winter Lake was visually assessed. This vicinity has a couple of small bedrock outcrops on the southeast side, a high bedrock knoll on the northwest side, and the area between is low and wet adjacent to the small creek. The bedrock outcrops were examined and the remainder is rated as low potential for heritage resources. Last year, the remains of an old exploration camp were found in this general vicinity along the northwest shore of Winter Lake in this area (see Prager 2005). Nothing cultural was observed in 2005.

Proposed Road to Nicholas Lake

An approximate route for an all weather road was depicted on a vegetation map. This map and four GPS points from fisheries work were used to estimate the route location. This route was flown by low and slow helicopter overflight (Figure 5). Two areas were walked: 1. surface exposures on one esker deposit near Maguire Lake were carefully inspected; and, 2. just south of Eclipse Lake, a bedrock ridge was crossed by pedestrian transects; some shovel tests were placed in a small section with some sediments, and surface vegetation was scraped back in approximately ten locations, revealing shallow sand, gravel and pebbles. No cultural remains were found. Much of the vicinity of the route assessed is typified by irregular, rocky bedrock surface with little sediment and vegetation cover. The terrain along the west side of Giauque Lake exhibits comparatively high, irregular bedrock; along Maguire Lake, terrain is more even but quite rocky. Bedrock outcrops again increase in height toward Eclipse and Nicholas lakes, the section south of Eclipse Lake to the Nicholas Lake camp is rugged, irregular bedrock with boulders (Photo 6). The potential for heritage resources along this particular route is judged to be generally low. Although the exact route was not definitely identifiable on the ground, there is really not much variation in this general corridor and as long as there are no major route alignment changes, it is unlikely that there will be a significant change in the archaeological assessment. However, because the route was not finalized, final plans should be assessed by an archaeologist to confirm this.



LEGEND

- Local Study Area
- Winter Road Assessed
- Proposed Footprint
- 10m Contours
- Low Level Aerial Reconnaisannce
- Ground Reconnaisannce

Base data sources:

Water Features: Extracted from IKONOS imagery

YELLOWKNIFE GOLD PROJECT

Road Route Assessed between Ormsby and Nicholas Lake

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:90,000 (0 0.5 1 2 3 Kilometers)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-005.mxd		DATE: May 24, 2006
JOB NO: 1740180	REVISION NO: 3	Figure 5
OFFICE: EBA-VANC	DRAWN: BGP / CHECK: GP	

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Photo 5. Some camp remains on east side of Winter Lake (view west).

Photo 6. General terrain of northeast portion of road route to Nicholas Lake (view northwest).

