APPENDIX 8

CONTWOYTO LAKE
REMEDIATION PROJECT

ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA)

February 2013

ARCHAEOLOGICAL IMPACT ASSESSMENT

Contwoyto Lake Weather Station

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Submitted to:
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REPORT

Report Number: 12-1372-0037/ NAP 2012-008A

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Golder Associates

EXECUTIVE SUMMARY

During August of 2012 Golder Associates Limited (Golder) conducted an Archaeological Impact Assessment on behalf of SENES Consulting Limited working for Public Works and Government Services Canada and Aboriginal Affairs and Northern Development Canada in conjunction with a Phase 3 Environmental Site Assessment for the Contwoyto Lake Weather Station. The Contwoyto Lake Weather Station is located on the northwest shore of an unnamed island located approximately one third of the way up Contwoyto Lake and is approximately 330 km southeast from the Hamlet of Kugluktuk. All required field work was conducted under Nunavut Archaeologists Permit 2012-008A issued by the Department of Culture and Heritage, Government of Nunavut to Julie M. Ross of Golder.

All areas of proposed disturbance were surveyed for heritage resources. The ground cover in the project area is a mixture of bare ground and vegetation; areas of high potential with ground cover were shovel tested. During the survey attempts were made to locate material evidence associated with LiNt-1, a site recorded based on community consultation during a previous Archaeological Impact Assessment relating to the proposed Bathurst Inlet Port Road.

By conducting this Archaeological Impact Assessment, it is recommended that SENES Consulting Limited, Public Works Government Services Canada, and Aboriginal Affairs and Northern Development Canada have fulfilled the requirements of the current program in their attempts to identify the potential for impact to heritage resources resulting from the proposed remediation of the weather station. The study included the participation of Stanley Klengenberg from Kugluktuk who participated in identifying heritage resource sites and acted as a bear monitor.

The results of the Archaeological Impact Assessment included the identification of recent land use and more detailed documentation of LiNt-1. LiNt-1 was recorded in 2002 based on community consultation. It is recommended that LiNt-1 feature 1 and 2, which are approximately 60 m from the radio tower, be avoided. There are three areas with evidence of modern land use and these include the north peninsula, the area around the radio tower, and a hunting blind south east of the main weather station. It is recommended that the community be consulted about the significance of and treatment of these land use features.

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1.0 INTRODUCTION

During August of 2012, Golder Associates Ltd. (Golder) conducted an Archaeological Impact Assessment (AIA) of the Contwoyto Lake Weather Station (the Project) in the Kitkmeot Region of Nunavut, on behalf of SENES Consulting Limited (SENES) working for Public Works and Government Services Canada (PWGSC) and Aboriginal Affairs and Northern Development Canada (AANDC). All required field work was conducted under Nunavut Archaeologists Permit 2012-008A issued by the Department of Culture and Heritage, Government of Nunavut (Culture and Heritage) to Julie M. Ross of Golder.

The field study included pedestrian reconnaissance over areas with moderate to high archaeological potential with the spacing of the traversed varied depending on terrain. Areas that were assessed as having high potential that were covered by vegetation were subject to shovel testing.

The AIA was intended to identify any artifacts or heritage resource areas that might be impacted by remediation activities.

1.1 Location

The Contwoyto Lake Weather Station is located on the northwest shore of an unnamed island located approximately one third of the way up Contwoyto Lake. The weather station was constructed by Pacific Western Airlines (PWA) during Distant Early Warning (DEW) Line Site construction (WESA Inc. 2011). Construction possibly occurred in the late 1950s; however, no exact date is known. The landscape is relatively flat: the land forms around the weather station range in elevation from 450 to 460 m above sea level (ASL) (Figure 1, Plate 1). The weather station is located in the traditional territory of the Copper Inuit, possibly the Kogluktuaryumiut or Kilusiktomiut (Damas 1984). The current geopolitical boundaries place the site within the Nunavut Territory's Kitikmeot region approximately 330 km southeast from the Hamlet of Kugluktuk. The Project is on Crown lands; portions of the island are also Inuit Owned lands.

LEGEND

APPROXIMATE WEATHER STATION LOCATION

REFERENCE

TOPOGRAPHIC MAP 076/E, 076/F, 076K AND 076L OBTAINED FROM Canmatrix © 2009 2008, 1990 AND 1993. HER MAJESTY THE QUEEN IN RIGHT OF CANADA. DEPARTMENT OF NATURAL RESOURCES.
DATUM: NAD83 PROJECTION: UTM ZONE 12

PROJECT

AIA CONTWOYTO LAKE WEATHER STATION

TITLE

CONTWOYTO LAKE WEATHER STATION AIA STUDY AREA

Golder Associates

PROJECT	12.1372.0037.1000		FILE No.	12137200371000A001
DESIGN	JMR	24 Oct. 2012	SCALE AS SHOWN	REV. 0
CADD	DLM	06 Nov. 2012		
CHECK	JMR	06 Feb. 2013		
REVIEW	BM	06 Feb. 2013		

FIGURE: 1

\\golder.gds\CALIM\CAD\2012\1372\12-1372-0037\1000\Report_AIFig1_12137200371000A001_STUDYAREA.dwg Feb 06, 2013 - 9:55am

Plate 1: Overview of Contwoyto Lake Weather Station Project Area (photo SENES Consultants Limited)

1.2 Potential Impacts

The potential impacts to heritage resources around the Contwoyto Lake Weather Station are dependent upon the proximity of those resources to the remediation activities that will be conducted to remove the remnants of the former weather station site. Heritage resource sites are non-renewable resources that may be located at or near ground level or may be deeply buried. Prehistoric or precontact archaeological sites are those sites which contain features, artifacts, or ecofacts reflecting the use of a given land base by people prior to European influences and technologies. Features are non-portable articles that indicate a human modification of the local environment such as hearths, pits, tent rings, stone cairns, and Inuksuit. Artifacts are portable items that have been modified by people at some time in the past. These include such items as projectile points, stone flaking debris, and cut and modified bone. Ecofacts are naturally occurring items such as preserved plant remains or pollen that can aid in the interpretation of archaeological sites. Historic archaeological sites include the features, artifacts, and ecofacts relating to the past few hundred years of human occupation. These sites are typically identified by the presence of buildings or structural remains, but may include any site that has evidence of historic use of the landscape.

Alteration of the landscape can result in the damage or complete destruction of all or portions of historic resource sites. These alterations often involve the displacement of artifacts resulting in the loss of valuable contextual information or may involve the destruction of the artifacts and features themselves resulting in complete information loss. These losses are permanent and irreversible. Primary, secondary, and tertiary impacts are possible with any new development. Remediation can be considered a new development in this context if it impacts previously undisturbed areas during operation.

