KEEYASK TRANSMISSION TECHNICAL REPORT

HERITAGE RESOURCES

Northern Lights Heritage Services Inc.

OCTOBER 2012

PREFACE

The following is one of several technical reports for Manitoba Hydro's application for environmental licensing of the Keeyask Transmission Project. This technical report has been prepared by an independent technical discipline specialist who is a member of the Environmental Assessment Study Team retained to assist in the environmental assessment of the Project. This report provides detailed information and analyses on the related area of study. The key findings outlined in this technical report are integrated into the Keeyask Transmission Environmental Assessment Report.

Each technical report focuses on a particular biophysical or socio-economic subject area and does not attempt to incorporate information or perspectives from other subject areas with the exception of Aboriginal Traditional Knowledge (ATK). Applicable ATK is incorporated where available at time of submission. Most potentially significant issues identified in the various technical reports are generally avoided through the Site Selection and Environmental Assessment (SSEA) process. Any potentially significant effects not avoided in this process are identified in the Environmental Assessment Report along with various mitigation options that would address those potential effects.

While the format of the technical reports varies between each discipline, the reports generally contain the following:

- Methods and procedures.
- Study Area characterization.
- Description and evaluation of alternative routes and infrastructure sites.
- Review of potential effects associated with the preferred transmission routes and station sites.

Following receipt of the required environmental approvals, an Environmental Protection Plan (EnvPP) will be completed and will outline specific mitigation measures to be applied during construction, operation and maintenance of the proposed Keeyask Transmission Project. An EnvPP is typically developed from a balance of each specialist's recommendations and external input.

Each of the technical reports is based on fieldwork and analysis undertaken throughout the various stages of the SSEA process for the Project. The technical reports are as follows:

- Technical Report 1: Aquatics Environment
- Technical Report 2: Terrestrial Habitat, Ecosystems and Plants

- Technical Report 3: Amphibians
- Technical Report 4: Avian
- Technical Report 5: Mammals
- Technical Report 6: Forestry
- Technical Report 7: Socio-economic Environment
- Technical Report 8: Heritage Resources
- Technical Report 9: Tataskweyak Cree Nation Report on Keeyask Transmission Project

The technical reports contain more detail on individual subject areas than is provided in the Environmental Assessment Report. The technical reports have been reviewed by Manitoba Hydro, but the content reflects the opinions of the author. They have not been edited for consistency in format, style and wording with either the Environmental Assessment Report or other technical reports.

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EXECUTIVE SUMMARY

This Heritage Resources Technical Report is a supporting volume of information that describes the existing environment from a heritage resource perspective. Heritage resources are non-renewable and are protected under Manitoba's *The Heritage Resources Act* (1986). The concept of Valued Environmental Components (VEC) as described by the Keeyask Transmission Project will discuss heritage resources under a single VEC.

The heritage assessment process for the Keeyask Transmission Project included an intial desk top background review of existing archaeological sites within a regional scope, and employment of a predictive model to identiy high potential areas within the Project Study Area. ATK was reviewed and assisted in the development of a cultural characterization. Field investigations were conducted in select areas along the Alternative Routes, along with an aerial examination of the length of each proposed route and associative infrastructure.

The results of the heritage assessment identified four archaeological sites within the Project Study Area, however each of these sites are located away from any potential disturbance. There were no newly identified heritage resources along any of the Construction Power Transmission lines, the Generation Outlet Transmission lines, or associative infrastructure.

Mitigation measure are discussed in Chapter 5 with recommendation for heritage resources monitoring of two identified water crossings – the Kettle River and the Butnau Diversion Channel. If heritage resources are discovered during the monitoring component, then procedures outlined in the Environmental Protection Plan will be implemented.

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

The primary function of the Keeyask Transmission Project is to provide construction power and generation outlet transmission capacity for the Keeyask Generation Project

The Keeyask Transmission Project will consist of the following:

- Construction Power Transmission Line and Station.
- Four Unit Transmission Lines that originate at the Keeyask Generating Station and terminate at a new Keeyask Switching Station.
- Three Generation Outlet Transmission (GOT) Lines link the Keeyask Switching Station to the northern ac collector system, terminating at the Radisson Converter Station.