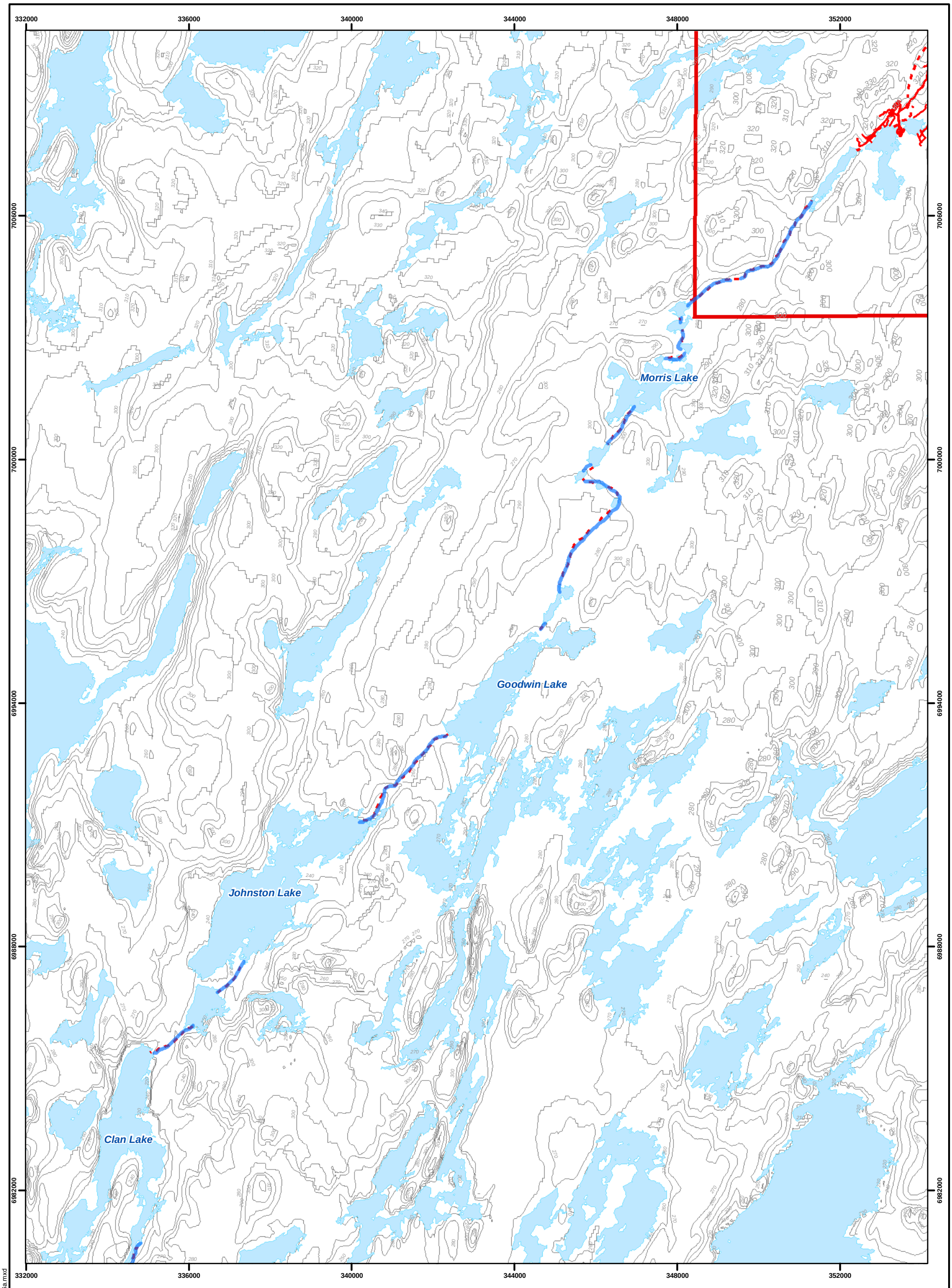
Winter Road from Yellowknife

The winter road to Yellowknife was obvious from the air, since it has been used repeatedly in the past. The route (Figure 6) was flown by low and slow helicopter to assess archaeological potential and to identify sections with sufficient potential to require ground level assessment. A range of types of terrain was selected for ground reconnaissance, with the emphasis on landscape features suggestive of at least moderate archaeological potential. Locations examined by pedestrian survey included those portions where the road crosses elevated landforms or parallels low elevated terrain such as esker deposits, medium bedrock ridges, as well as low lying comparatively level ground. High ridges were not subjected to ground reconnaissance since the chances for those terrain features to be affected by use of the winter road are judged to be very remote. This strategy provided a good sample of the range of terrain crossed by the winter road.

Since this is a winter road, the majority of the route is over water with only short portages between lakes. The overflight revealed that the land based portions of the winter road generally traverse low lying, often waterlogged ground between swamps, ponds and lakes. Due to the need to keep grades to a minimum, few elevated, dry landforms are directly on the route, but some do occur immediately adjacent. The southern portion of the route is suggestive of lower potential for archaeological resources, due to the fact that the relief increases heading south, to the point that bedrock ridges are very high and low ground between (on which the road runs) is characterized by muskeg. In the south half of the route, the road travels over largely waterlogged terrain. Throughout the length of the route, lake edges crossed by the road do not have elevated beaches, rather, they are characterized by gradual rises. With the exception of some small esker deposits crossed by the northern portion of the road, the potential for archaeological resources of the terrain directly affected by the road is deemed to be low.

Three sections of an esker complex within the southwest section of the project study area that is bisected by the road route were examined by pedestrian transects (Figure 6, Location 1). Exposures created along the road were closely examined as were any surface exposures scattered throughout the pine/aspen forest. Subsurface tests were completed where appropriate and comprised frequent scraping back of vegetation and, where possible, deeper shovel tests were dug, resulting in a total of approximately 30 subsurface tests. Soils ranged from mostly gravels to sandy in the southwestern portion of the landform. No cultural remains were found.