Primary impacts include those disturbances resulting immediately from a project. The primary impact zone is the area within the remediation footprint including access roads, temporary work zones, borrow pits, and dumps. Individual sites are likely to be affected to varying degrees if they are located within the development area. Artifact context is fundamental to interpretation of archaeological sites. By disturbing the context in which artifacts and features are recovered, interpretations of heritage resources sites and, ultimately, past lifeways are affected negatively.

Secondary impacts can occur when the support services or additional access required by development adversely affects heritage resources outside the primary target areas. The remediation project should have no secondary effect on heritage resources.

Tertiary impacts are the results of project induced changes in demography and land use patterns. Increased rates of intentional and unintentional impacts can be expected as a result of increased visitation to an area if a project were large enough to affect regional population bases. Tertiary impacts are anticipated to be very low for this project, especially because changes to the site through remediation will probably only negatively affect the visitation rates.

The study detailed in this report is intended to identify areas of possible impact and to determine whether the current proposed project will disturb those heritage resources located in proximity to the development.

1.3 Project Objectives

The objective of the Project is to ensure that heritage resources are not inadvertently impacted by the proposed clean-up and remediation activities. Specifically the purpose of this AIA is to:

- conduct a pre-impact assessment of the proposed remediation areas;
- identify any archaeological sites within proposed remediation areas (if present);
- make recommendations to Culture and Heritage, SENES, and PWGSC to mitigate or avoid those sites;
- make recommendations on surveillance and monitoring; and
- prepare a draft final report to be reviewed by SENES and PWGSC, followed by a final report for distribution as required and submission to Culture and Heritage.

2.0 PHYSICAL AND CULTURAL SETTING

2.1 Environmental Context

An understanding of past environmental conditions and the environmental factors that shape human approaches to subsistence and settlement patterns enables archaeologists to not only locate sites, but also to provide more accurate interpretations of individual sites. The physical aspects of the environs (topography, drainage, climate, and soils) as well as resource availability (flora, fauna, lithic materials, and water) are prime criteria for the identification of site location and function. Assessments of universal cultural activities related to site location, travel within and through variable terrain, and resource exploitation are key components of any archaeological site analysis.

Bostok (1970) classifies the Project area as the Kazan Upland Region, specifically the Bear Slave Upland, and characterizes by bare-rock numerous lakes and rounded rocky hills typical of the Canadian Shield. The area is

also part of the Barrenlands within a continuous zone of permafrost. The vegetation is classified as sub-arctic vegetation. The coastline predominately has low relief with occasional bedrock outcrops and cliffs, which would influence prehistoric settlement patterns. The inland topography is flat and low lying and is predominately overlain by glacial depositions as well as marine sediments as the result of the postglacial Tyrrell Sea. Since deglaciation at approximately 8,000 years before present (B.P.), the area has been uplifting. Much of the study area's topography consists of an extensive esker system.

The Barrenlands has been subject to climatic varation since occupation. The Holocene Thermal Maximum lasted from approximately 9000 to 3400 B.P., and was characterized by warmer than present temperatures (Kaufman et al 2004). However, within this time period there were climate fluctuations; with evidence of two cooler periods lasting between 5300 to 4600 B.P. and again between 4000 to 2000 B.P (Barry et al 1977; Jacoby et al 1985; Seppa et al 2003; Szeicz 1996.). During the intervening period, warmer temperatures persisted. Based on several pollen records (Nichols 1972; Ritchie 1984) there may have been another warm period from about 2000 to after 900 B.P., with a peak of the warmth centered at approximately 1500 B.P. A cold period registers from approximately 1,000 years ago to the twentieth century, with a relatively warmer period beginning at about A.D. 1700 (D'Arrigo et al 1992; D'Arrigo et al 1999).

The Arctic Barrenlands is the coldest of the Arctic regions in winter because it does not have the Arctic waters to moderate the cold's influence. Some of the highest wind chill factors have also been recorded from Barrenlands communities such as Baker Lake and Chesterfield Inlet. The cold temperatures and distance from open water sources probably explains why there is less snow in the Barrenlands of Canada than the Arctic islands. Like the other regions of the Arctic, ice along the Barrenlands' northern coast does not clear until August. Spring and summer are dynamic times owing to changes in the pressure systems; the Barrenlands in particular is more influenced by westerly currents from the Pacific than other areas in the Canadian Arctic. Average precipitation for the Barrenlands is between 20 and 30 cm a year and most falls in late summer and early fall; almost half of this occurs as rainfall. The July average temperature along the coastal Barrenlands is about 7.5°C (Phillips 1990). The terrestrial animals ranging throughout the Barrenlands include Barrenground caribou, grey wolf, Arctic fox, red fox, grizzly bear, wolverine, ermine, least weasel, mink, Arctic hare, and brown lemming. Musk-oxen are present throughout most of the Barrenlands. Black bear and woodland caribou can be found in the westerns portion of the Barrenlands. Moose are found in pockets of the more south eastern portion, and more extensively in the southwest. Marten, northern red backed vole, ground squirrel, and meadow vole are present in the more southern portions (Anand-Wheeler 2002; GNT 2005).

2.2 Heritage Resources

Archaeology is the study of human history through the material remains of culture, often referred to as heritage resources. The ultimate goal in archaeology is to describe the cultures and events responsible for the creation and deposition of the remains at a given archaeological site. As such, archaeologists use material remains to determine the nature and age of cultural occupations at a site. Artifacts, ecofacts, and features deposited into the natural environment, along with their inter-relationships, are the integral parts that make up an archaeological site.

Predating the arrival of Europeans, precontact archaeological sites are comprised of artifacts, features, and residues of native origin typically characterized by modified bone and stone, and stone structures. Historic sites are those structures, features, and objects of European influence that date to as early as contact with the Europeans but can also represent more recent activity of more than 50 years. Depending on the context, sites

less than 50 years old may be considered to represent traditional land use and are identified to document continued use and occupation of an area to the present time. A key component of the historic period record are the sites, artifacts, and affiliated resources relating to post-contact Aboriginal people's use of the landscape. These include both archaeological sites and objects such as standing and collapsed cabins, campsites, graves, and traditional sites and resources, such as special places, hunting and plant collecting areas, traplines and their associated remains, oral traditions, and documents. These latter resources are usually identified through consultation procedures such as Traditional Use Studies (TUS), Inuit Qaujimajatuqangit (IQ) or other forms of community consultations.