Heritage resources are considered to be non-renewable resources which provide a tangible cultural link between the past and present. Heritage resources are protected under Manitoba's *Heritage Resources Act* (herein referred to as *The Act*) (1986) and are defined as:

- A heritage site,
- A heritage object; and
- Any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof (Government of Manitoba The Heritage Resources Act CCSM c H39.1, 1986)

Changes to the physical environment during the construction phase may cause effects to heritage resources. This technical report discusses the Project effects on known and unknown heritage resources. Under *The Act*, a Heritage Resource Impact Assessment (HRIA) occurs when it is in the opinion of the minister that heritage resources may be affected by development. *The Act* ensures that any heritage resources will be protected from the effects of impact caused by development, including adverse or residual effects. The purpose of the Heritage Technical Report is:

- To identify the potential effects of the Keeyask Transmission Project to known and unknown heritage resources;
- To describe the existing environment of heritage resources in the Study Area;

- To provide evidence of compliance with the terms set out in *The Act;*
- To assist in determining mitigation of sensitive heritage resources; and
- To provide recommendation for mitigation strategies to minimize or eliminate adverse effects.

The Project is situated within the Split Lake Resource Management Area. The First Nations and the municipality in the project study area are Tataskweyak Cree nation (TCN), Fox Lake Cree Nation (FLCN) and Gillam. The area is utilized by resource users from TCN and FLCN as well as from War Lake First Nation and York Factory First Nation and includes individual registered traplines (RTLs) and community lines. Tataskweyak Cree Nation has provided comment and Aboriginal Traditional Knowledge (ATK) through their supporting document (TCN 2011).

2.0 METHODS AND PROCEDURES

2.1 STUDY AREA DEFINITION

The Keeyask Transmission Project is located in northern Manitoba, approximately 6 km northeast of the town of Gillam, along the south shore of Stephens Lake. The Heritage Resource study area was divided into two components in order to incorporate both a broad regional scope as well as a project-focused analysis. The main study area is the **Project Study Area** which includes all project structures and facilities. The Project Study Area is bounded in the south by the existing 138 kV transmission line KN36 (Kelsey to Radisson Line) and north by the proposed Keeyask Generating Station located on the north shore of the Nelson River (Map 2-1). The east extension is to the Radisson Converter Station near Gillam, Manitoba. The larger study area termed the **Regional Study Area** contains comparative archaeological sites and a setting for an overall cultural characterization. This larger study area includes a narrow band of land along the Nelson River and commences downriver of Birthday Rapids to the Kettle Generating Station at the outlet of Stephens Lake reservoir. The physical landscape features of Birthday and Kettle Rapids provided a natural boundary for encapsulating the study area.

2.2 DATA COLLECTION AND ANALYSIS

2.2.1 Overview of information Sources and Data

NLHS applied several research approaches to assess potential for heritage resources in the study area and implemented field methods to discover heritage resources. This includes background research, literature review, ATK, existing site valuation, predictive modeling, professional judgement, and field investigation where possible, were important factors in determining route preference from a heritage perspective. The following sections provide a description of methods and models used in the assessment.

2.2.2 Cultural Characterization

At the outset of the study, a characterization of the Regional Study Area was developed to situate the project within a cultural and temporal framework (NLHS 2009). Found heritage resource sites reflect the nature of occupancy described in this characterization. The cultural heritage characterization is found in Section 3.0.

2.2.3 Existing Registered Archaeological Sites

Existing heritage resource data include archaeological and heritage sites registered in the Provincial site inventory database; this is managed by the Historic Resources Branch, Manitoba

Culture, Heritage and Tourism. To date, there are four registered sites within the Project Study Area and 52 sites in the wider Regional Study Area. All of these sites were located and recorded during Heritage Resource Impact Assessments (HRIA) for the Proposed Keeyask Generation Project between 2001 and 2011. No recorded sites are located within proposed transmission line right-of-ways (ROW) or within footprint of project facilities however two sites are within 2 km of certain proposed routes, HcKs-01 and HcKt-02. An offering stone identified by Peter Fidler in 1809 on the north side of Keeyask Rapids was not located despite intensive field survey. This feature has most likely slumped into the river.