A little further south (Figure 6, Location 2) another sandy esker deposit was bisected by the road (Photo 7). The terrain feature is low in the southeast portion, rising toward the west. This is covered by open pine forest with little ground cover, thus, there was excellent surface visibility which was carefully inspected. Periodic subsurface scrapings were completed wherever possible. On the east portion, some platy/blocky quartz fragments were uncovered. The surrounding area was intensively tested, but no definite flakes were uncovered, in fact, no other



LEGEND

- Local Study Area
- Proposed Footprint
- Winter Road
- 10m Contours
- Aerial Reconnaissance
- Ground Reconnaissance

Base data sources:

Water features classified from Landsat 7 TM

NOTES

YELLOWKNIFE GOLD PROJECT

Archaeological Assessments of Winter Road to Yellowknife (Northern Portion)

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:90,000 (1 0.5 0 1 2 3 Kilometers)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-006a.mxd		DATE: May 24, 2006
JOB NO: 1740180	REVISION NO: 3	Figure 6a
OFFICE: EBA-VANCOUVER	DRAWN: BGP / CHECK: GP	

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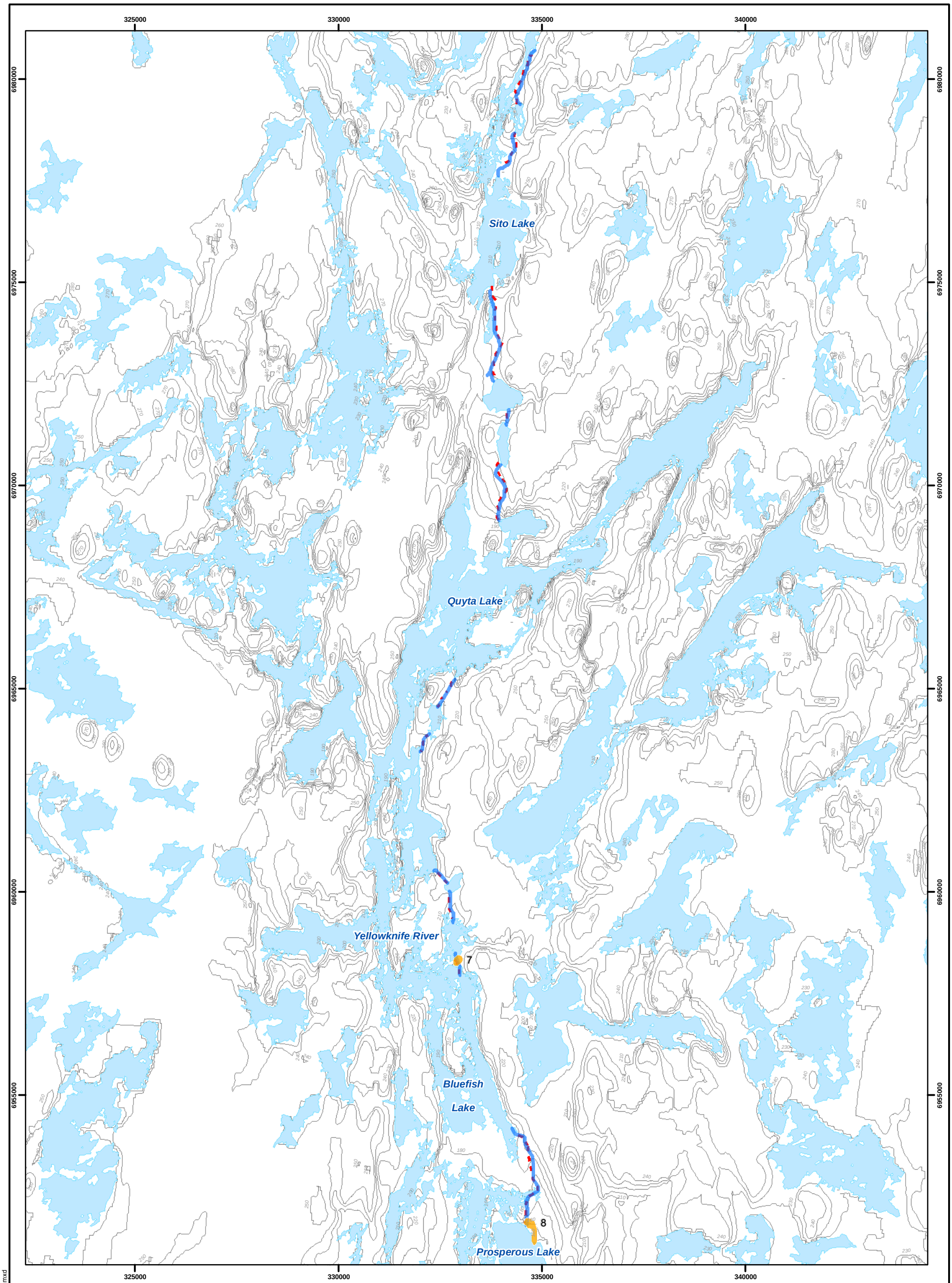