Heritage resources are non-renewable and are susceptible to alteration, damage, and destruction by construction and development activities. The value of heritage resources cannot be measured in terms of individual artifacts or biological specimens; rather the value of these resources lies in the integrated information which is derived from the relationship of the individual artifacts and fossil specimens, associated features, spatial relationships (distribution), and contextual situations. Interpretation of heritage resource materials, and the ability to interpret the significance of particular sites in a landscape, is based on an understanding of the nature of the relationship between individual archaeological and palaeontological materials, as well as the sediments and strata within which they are contained. As such, removal or mixing of cultural or fossil bearing sediments results in the permanent loss of information basic to the understanding of these resources.

Tundra areas north of the tree line are characterized by extremely slow rates of soil development and sediment accumulation. Accordingly, at repeatedly occupied sites, there is little chance of distinguishing occupations relating to different periods within the 5,000 year record of human occupation in the region without recovering a diagnostic indicator. Some areas of high sediment deposition rates are present within the study area, but these are not the typical scenario.

The lack of temporally diagnostic artifacts, the absence of materials suitable for radiocarbon dating, and the natural mixing of shallow archaeological deposits serve to limit the definition of the recognized prehistory for the region. In contrast, extant documents, records, and oral testimony provide a firmer basis for understanding the historic period of the region.

2.2.1 Cultural Chronology

A brief outline of the regional culture history can be summarized as a result of the archaeological work conducted in the study region since the mid-twentieth century. It should be noted that throughout the millennia, peoples who lived in the Barrenlands relied almost exclusively on caribou for subsistence. The annual migration patterns of these animals would dictate the seasonal rounds of the highly mobile hunting and gathering populations that inhabited the region. Specifically, caribou migrate cross Contwoyto Lake in July, April, and May; the lake is also used for fishing, trapping, and opportunistic hunting of wolves, wolverines, and grizzly bears (Reiwe1992).

Occupation of the Barrenlands of Nunavut began shortly after the recession of the glaciers approximately 9000 B.P. The Tyrrell Sea occupied lands boarding the current extent of the Hudson Bay until approximately 5000 B.P. (Canadian Museum of Civilization 2005). The earliest recognized archaeological tradition is Northern Plano (8000 to 6500 B.P.), which is characterized by projectile points similar in form to Agate Basin points found in the plains of North America (Gordon 1996, 219). These long lancelate points with tapered and ground bases were manufactured largely out of quartzite. Radiocarbon dates from the Migod site (KkLn-4) on

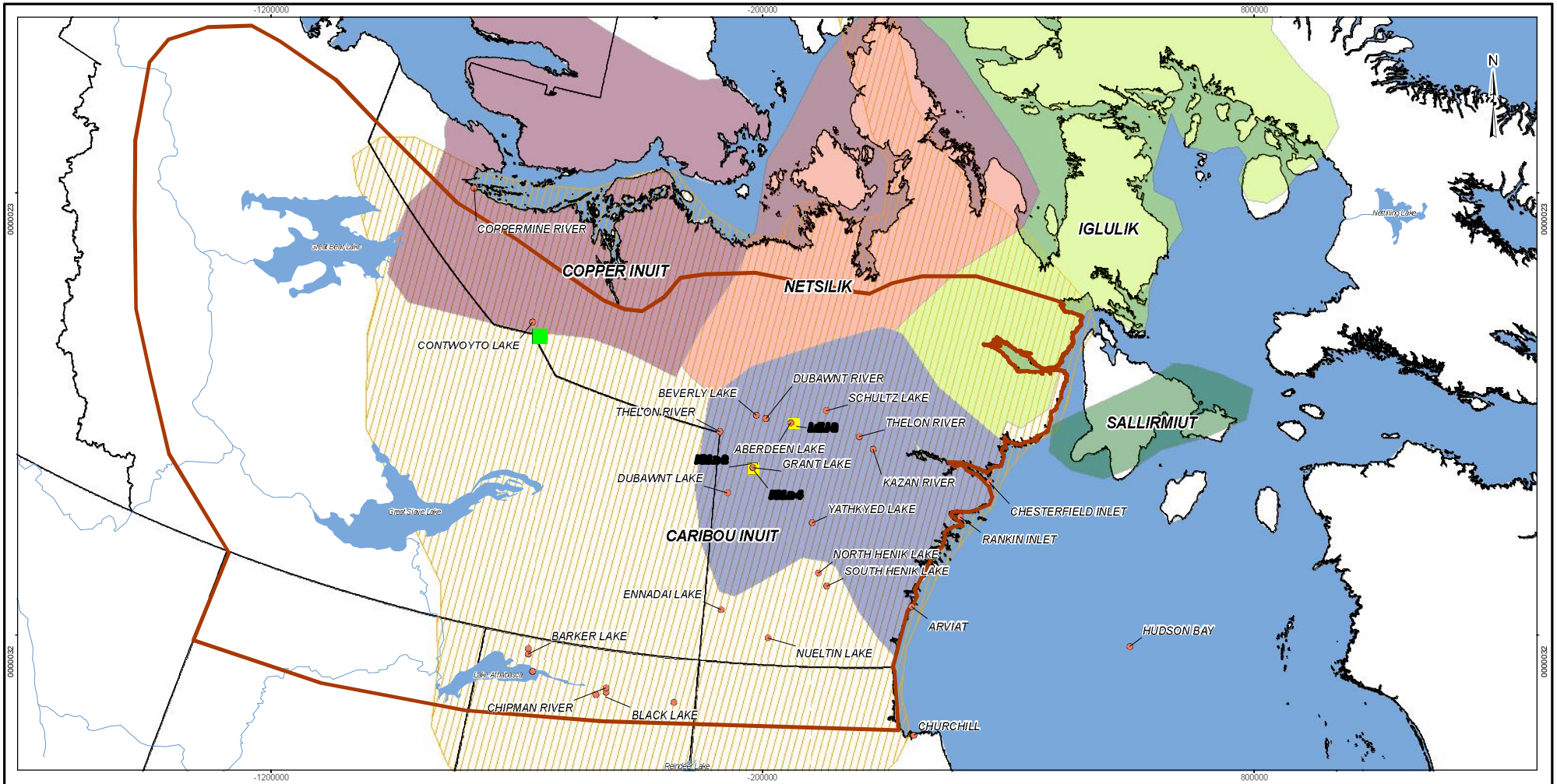
Grant Lake suggest that Northern Plano dates from at least 8000 B.P. (Gordon 1975). The concentration of Northern Plano materials on Grant Lake further suggest the Dubawnt and Thelon Rivers were major caribou migration corridors exploited by Northern Plano peoples (Gordon 1996, 219) (Figure 2).