Table 2-1: List of Archaeological Sites Within the Project Study Area

Registered Archaeological Site Borden Number*	Site Type	Cultural Affiliation
HcKs-01 “Jimmy’s Camp”	Lithic Workshop	Pre-European Contact
HcKt-08 “Bryant’s Cabin”	Campsite	Late Historic 1870-1930 A.D.
HcKt-09 “Sandstone Flakes”	Lithic Workshop	Pre-European Contact
HcKt-02 “Keeyask Rapids”	Lithic Workshop	Pre-European Contact

*A Borden Number is an Alpha-numeric identifier which is based on a lat/long coordinate system

2.2.4 Aboriginal traditional knowledge

Aboriginal Traditional Knowledge (ATK) was provided by the TCN Report on the Keeyask Transmission Project (2011). ATK provides an understanding of the overall cultural landscape of an area which can be used in conjunction with tangible heritage resource. Summarized ATK statements by TCN members regarding heritage resources included:

- a general youth statement indicating concern over the potential loss of heritage resources due to the loss of traditional lands;
- a general member statement noting the potential damage to sacred and/or burial sites; and
- a statement regarding TCN’s historical relationships to the land and the effect that profound changes to the cultural landscape will have on these relationships.

While ATK information provided thus far has not indicated specific locational information on heritage or cultural sites within the study area, the ATK serves to link the intangible (e.g. oral narrative) to the tangible heritage resources and contributes to an understanding of the past and enduring cultural traditions Workshops with FLCN elders have been conducted, including a

proposal to conduct a knowledge study on FLCN historical and present use of the KTP Study Area. The Manitoba Metis Federation have also submitted a workplan for compiling a historical narrative of Metis presence in the Study Area. However the results from these studies have not yet been disseminated to the study team at the time of writing this technical report.

2.2.5 Predictive Model

A **predictive model** for potential heritage site locations was used to test lands within the study area for certain stable environmental variables that are considered conducive to archaeological sites. Modeling served the purpose of ranking areas of high, medium and low potential prior to field investigation.

Archaeological predictive modeling is a tool that indicates the relative probability of locating archaeological sites within a specified area. The basic premise for predictive modeling is that certain physical environmental attributes can assist in ranking areas as high, medium and low potential for the presence of archaeological sites. It is an effective support for pre-field planning within a prescribed study area.

NLHS applied a Weighted Ranking Analysis approach in archaeological predictive modeling whereby certain valuation was assigned to specific attribute classes. The weight of each class is based on a sliding scale from the most optimal choice of each environmental attribute (n=5) to the least optimal (n=0). The resultant value of each attribute is then tallied and the total determines the level of potential of the specific area to contain an archaeological site. The higher the total values for a location, the greater the potential to contain an archaeological site.

For the Keeyask Transmission Project, seven attributes were chosen for analysis. The attributes applied are:

1. **Proximity to potable water: a)** Access to potable water is a necessity for survival. **b)** Waterways were critical for transportation and resource harvesting during all seasons. Archaeological sites are commonly found near water bodies (Kvamme 1992:27).

2. **Soil types:** Studies on Gull Lake have indicated (on a preliminary basis) that human occupation of sites may be in direct correlation to a specific soil type. Most of the archaeological sites representing campsites were located on organic soils identified for the Keeyask Generation Project by Ecostem (2009). Because of the soils, certain plants and trees, plus good drainage are conducive to preferred occupation or activity areas

3. **Slope:** Surfaces with little relief and less than a 5° slope are considered most optimal for occupation sites (Kvamme 1992: 225; Petch *et al.* 2001).

4. **Aspect:** Foremost direction or exposure of a site. South-facing aspects appear to be most favoured (Kvamme 1992:26)..

5. **Vista (View):** Measuring the visual range from a site 0° to 359°. This is considered useful for both defensive purposes or searching for game.

6. **Geographic features:** Features such as eskers, moraines, isthmus, peninsulas and points; elevated terraces were considered to be optimal areas for habitation and activity.

7. **Water body convergence:** The occurrence of ordered streams indicates that larger and more complex archaeological sites are located strategically at the confluence of two water bodies (i.e.) lake to river. However, this does not preclude the randomness of human behavior to choose site location at other points on a water body.