LEGEND

- Winter Road
- 10m Contours
- Aerial Reconnaissance
- Ground Reconnaissance

Base data sources:

Water features classified from Landsat 7 TM

NOTES

YELLOWKNIFE GOLD PROJECT

Archaeological Assessments of Winter Road to Yellowknife (Southern Portion)

PROJECTION: UTM Zone 12	DATUM: NAD83	Tyhee Development Corp
Scale: 1:90,000 (1 0.5 0 1 2 Kilometers)		EBA Engineering Consultants Ltd.
FILE No: B-Arch-006b.mxd		DATE: May 24, 2006
JOB NO: 1740180	REVISION NO: 3	Figure 6b
OFFICE: EBA-VANCOUVER	DRAWN: BGP / CHECK: GP	

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Photo 7. Small esker along north portion of winter road to Yellowknife (view west).

Photo 8. Section of winter road north of Morris Lake (view northwest).

quartz specimens were found. It was, consequently, concluded that these pieces were the results of natural processes.

A little north of Morris Lake, the road splits into two alternatives, both crossing the same small, low bedrock ridge. This ridge was walked (Figure 6, Location 3) and exposures created in both routes were checked. This feature is irregular bedrock outcrop with boulders; there is very little soil cover. Archaeological potential is low and no cultural remains were observed.

The next portage is at the north end of Morris Lake (Figure 6, Location 4) where the road runs along the base of a moderate bedrock outcrop (Photo 8). Exposures were checked and some subsurface testing and surface scraping up to 10 cm deep was conducted on a sandy end of ridge along the shore a short distance east of the road. The full length of this portage was walked and exposures along it were checked. No archaeological evidence was observed.

At the south end of Morris Lake, the road route passes between two bedrock outcrops, one of which forms a long finger into the lake (Photo 9). Both outcrops were examined by pedestrian traverses and exposures along the portion of road between them were inspected (Figure 6, Location 5). These features have undulating rock surfaces with frequent boulders. The only evidence of human activity observed was a claim post in a cairn (Photo 10).

From this point on, the terrain is characterized by increasingly higher and larger bedrock outcrops, and the road is situated in low ground between. All of the portage between Clan and Johnston lakes was traversed on foot (Figure 6, Location 6). This is essentially flat, but drier than most of the other portages in the southern section of the road. Exposures along the road edges were closely inspected and at a small bedrock outcrop, six shallow subsurface tests were completed. The surface of the outcrop was obviously rocky with some silt. The subsurface tests revealed much the same, silt and pebbles. At the base of the bedrock were the remains of a burned camp, comprising frying pan, doorknob and tin cans, obviously comparatively recent.

The portage in the north portion of Bluefish Lake goes over a small, narrow ridge and this section was examined on foot (Figure 6, Location 7). Sandy exposures within and along the road were examined and surfaces of adjacent, small bedrock knobs were also examined. No cultural remains were observed. A high bedrock ridge running along the east side of Bluefish Lake, adjacent to the road route, contains scattered cultural materials, all apparently comparatively recent, including a modern inukshuk and rocks laid out to form letters. These were only observed from the air, since the likelihood of conflicts with the road route well below the height is considered remote.

The portage from Bluefish Lake into the north end of Prosperous Lake is entirely on low, wet spruce bog. At the point of entry to Prosperous Lake the ground is again low and wet. Nearby, along the east shore there is much evidence of human activity: numerous camps, hearths, cut tent

Photo 9. Section of winter road south of Morris Lake (view south).