Approximately 6,500 years ago, Northern Plano evolved into Shield Archaic (6500 to 3500 B.P.) (Gordon 1996, 199). This cultural development coincided with a warming period that resulted in the expansion of the boreal forest as far north as Dubawnt Lake. Projectile points were also manufactured primarily out of quartzite, but differed from the preceding Northern Plano Tradition in that they were "side-notched lance heads with ground, rocker [convex] bases" (Gordon 1996, 201).

The Shield Archaic Tradition was followed by the Pre-Dorset Tradition which lasted from approximately 3450 to 2650 B.P. (Gordon 1996, 149). Pre-Dorset is part of the Arctic Small Tool Tradition (ASTt), well known in the high Arctic. The migration of these early Pre-Inuit groups corresponded with a cooling trend that adversely affected maritime hunting. As a result, these arctic-adapted people were forced further south in their quest for food. They were able to exploit migrating caribou herds on the Barrenlands as a result of the southward retreating forest edge. The Pre-Dorset Tradition is characterized archaeologically by very small, finely retouched tools manufactured from fine grained, banded chert. Distinct tools include end and side blades used for harpoons and arrows, burins, and microcores. Pre-Dorset sites found on Victoria Island and south on the main land are also known for the use of larger coarser grained pinkish quartzite (Brink 1992; Taylor 1967, 1972; Seip 2012).

The Taltheilei Tradition is the latest precontact archaeological culture identified in the study area, and dates from approximately 2600 to 1200 B.P. (Gordon 1996). People representing this tradition moved into the region from the west after the preceding cooling period ended and are generally regarded as ancestral Dene. The material culture of the Taltheilei Tradition is characterized by a continuum of lancelate and notched points, distinct discoidal hide-working tools known as chithos, and a variety of scraping tools. This archaeological culture has been divided into three Periods based on projectile point style: the Early Period (2600 to 1800 B.P.) characterized by long stemmed points; the Middle Period (1800 to 1300 B.P.) by unshouldered lancelate points; and, the Late Period (1300 to 200 B.P.) by small side and corner-notched points (Gordon 1996).

The precontact origins of the Copper Inuit ultimately lie in the Thule Tradition, which spread across the central and eastern Arctic approximately 750 B.P. (McGhee 2009). Technologically and social they are similar to pan Inuit groups across the Arctic and their Thule ancestors. Thule are traditionally known for their bone and antler technologies, as well as a ground stone slate technology. Inuit sites, which are characterized by stone features including Inuksuit, tent rings, caches, hunting blinds, and kayak stands (Friesen 1989, 4.7). As opposed to many of the more eastern groups, Copper Inuit had easier access to soapstone, wood, and copper. It was the access to firearms which permitted year round caribou hunting, more than fluctuation in territory of more southerly First Nations groups which is cited as the cause for an increase of inland adaptation away from a costal adaptation (Damas 1984).



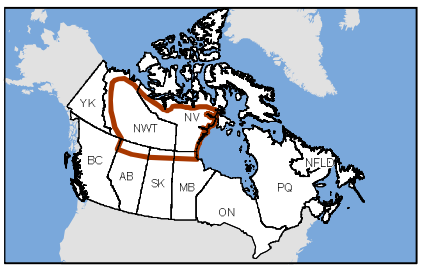
LEGEND

- ARCHAEOLOGICAL SITE
- PLACE NAME
- STUDY AREA
- WATERCOURSE
- WATERBODY

CULTURAL AREA

- IGLULIK
- CARIBOU INUIT
- COPPER INUIT
- NETSILIK
- SALLIRMIUT

- APPROXIMATE OUTLINE OF BARRELANDS
- KAZAN REGION
- PROVINCIAL BOUNDARY



250 0 250
SCALE 1:7,750,000 KILOMETRES

NOTE

BOUNDARIES ARE DIGITIZED AND MAY BE APPROXIMATE.

REFERENCE

CULTURAL AREAS DIGITIZED FROM DAMAS, DAVID (ED) HANDBOOK OF NORTHERN AMERICAN INDIANS. PHYSIOGRAPHIC REGIONS OF CANADA DIGITIZED FROM BOSTOCK, H.S. 1970. PLACE NAMES OBTAINED FROM GEOBASE®. ARCHAEOLOGICAL SITES DIGITIZED FROM GORDON, B.C. 1996
DATUM: NAD83 PROJECTION: UTM ZONE 14

PROJECT: SENES CONSULTANTS LTD. CONTWOYTO LAKE WEATHER STATION REMEDIATION AREA AIA NUNAVUT

TITLE: **CULTURAL HISTORY PLACE NAME OVERVIEW**

Golder Associates

PROJECT	12-1372-0037	FILE No.		
DESIGN	JR	19 Oct. 2012	SCALE AS SHOWN	REV. 0
GIS	HP	20 Nov. 2012		
CHECK	JMR	31 Oct. 2012		
REVIEW	BM	31 Oct. 2012		

FIGURE: 2

17300 2731- 21 2731- 21 21021

2.2.2 Historic Inhabitants and Heritage Studies

Early European exploration of the area of the Barrenlands now known as Nunavut began with the establishment of fur trade posts on the western shore of Hudson's Bay in 1670. The travels of Samuel Hearne from Fort Prince of Wales to the mouth of the Coppermine River between 1769 and 1772 (Tyrrell 1911) are well documented. However, the first scientific exploration of the Barrenlands would not occur until the expedition of James Tyrrell of the Geological Survey of Canada (Tyrrell 1898). In 1893 Tyrrell travelled north from Lake Athabasca, eventually ascending the Dubawnt River to the Thelon River, then eastward through Aberdeen and Baker lakes to Chesterfield Inlet. In 1900 Tyrrell embarked on another expedition, this time travelling eastward from Great Slave Lake along a series of rivers and lakes to the Thelon River, then on to Chesterfield Inlet. David Hanbury (1900; 1903) also explored and mapped the rivers of the Barrenlands at the turn of the century in two separate expeditions. He travelled westward through the region by canoe in 1898 to 1899 from Chesterfield Inlet, along the Thelon River to Great Slave Lake. In the second expedition of 1901, he travelled eastward along a similar route, this time embarking from Great Slave Lake. Stefánsson's exploration (1910-1911), the Canadian Arctic Expedition (1914-1917) and trade goods associated with trading posts and trading ships during the 1920s were the main caused of social, economic, and technological changes (Damas 1984). In 1922 Knud Rasmussen entered the region as part of the Fifth Thule Expedition (Rasmussen 1926). Members of his party travelled inland from Chesterfield Inlet to Baker Lake, then south along the Kazan River to Yathkyed Lake to conduct geographic and ethnographic research. By this time changes in the traditional life ways were changing; the inland was being occupied all year round and summer rather than winter trips were made to the sea (Damas 1984). More change occurred in the 1950s when concentration into communities (Coppermine/Kuglulktuk, Cambridge Bay, and Holman) occurred. The cause of concentration varied; wage labour associated with the DEW Line Site at Cambridge Bay; decline in caribou populations, instability of fox prices associated with the fur trade and amenities offered in communities all contributed (Damas 1984).