The calculated results were then ranked into high (40-30), moderate (29-20) and low probability (19 and under). The results of the initial predictive modeling are discussed in Section 4.0.

2.2.6 Aerial Survey

An aerial examination via a helicopter overflight of the two proposed construction power transmission lines and of the three GOT line alternatives was undertaken during the field assessment to visually select potential areas along each route for ground-truthing. An aerial video of the routes was also used prior to field investigations and assisted in assessing the general environmental conditions for the unit lines and stations as specific locational information on these areas had not been identified at the time of the survey.

2.2.7 Ground-Truthing

Areas identified by the predictive model were initially flagged. The heritage resource assessment for the project included data retrieved through observation, pedestrian survey tracks, and shovel test data. These ground-truthing components were implemented in areas where favourable environmental attributes were known to be preferred locations for heritage resources. These areas were typically situated near waterways, and areas of higher elevation such as eskers or moraines.

2.3 VALUED ENVIRONMENTAL COMPONENT SELECTION

The Site Selection Environmental Aassessment (SSEA) process involves the selection and evaluation of preferred final routes for the Construction Power and Generation Outlet Transmission lines, as well as the Keeyask Switching Station and Construction Power Station sites, largely on the basis of specific biophysical and socio-economic Valued Environmental Components (VECs) that could potentially be affected by the Project. The incorporation of VECs in the EIS process considers components of the environment that are valued by society (CEAA).

All heritage resources are protected under the Section 12(2) of *The Heritage Resources Act* (1986) and therefore are considered a VEC regardless of the nature or size of the site. *The Act* also applies to identified and newly discovered resources as a result of a project.

2.4 EVALUATION OF ALTERNATIVE ROUTES AND INFRASTRUCTURE

The HRIA for the Keeyask Transmission Project took place in 2009 with assessment focusing on the two alternative routes for the Construction Power Transmission Lines and four alternative routes for Generation Outlet Transmission (GOT) lines.Additional Project components such as the Construction Power Station and Switching Station were not assessed during the 2009 survey; however, these locations fall in close proximity to the proposed transmission lines and project effects are expected to be similar. The Unit Transmission Lines have been previously been assessed for heritage resources as part of the Proposed Keeyask Generation Project and Keeyask Infrastructure Project.

Each component considered existing and the potential impacts on heritage resources. Where there was reason to prefer one alternative site or route option over other from a heritage perspective, this preference was noted and included in the overall selection of preferred site and route options (Chapter 6 of the Environmental Assessment Report). Detailed discussion on the evaluation of the alternative routes and sites from a heritage perspective is provided in section 4.0.

The assessment review of existing heritage sites within the Regional Study Area provided a total of 52 archaeological sites. Two of these archaeological sites, HcKs-01 and HcKt-02, occur within the Project Study Area, however are located approximately 2 km from the nearest proposed infrastructure consisting of the Construction Power Transmission Line Route Option #1 and GOT line corridor. A predictive model was applied for areas along the proposed routes using physical environmental attributes as explained in section 2.2.5. Areas were ranked with low, medium or high potential for heritage resources. The multivariate analysis was compared for each of the routes and preference was given to the route with the least amount of interactions with high ranked areas. Those highly ranked areas were then incorporated into the field survey plans for areas of potential ground-truthing.

Archaeological field investigation for the Keeyask Transmission Project was carried out in September 2009. Field studies were conducted under Heritage Permit A18-09 & A51-09 for the two Construction Power transmission line routes, the three GOT line routes and associated facilities. No heritage sites were identified during this investigation. Many areas were inaccessible for helicopter landing or contained areas that were water saturated and unsuitable for ground survey and testing. The conclusion from the 2009 HRIA was that known heritage resource sites associated with the Keeyask Transmission Project would not be disturbed.

However, there remains the potential for undiscovered heritage resources to be disturbed through construction or clearing activities.