Photo 10. Claim post at south end of Morris Lake.

poles and a brush shelter (Photo 11). All camp remains are relatively recent. Close examination of the gravel banks, terrace cuts and surface exposures (Figure 6, Location 8) revealed no evidence of older occupations, although it is likely that this area has been used into the distant past. However, because this is some distance from the road which will be on the water, there is little chance of impact by the use of the winter road on this part of the shoreline. The south end of Prosperous Lake was not examined since there is a fully developed all season road and no new ground disturbance is anticipated.

In summary, no archaeological remains were found along the winter road route between the YGP and Prosperous Lake. Since this is winter road, the majority has been and will be on water and low lying ground. The typical terrain is either low and wet ground or high, rocky irregular bedrock, neither of which has good potential for archaeological resources. The lake margins are generally characterized by gradual rises out of water to become swamp and then muskeg which may or may not rise to become drier. Where there was originally hypothesized to be good potential, along the southern section which includes the Yellowknife River drainage, the terrain is very irregular and generally unappealing for human habitation. Only a few limited locations of landforms with moderate potential were observed and checked, and the best of these are in the northern part of the route, within or just outside the LSA. The only cultural remains observed appear to date no older than the past 10 to 30 years, quite likely related to the development and use of the original winter road to Discovery Mine. It appears that this route saw little use prior to that time other than occasional travelers passing through, and certainly, the terrain suggests little suitability for camps. The potential for encountering archaeological sites along the specific road route is considered low.

Photo 11. Brush shelter at Prosperous Lake.

Esker Airstrip

A preliminary field reconnaissance of a possible airstrip was requested on the same esker that was subjected to an overview assessment 2004 (see Prager 2005). This esker is east of Winter Lake and extends south from the main body of Giauque Lake (see Figure 2). The focus in 2004 was a potential borrow source at the very south end of the esker. In 2005, assessment of the central, wider part of the esker was aimed at providing some indication of the scope of work that would be required if it became a definite project component.

A low and slow helicopter overflight was completed of the portion of the esker identified as a possible airstrip, and several GPS readings were taken to enable ground level identification of the sections of interest. Those portions of the esker that had been identified on the map as within a potential airstrip location were examined to assess archaeological potential and to determine needs for additional work, should this become a component of the YGP. Some shovel testing was conducted at the south end of the area of interest, but the remainder was just visually assessed. No archaeological remains were observed.

The central section is broad and level and is suggestive of sufficient archaeological potential to require fairly intensive shovel testing. The southern end has moderate potential and additional subsurface testing is judged necessary. The north end is typified by irregular bedrock outcrops with boulders and is rated as low potential for archaeological remains. On an unconnected portion of gravel esker just to the northwest is an existing gravel pit in a portion of a high, level topped knoll. That area is also suggestive of sufficient potential to require shovel testing if it is to be used. A camp was identified on that point of land in 2004; in 2005, a screen structure associated with gravel extraction (Photo 12) was observed at the edge of the gravel pit and a log cabin was recorded in a nearby bay (Photo 13). These features are comparatively recent and both are most likely related to the mining activities.

Photo 12. Gravel sorting structure at Giauque Lake.

a. outside front view.

b. inside view.

Photo 13. Log cabin near gravel pit at Giauque Lake.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Archaeological assessments were completed in June, 2005 of the Yellowknife Gold Project infrastructure facilities locations as proposed at that time. Assuming the locations are not revised, project components considered fully assessed comprise:

- Ormsby mine and associated facilities including explosives magazine and waste rock storage area;
- Processing plant, power plant and camp for the Ormsby mine;
- Winter Lake tailings containment area and associated structures;
- All weather road route between Ormsby and Nicholas Lake mines;
- Winter road from Yellowknife.

Heritage resources identified in 2005 were all associated with hunting camps dating less than 50 years old. Three such camps were found on Winter Lake: two on the east shore of Winter Lake and one on the island in Winter Lake and one on Prosperous Lake. Two of the camps contained brush shelters. Although theses are very interesting as examples of the types of shelters and techniques of building shelters, all remains are comparatively recent. Consequently, no further work is recommended.