One of the earliest archaeological assessments of the Nunavut Barrenlands began with artifact collections by the Moffat Canoe expedition of 1955 (Harp 1959). Members of the expedition travelled from Black Lake, Saskatchewan, along the Chipman and Dubawnt rivers to Baker Lake. A total of nine archaeological sites were recorded south of Aberdeen Lake along this route. This expedition was followed by an archaeological survey conducted by Elmer Harp in 1958 along Beverly, Aberdeen, and Schultz lakes, as well as the lower Thelon River (Harp 1961). A total of 42 new sites were recorded as a result of this survey and Harp proposed the first culture history of the region based on the data obtained from these sites. Subsequent research by Irving (1968) on the Upper Kazan River and in the North Henik and Dubawnt Lake areas would result in a revision of Harp's proposed cultural chronology.

Archaeological investigations continued in the region in the 1970s with more controlled excavations conducted at a number of sites first recorded by Harp. Wright (1972a, b; 1976) excavated at the Aberdeen (LdLl-2) and Grant Lake (KkLn-2) sites, while Gordon (1976) conducted excavations at the Migod (KkLn-4) site located north of Dubawnt Lake (Figure 2). These multi-component sites were significant in further refining the continuum of precontact occupation in the region. Additional surveys were also conducted by Gordon (1974) in the vicinity of the Baker Lake settlement where five of Elmer Harp's sites were revisited and four new sites were recorded. While in the Copper Inuit territory but associated with the Arctic Archipelago, Taylor (1967, 1972) and McGhee (1971, 1972) conducted some of the earliest studies.

2.2.3 Pervious Heritage Studies

It was not until the 1980s that archaeological sites were recorded near Contwoyto Lake (Table 1). In the 1980 and 1990s Morrison, Gordon, and Fitzpatrick conducted research in the area; the remaining archaeological studies have been associated with impact assessment associated with development. The sites are associated with Prehistoric and Indigenous historic periods only two specific cultural affiliations have been assigned one is a possible Northern Plano affiliation and the other is associated with Inuit. Tent rings and lithic scatters are the most common site types; however, cabins, cairns, hearths, inuksuit, and hunting blinds have also been recorded.

LiNt-1 is the only archaeological site recorded on the same unnamed island as the Contwoyto Lake Weather Station. The site was originally recorded by David Blower under 2002-035A in association with Kugluktuk Elders' contribution and site visists to the Bathurst Inlet Port Road (BIPR) Project (Blower 2003:40). The site is described as a large gathering place and campsite used by Inuit families at Christmas and in the spring. This information was provided by Josheph Niptanatiak who also indicated there would have been tents all over the north shore of the island and dogs tied up along the west shore at gathering times.

Table 1: Archaeological Research Conducted in Project Area

Year of Archaeological Investigation	Investigator	Project
1981	D.A. Morrison (Canadian Museum of Civilization)	Excavation of two Thule sites in the western Coronation Gulf
1985	B. C. Gordon (Canadian Museum of Civilization)	Archaeological Investigations on Burnside River downstream from Kathawachaga Lake
1993	Eric Damkjar (ERD Heritage Consulting)	Metal Mining Corp., Izok Development, Heritage Resources Impact Assessment
1996	Patricia Fitzpatrick (University of Waterloo)	Esker Habitat Characteristic and Traditional Use Study in the Slave Geological Province
1996	Gloria Fedirchuk (FMA Heritage Resources Consultants Inc.)	Lytton Minerals Jericho Project Heritage Resource Inventory
1999	Gloria Fedirchuk and Wendy Unfreed (FMA Heritage Resources Consultants Inc.)	Tahera Corporation Contwoyto Pipe Archaeological Impact Assessment
2001	Gloria Fedirchuk (FMA Heritage Resources Consultants Inc.)	2001 Bathurst Road Project
2002	David Blower (FMA Heritage Resources Consultants Inc.)	2002 Bathurst Road Project
2008	Gabriella Prager (Points West Consulting)	2008 Izok Project

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3.0 METHODOLOGY

3.1 Field Inventory and Assessment

Archaeological field studies are conducted with the intent of identifying significant heritage and cultural resources that might be affected by the Project. Locations identified for assessment are investigated using a combination of surface and subsurface investigation techniques. Surface techniques include pedestrian reconnaissance of areas that are not water saturated or poorly suited for occupation, and visual inspection of any fortuitous subsurface exposures that might be present. Subsurface techniques include placement of shovel tests or test units in area assesses as having high archaeological potential and covered by vegetation

Site evaluation is based on assessment of physical attributes, including site size, depth and character of deposits, assemblage density, and diversity and current condition. Consideration is also given to traditional significance reported by local community representatives assisting on the project, to cultural historic context, and to relative frequency in the region. Sites or areas of traditional significance that are not considered archaeological sites are also recorded in detail. These results are included in written submissions to Culture and Heritage as required by the permit to conduct the AIA.

3.2 Heritage Feature/Structure Evaluation

Evaluations of heritage features and standing structures are completed for features/structures that are observed during the investigations. These evaluations consider perceived heritage resource value and community cultural value as well as the predicted impact from the proposed program. In general, disturbed sites with limited cultural remains would be assigned lower archaeological resource values than undisturbed sites, large sites with large amounts of cultural material, complex sites, and multicomponent sites. Undisturbed multicomponent sites would generally be assigned the highest heritage resource value.

Community input plays a role in the evaluation of site value and the inclusion of a member of the local community on the field crew when possible aids discussions regarding site significance.

3.3 Reporting and Conservation

Analysis of collected artifacts includes consultation with a professional conservator regarding specific conservation requirements and cleaning, cataloguing, identification, inventory, and description of each individual piece for inclusion in the final report. GPS site information is provided to Culture and Heritage and the Canadian Museum of Civilization for archival purposes and is used for mapping features and important aspects of each identified site, but is not included in the final versions of the report. Archaeological site maps and photographs are prepared as digital files. Based on the cultural material collected and site observations, a recommendation regarding final site disposition relative to future projects is made.