Manitoba Hydro

Keeyask Transmission Project

Infrastructure

- Converter Station
- Generating Station (Proposed)
- Generating Station
- Bipole I and II (Existing 500 kV DC Line)
- Transmission Line
- North Access Road
- Proposed Access Road

Project Study Areas

- Project Study Area
- Heritage Regional Study Area

Landbase

- Community
- Provincial Road
- Municipal Road
- Active Railway
- Abandoned Railway
- Watercourse
- Waterbody

Coordinate System: UTM Zone 15N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: Tuesday, September 25, 2012

N

0 2 4 Kilometres
0 2 4 Miles

1:225,000

Regional and Project Study Area

Map 2-1

3.0 STUDY AREA CHARACTERIZATION

3.1 STUDY AREA OVERVIEW

Most archaeological sites located within the Regional Study Area are associated with ancient, historic and recent Cree land use and occupancy. Diagnostic artifacts, such as projectile points and pottery, plus datable organic materials provide temporal markers of past cultural groups. Using these diagnostic artifacts, archaeologists have subdivided the ancient past into three main cultural periods and a number of small cultural complexes and are represented in a cultural timeline (Figure 3-1). These periods are loosely based on the changing technology used by past peoples. The more recent past, defined by European contact over the last 350 years, has also been subdivided into three periods, Early, Middle and Late Historic. The Historic Periods are also identified by specific types of technology; and are augmented with written records such as fur trade journals, maps, ethnographic studies and induction based on present-day land use activities.

The following overview will provide evidence of human occupation in the Project Study Area as well as to verify the potential for undiscovered heritage resources that may be unearthed or disturbed during construction and operation of the Project.