No archaeological remains were found. The archaeological potential of the specific areas that may be affected by the mine and camp facilities is rated as low due to the nature of the terrain, soils and vegetation. The winter road to Yellowknife is assessed as low risk to encounter archaeological resources as long as there are no significant deviations from the existing route that was assessed. If any gravel or fill is needed for this road, borrow sources will require assessment. Furthermore, any revisions of the route would require some level of further assessment. The major terrain features with archaeological potential in this area are eskers of which there are only a few of limited length. Any areas of newly proposed ground disturbance of the small esker deposits along the winter road or the eskers adjacent to Giauque Lake and Nicholas Lake should be assessed.

On the basis of documentary research, it was suggested that the Yellowknife Gold Project local study area lies between past preferred travel routes from Great Slave Lake to various points north. Field investigations conducted over the past two seasons appear to confirm this general premise. No archaeological sites were recorded, suggesting low levels of use of this specific area. The hypothesis that sites would most likely be occasional, small, short term hunting or fishing camps was also confirmed, but the fact that all such sites recorded appear to date within the past 50 years suggests that more intensive use of the area may be linked to the development of the original winter road to Discovery Mine. A higher potential for archaeological remains was originally suggested for the southern portion of the winter road to Yellowknife, since past use of the Yellowknife River drainage was recorded. However, the terrain observed in that area during

2005 field work is generally unappealing for human activities such as camping; consequently, potential for archaeological sites is considered lower than originally hypothesized. Therefore, although it is likely that people occasionally traveled the Yellowknife River drainage system (as noted by Franklin – see background section), they probably did not often stop in that relatively rugged section through which the winter road passes.

In conclusion, no further archaeological assessments are considered necessary of the specific project components examined over the past two seasons of field investigations, assuming no revisions from the locations as shown on maps included in this report. Any changes to the project infrastructure should be assessed for further field work requirements. Once the route for the Nicholas Lake all weather road has been surveyed and firmly delineated, it should be reassessed to determine whether any areas require field assessment. If any portions of eskers are to be used for any purpose, such as borrow material or air strip, further archaeological field assessment will be required.

Recommendations

1. It is recommended that an archaeologist review the final plans for the mine development and associated facilities to determine whether additional archaeological field reconnaissance is warranted.

2. Map assessments of any as yet unidentified facilities and access roads (for example, road around Winter Lake) or revised facility or road locations are recommended to determine if any additional field assessments are necessary.

3. Assessments of any revisions to the winter road to Yellowknife and/or any associated borrow sources are recommended.

4. If use of any portions of any eskers is proposed, either within the project area or along the winter road route, detailed field assessment is recommended. In particular, the portion of the esker proposed as a possible airstrip, once confirmed, will required further investigation. If the esker north of Nicholas Lake is to be used, the three previously recorded sites will require relocation and assessment.

5. If the existing gravel pit at Giauque Lake is to be used, a subsurface testing program is recommended once the boundaries of the area to be used are firmly identified.

6. Low level helicopter overflight of the final surveyed road route between Nicholas Lake and Ormsby is recommended to determine if additional ground reconnaissance is necessary.

7. It is recommended to request input from local First Nations groups regarding any traditional land use knowledge of areas used within the YGP study area. This will assist in evaluating and interpreting the results of the archaeological studies since only relatively recent remains were found.

8. It is recommended to incorporate into project/camp orientation sessions for all personnel and visitors some discussion of archaeological sites and the importance of not disturbing any features or artifacts, as well as procedures to follow if any archaeological sites or features are discovered during any project activities.

It must be emphasized that archaeological sites are protected by legislation (Northwest Territories Archaeological Site Regulations, The Territorial Land Use Regulations, Mackenzie Valley Land Use Regulations [MVLUR]), and removal of artifacts or disturbance of site features is prohibited. Furthermore, the Regulations state that no land use activity is permitted within 30 m of a known or suspected historical or archaeological site or burial ground (MVLUR, Sec. 6a). All personnel working on the Yellowknife Gold Project should be informed of these regulations and educated as to the importance of leaving artifacts and site features in place and undisturbed. Although no archaeological sites have been found within the currently proposed development footprint to date, recreational activities during camp residents' off work hours may extend into areas not assessed, that is, outside the development footprint, or expansion of the footprint may occur at some future time. Although considered unlikely within the currently proposed development footprint, if archaeological sites or human remains are encountered during any development related activity, all work in that area must cease and the Territorial Archaeologist of the Government of the Northwest Territories must be notified.

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