Upon completion of the field components, a final permit report on the archaeological studies is prepared on behalf of SENES for review by Culture and Heritage. This report includes a Project description, environmental setting, cultural and archaeological context for the Project area, field methodology, and the results of the field reconnaissance. All identified sites are documented on appropriate site inventory forms.

In general, the following recommendations are employed:

- Avoidance is recommended, if feasible, at all archaeological sites.

- Documentation is undertaken as a mitigative option of sites, as a method of protecting the heritage resource from future undocumented impacts due to increased personnel activity in the vicinity.
- Sites at immediate risk of disturbance, or if the location of a site conflicts with project cleanup activities, (depending on their scientific significance) sites will be photographed, mapped, and test excavations conducted and collections made if warranted.

3.4 Community Consultation

Consultation regarding the Contwoyto Lake Phase III Environmental Site Assessment is scheduled for January 2013; consultation will happen with the community of Kugluktuk. During the permit application process the community was consulted by means of letter from the Permit Holder and the Inuit Heritage Trust Incorporated (IHTI) was in contact with the community. Copies of permit reports are typically submitted to the hamlet(s) situated closest to the Project.

4.0 RESULTS

A draft report on the AIA was prepared upon completion of the field component. This draft permit report will be forwarded to SENES for review and then finalized for submission to Culture and Heritage for review. The report includes a Project description, describes the environmental setting, the historical and archaeological context for the Project area, field methodology, and the results of the field reconnaissance. The report also includes descriptive data on the sites and features identified, as well as detailed information on the nature, content, and significance of features identified. No cultural material was recovered; however, recovered artifacts are typically inventoried, described, and discussed within the report text to aid in evaluation of scientific and interpretive value. All identified sites have been documented on appropriate site inventory forms.

If required, a summary of the findings will be prepared for inclusion in a screening document.

The following workplan was followed:

- Avoidance has been recommended where feasible at all sites assigned high archaeological resource value
- Collection and documentation has been undertaken as a mitigative option of sites with low archaeological resource value and as a method of protecting the heritage resource from future undocumented impacts due to increased personnel activity in the vicinity.
- Acceptable methods of mitigation were discussed with Culture and Heritage and the Territorial Archaeologist, and may lead to a recommendation for detailed mapping, collection, and/or test excavations at those sites assigned high archaeological resource value that cannot be avoided by the reclamation project.

A management plan for required mitigation, monitoring, or surveillance relative to the proposed remediation will be developed as part of the contracted services deliverable to PWGSC. This includes site mitigation, additional survey of any project re-locates required due to site avoidance, and verification of those heritage sites located outside the proposed development activity area that should remain outside re-located areas.

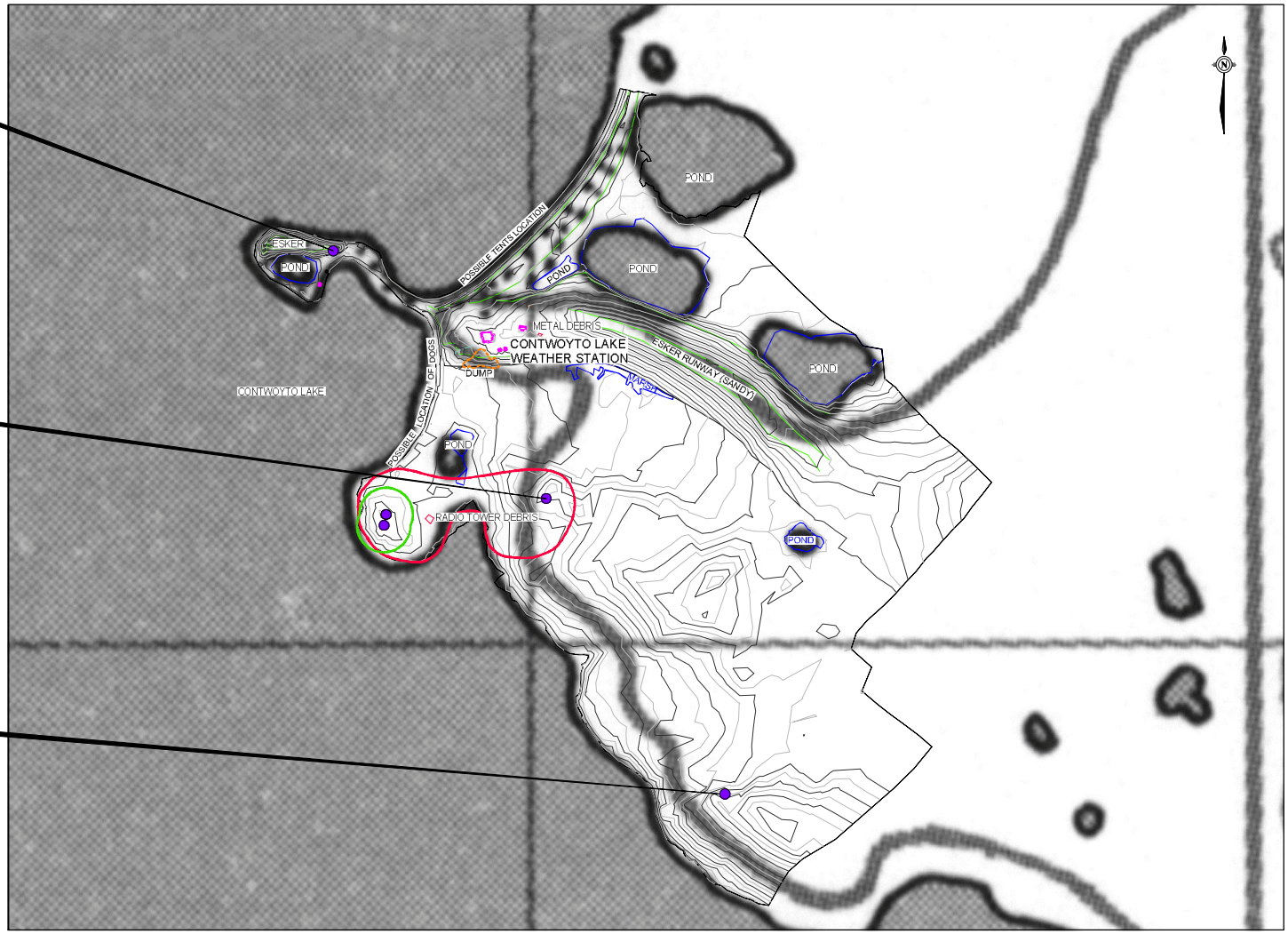
4.1 Heritage Resource Sites

During the survey of the Project area and surrounding area no previously unrecorded archaeological sites were recorded. However one previoulsy recorded site, LiNt-1, was revisted and three land use site were also documented (Figure 3). Documentation requirements, as outlined in the *Nunavut Archaeological and Palaeontological Sites Regulations* were followed (Government of Nunavut 2003).