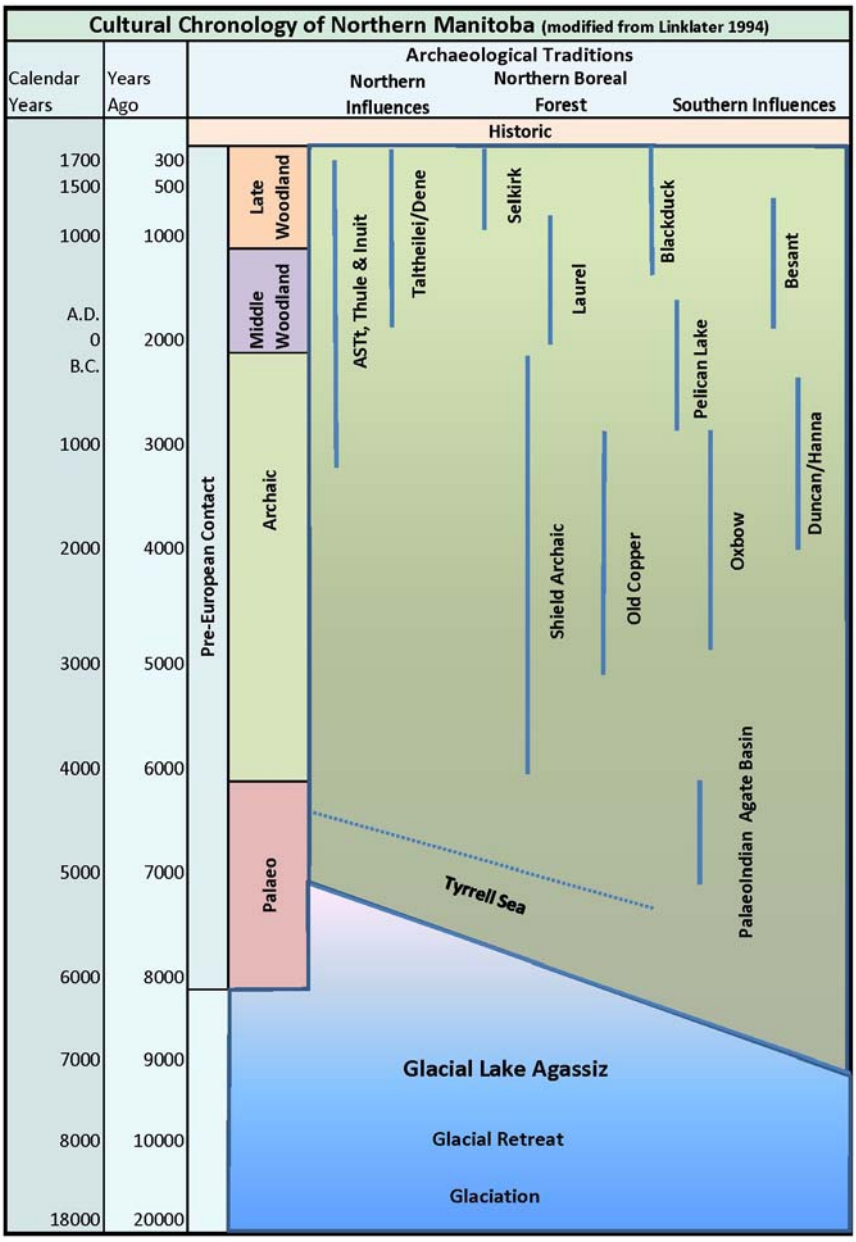

Figure 3-1: Cultural Timeline for Northern Manitoba © 2012 Keeyask Hydro Limited Partnership

3.1.1 Early Pre-European Contact Period (10,000 – 6,500 Years Ago)

The study area was not habitable until around 7,500 years ago because of environmental conditions (Nielsen et al 1988;Teller 1984: 25). Prior to this time, the area was covered by the Laurentide ice sheet (Figure 3-2), then by glacial Lake Agassiz until it drained northward into Hudson Bay. Groups of people living at the edge of the boreal forest during the last glacial advance may have gradually moved into the region once it became habitable.

Figure 3-2: Map of North America showing the extent of the Laurentide Ice Sheet (the blue outline notes the ice sheets borders about 15,000 years ago [Map © of University of California 2002])

Based on the archaeological record as it currently exists, the earliest human inhabitants in Manitoba are believed to be Palaeo people (Pettipas 1984:26). They are characterized as big game hunters who subsisted primarily on the bison as their main food source (Pettipas 1970:17). No Palaeo sites have been found in northern Manitoba. However, Palaeo people are believed to have culturally evolved into a Plano culture which moved northwards through the Great Central Plain. Archaeological evidence indicates movement of Plano people into the Southern Keewatin District of Nunavut. The emergence of Plano out of the plains brought with it a change in stone tool technology. Large lanceolate or leaf-shaped spear tips stone projectile pointsare prevalent during this cultural period. Projectile points such as Agate Basin, which is dated *ca.* 7,000 to 8,000 years ago, have been found in association with boreal forest faunal remains in northern Manitoba, northern Saskatchewan and eastern North West Territories (Ebell 1982:96). The plains-adapted hunting bands of this complex, in following bison to their distant seasonal habitats may have taken up residence in these new areas and adapted their hunting strategy to caribou. To date there has been no evidence of Plano cultural materials within the general study area.

Potential animal kill and associated campsites largely depended on locations that favoured intercepting caribou herds along migration routes. These include stream crossings, lake narrows, eskers or beach ridges. Other potential sites would include quarry locations for lithic tools, areas of plant harvesting and sacred areas. The groups probably travelled in small nuclear family groups and may have banded together during certain seasons of the year. As such, habitation sites would be relatively small. Lanceolate projectile points, trihedral adzes and large asymmetrical bifaces, characterize heritage resources of Plano occupations.

3.1.2 Middle Pre-European Contact Period (6,500 – 2,000 Years Ago)

Models of cultural mobility of this early period suggest that by 6,500 years ago northern people referred to as Shield Archaic may have emerged out of the earlier Plano Complex in the north central plains of Saskatchewan and Southern Keewatin (Wright 1972:33-38; 1970; Gordon 1996). These cultures may have gradually shifted southeast across the northern boreal shield as deglaciation and glacial Lake Agassiz diminished. Shield Archaic sites are associated with big game hunting but may have also included small game, fishing and gathering activities. Knowledge of this period is limited by soil conditions and repetitive collapsed stratigraphy due to cyclical forest fires.

Preferred sites appear to have been strategically located at caribou interception points andadjacent to swift-moving water for fishing. Many of the habitation sites face open water with a westerly to southerly view. Based on these and other variables data, several locations along the north bank of Gull Lake would be high potential areas for Middle Period sites.