DOG TIE OUT 1

DOG TIE OUT 2

HUNTING BLIND



LEGEND

- ARCHAEOLOGICAL / LAND USE SITE
- ARCHAEOLOGY SITE BOUNDARY
- BUILDING
- CREST
- DUMP
- INUIT LAND USE DEBRIS AREA
- METAL DEBRIS
- POND / MARSH

REFERENCE

TOPOGRAPHIC MAP 76E/8, OBTAINED FROM CanMatrix. © 1980 HER MAJESTY THE QUEEN IN RIGHT OF CANADA, DEPARTMENT OF NATURAL RESOURCES. ALL RIGHTS RESERVED.
DATUM: NAD 83 UTM ZONE 12.
DWG FILE OBTAINED FROM OLLERHEAD & ASSOCIATES LTD. PROJECT NUMBER: 12-40-DC

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SCALE METRES

PROJECT
AIA CONTWOYTO LAKE WEATHER STATION

TITLE
AIA OVERVIEW MAP - ARCHAEOLOGY/LAND USE SITES

Golder Associates

PROJECT	12.1372.0037.1900		FILE No.	12137200371900A001	
DESIGN	JMR	20 Nov. 2012	SCALE	AS SHOWN	REV. 0
CADD	AW	30 Nov. 2012			
CHECK	JMR	06 Feb. 2013			
REVIEW	BM	06 Feb. 2013			

FIGURE: 3

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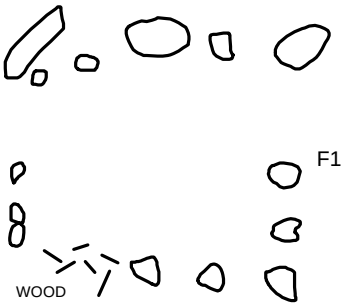
4.1.1 LiNt-1

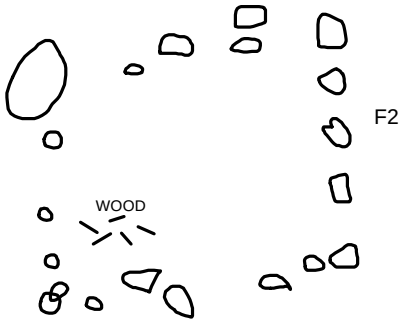
LiNt-1 was recorded as a large gathering place and campsite used by Inuit families at Christmas and in the spring. This information was provided by Josheph Niptanatiak who also indicated there would have been tents all over the north shore of the island and dogs tied up along the west shore at gathering times (Blower 2003:192). Blower visited the island with the Elders; however no archaeological features are mentioned.

During the revisit possible dog tie outs were located in two locations: one is near the current HTO cabin; the second is south of the weather station buildings and east of the radio tower (Figure 3). There are also two square stone arrangements located south of the weather station buildings and west of the radio tower (Figures 3 and 4; Plates 2 and 3). Feature 1 is 2.4 m by 3.2 m and feature 2 is 3.7 m by 3 m. There is a claim tag (Post 3 No. 112080) next to the stone features. While no records for this claim tag could be located, claim tag 112082 was used in 1958. It is assumed that tag 112080 was used around the same time (Personal communication R. Greening 2012).

Debris is scattered over a large area, however, between the square stone features and dog tie out 2 (Figure 3) there is a concentration which could be associated with recent Inuit occupation of the area and trade with weather station staff; as opposed to being purely associated with the use of the weather station. The debris consists predominately of metal and animal bones (Plates 4 to 8). The debris is recent and not assessed as being archaeological or related to use by a specific cultural group.

An intensive surface search of northern portion of the island close to the weather station was conducted to locate evidence of tents mentioned by Josheph Niptanatiak (Blower 2003). There was no clear evidence of the tents, which is not surprising since the tents may have been set up in the spring and winter while snow cover was present. The snow cover may have also necessitated the use of snow blocks being used as opposed to stones for the tens. In addition, there is evidence of ice push along the island's north coast and this activity may have removed evidence of past use (Plate 9).





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SCALE METRES

LEGEND

F FEATURE
STONE
WOOD

PROJECT
AIA CONTWOYTO LAKE WEATHER STATION

TITLE
LiNt-1 FEATURE MAP

Golder Associates

PROJECT	12.1372.0037.1900		FILE No.	12137200371900A002
DESIGN	JMR	20 Nov. 2012	SCALE AS SHOWN	REV. 0
CADD	AW	30 Nov. 2012	**FIGURE: 4**	
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REVIEW	BM	06 Feb. 2013		

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Plate 2: LiNt-1, Feature 1, View North

Plate 3: LiNt-1, Feature 2, View Northwest

Plate 4: LiNt-1, Feature 2, View Northwest

Plate 5: Klim Tin between LiNt-1, Feature 1 and Dog Tie Out 2

Plate 6: Portion of Tent Frame between LiNt-1, Feature 1 and Dog Tie Out 2

Plate 7: Caribou Bone and Button between LiNt-1, Feature 1 and Dog Tie Out 2

Plate 8: Women's Shoe between LiNt-1, Feature 1 and Dog Tie Out 2

Plate 9: Evidence of Ice Push along North Shore

4.2 Land Use Site

Land use sites represent evidence of human, typically but not exclusively Inuit, use of the land within the past 50 years. They are not assigned Borden numbers, there is no obligation to report them and they are not afforded protection under law. Therefore, there is no requirement to make accommodations for them during non-traditional land use planning. However, they are important to note because as time passes, should these sites not be disturbed, they will qualify as archaeological sites; they provide important information about changes in land use and technology and they may indicate the presence of other valued environmental components for which it is prudent for land developers to be aware of these sites.

The cabin owned by the Hunter and Trappers Association is located on a peninsula at the northwest corner of the island. There are several recent stone features located on this peninsula, all of which have been assessed as modern. One of the possible dog ties outs is also in this area (Figure 3; Plates 10 and 11).

A modern hunting blind was also recorded south of the weather station. The hunting blind was assigned land use status owing to the lack of lichen on many of the uppermost rocks (Figure 3).

Plate 10: Hearth Land Use Feature

Plate 11: Stone Land Use Feature

4.3 Overview of Development Areas

For details on the remediation program for the Contwoyto Lake Weather Station, refer to SENES' Phase 3 Environmental Site Assessment for the Contwoyto Lake Former Weather Station, Nunavut (2013). The description and summary of the proposed development area are written exclusively from a heritage perspective. It is currently unknown which areas will be used during remediation and for what purposes. It is also possible that the final contractor may recommend additional locations for use. While the AIA was conducted on an area beyond those described below, only the areas mentioned below were systematically investigated for heritage resources (Figure 3).

4.3.1 Hunters and Trapper Cabin

An intensive surface search was conducted of the peninsula associated with the hunters and trappers cabin. In ; in particular the esker to the north of the cabin was considered to have high potential. However, no archaeological material was observed or recorded and therfore no further archaeological work is recommended for the northern peninsula area associated with the hunters and trappers cabin (Plate 12). The community should be consulted regarding activities on the peninsula.

Plate 12: Peninsula with Hunter and Trapper's Cabin

4.3.2 Main Station Area

The main weather station consists of four buildings and two debris areas. The building include the main building, a generator building, and two small “ham radio” shacks (Plate 13) (WESA Inc. 2011). An intensive surface search was conducted of the main weather station area; however, no heritage resources were observed or recorded and therefore no further archaeological work is recommended.

Plate 13: Main Weather Station Buildings, View West

4.3.3 Airstrip

The airstrip was constructed during the use of the weather station and it is situated east of the weather station buildings on the same esker (Figure 3). The esker has been disturbed and has low potential for *in situ* archaeological resources (Plate 14). An intensive surface search was conducted; however, no heritage resources were observed or recorded and therefore no further archaeological work is recommended for the airstrip.

Plate 14: View of Airstrip Area

4.3.4 Radio Tower and Inuit Camp

The radio tower is located southwest of the main weather station area. Debris is scattered in the vicinity, items are likely less than 50 years old and not considered artifacts or archaeologically significant. Some of the debris may be associated with comtemporary Inuit use of the area, however, cultural affiliation is difficult to establish since most items have been imported from southern Canada. Feature 1 and feature 2 of site LiNt-1 are approximately 60 m west from the radio tower and dog tie out 2 is approximately 160 m east of the radio tower. It is recomeended that features 1 and 2 of LiNt-t should be avoided and that the removal of debris in this area be conducted by hand (Plate 15).

Plate15: Radio Tower with Feature 1 in Foreground

4.4 Life at Contwoyto Lake Weather Station – Archaeological Evidence

The weather station was constructed during DEW Line Site construction in the early 1950s and was operated by Pacific Western Airlines. In 1978 the department of Transportation took over operation of the station and in 1984 the Kugluktuk Hunter and Trappers took responsibility for the buildings (WESA Inc. 2011). Based on the chain of ownership it is clear that the Contwoyto Lake Weather Station is not an archaeological site; however, photo documentation of the Euro-Canadian debris provides an archaeological perspective of activities at the site (Appendix 1).

While the debris documented cannot clearly be assigned to the period of weather station use or post abandonment, some interesting information can be gained. As would be expected, canned food is common. Some glass containers suggest ketchup was a common condiment. Pop cans with different mouth styles pop can with the pull tab may date between 1960s and 1980s; a date closer to the 1980s may be more likely(Maxwell 1993; Tanner personal cummunication 2012).

5.0 SUMMARY AND RECOMMENDATIONS

Golder conducted an AIA on behalf of SENES during August of 2012, in conjunction with a Phase 3 Environmental Site Assessment for the Contwoyto Lake Former Weather Station. All required field work was conducted under Nunavut Archaeologists Permit 2012-008A issued by Culture and Heritage to Julie M. Ross of Golder.

All areas of proposed Project were surveyed for heritage resources. The weather station is located on a sandy esker, a portion of which is covered by vegetation and for the most part has been previoulsy disturbed. During the study the previously recorded site LiNt-1 was revisited. Two stone square features (possible outlines of wall tents) were located southwest of the main weather station areas. A definite cultural affiliation cannot be assigned to these features. The debris close to the feature has not been classified as archaeological. There was evidence of current land use within the areas surveyed. The land use features include: two dog tie outs, a hunting blind, and stone features on the north peninsula.

It is recommended that features 1 and 2 associated with LiNt-1 be avoided (Table 1). Community members should be consulted about the current significance of the stone features on the north peninsula, the debris near the radio tower, and the hunting blind.

By conducting this AIA, it is recommended that SENES, PWGSC, and AANDC have fulfilled the requirements of the current program in their attempts to identify the potential for impact to heritage resources resulting from the proposed remediation of the Contwoyto Lake Weather Station. The AIA included the participation of Stanley Klengenberg from Kugluktuk, who participated in discussions about heritage resources and Inuit use of the area.

Table 2: Recommendations

Borden Number	Type	Period	Significance[1]	Associated Proposed Development	Status of Work	Recommendation
NiLt-1	campsite	indigenous historic; historic	low	60 m from radio tower	feature coordinates recorded; features photographed, feature mapped	avoid
North Peninsula features (including dog tie out 1)	campsite	recent	consult with community	200 m from main weather station	features photographed,	no further archaeological work
hunting blind	hunting	recent	consult with community	700 m from main weather station	feature coordinates recorded; features photographed	no further archaeological work
Inuit debris area between feature 1 and 2 and dog tie out 2	campsite	recent	consult with community	adjacent to radio tower	representative photo documentation	no further archaeological work

[1] Community consultation may alter significance assessment

Report Signature Page

Yours truly,

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APPENDIX A

Select Photo Documentation of Contwoyto Lake Weather Station

Photo 1: Blank Sign on North Beach

Photo 2: Komtiq Wood Debris

Photo 3: Rock Scatter North Of Main Station

Photo 4: Main Weather Station Building

Photo 5: Main Weather Station Building

Photo 6: Main Weather Station Buildings

Photo 7: Main Weather Station Building

Photo 8: Metal Debris

Photo 9: Glass Bottles

Photo 10: Pop Can

Photo 11: Top of Pop Can mouth style dates between 1962 and 1980s

Photo 12: Matters Frame

Photo 13: Metal Debris

Photo 14: Metal Debris

Photo 15: Stove

Photo 16: Furnace

Photo 17: Fridge

Photo 18: Skidoo Hood

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