Two large archaic projectile points have been recovered on the north shore of Gull Lake, approximately 7 km from the Keeyask Construction Power study area (Figure 3-3). Their size and manufacture suggest affiliation to the Middle Pre-European Contact Period (NLHS 2003a).

Figure 3-3: Stone tools of the Middle Pre-European Contact Period found at Gull Lake (From left to right HcKt-1-40 and Hckt-5-1 [from NLHS 2003a])

Human remains radiocarbon dated to 4,800 BP were recovered from the southeast shore of Gull Lake at the edge of Keeyask Generation Project Borrow area S-5 (NLHS 2011). The remains have been temporarily reinterred approximately 30 m from the present shoreline and will be moved to the Keeyask Re-interment Site once this is identified.

3.1.3 Late Pre-European Contact Period (2,800 - 360 Years Ago)

In the late Pre-European Contact period, new technologies were introduced by diffusion, or adaptation to or by parallel invention by resident groups within the boreal forest. The period is commonly referred to as the Woodland Tradition by archaeologists. Major technological changes that occurred during this time period include development of distinctive types and styles of Native clay pottery based on signature motifs and changes to weaponry through the introduction of the bow and arrow. Many other organic aspects of lifeways,have not survived over the years; because of acidic soils, forest fires and other natural phenomena; this lack of organic data is more pronounced the earlier the occupation.

The Woodland Tradition in Manitoba is frequently divided into two periods, Middle and Late (or Initial and Terminal). Representations of Early Woodland, which is identified in southern Ontario,, Wisconsn, Minnesota and Michigan do not occur in Manitoba. In Manitoba the Middle Woodland Period is represented by the Laurel complex pottery as well as other signature tool assemblage (2,000-,1200 years ago.). The Late Woodland Period in Northern Manitoba is represented mainly by pottery and tools associated with the Selkirk complexes; Clearwater Lake pottery (*ca.* 900-360 years ago) is considered by archaeologists to be the product of early Cree people who inhabited the northern Manitoba's boreal forest. Interestingly, variations of a ceramic type referred to as Blackduck (*ca.* 1200-300 years ago) and usually associated with more southerly early Ojibwa, has been found on occasion, suggesting possible exogamous marriages between cultural groups (Wright 1998:77-78).

Laurel ceramic vessels were elliptical in shape and constructed using the "coil and paddle-and-anvil" technique. Rolled coils of clay were placed on top of each other to form the sides of the vessel. The walls were then pounded with a paddle to thin the sides and increase the vessel's height. Decorative motifs such as incised designs, pseudo-scallop or dentates, were applied in various combinations to produce several designs. Punctate (circular holes pushed into the exterior surface of the malleable clay vessel) with the resulting "boss" or embossed protruding into the interior wall was an added feature of Laurel vessels. In addition to the ceramic technology, this cultural period included an extensive assemblage of stone tools including scrapers, netsinkers, hammerstones, pipes, abraders and pendants.

Figure 3-4: Laurel ceramic sherd with pseudo-scallop design from Fox/Atkinson Lake (NLHS 2003b)

A small concentration of Laurel sites (HbKx-2, 3, 10, 12, and 18) were found on Clark Lake approximately 40 km upriver from Gull Rapids during the HRIA for the Keeyask Generating Station Project. Comparative archaeological investigations on Fox/Atkinson Lake also resulted in a single Laurel neck sherd decorated with a pseudo-scallop design (Figure 3-4). The finding of Laurel pottery in Clark Lake and Fox/Atkinson Lake are the only evidence for the Middle Woodland period to date.

Selkirk, Clearwater Lake and Blackduck ceramics display fabric or cord-impressed exterior surfaces. The method of construction is still not completely known but may have been by textile-wrapped paddle-and-anvil or the use of a woven bag or basket as a mold. The latter method has been tested successfully by experimental archaeology. Unlike Blackduck, both Selkirk and Clearwater Lake ceramics usually exhibit a single row of punctates at the neck portion of the vessel, although variations to this have been found. Often, cord-wrapped stick (CWS) decoration around the rim was the only adornment (Figures 3-5 and 3-6).

Figure 3-5: Selkirk pottery (from Pettipas 1984)

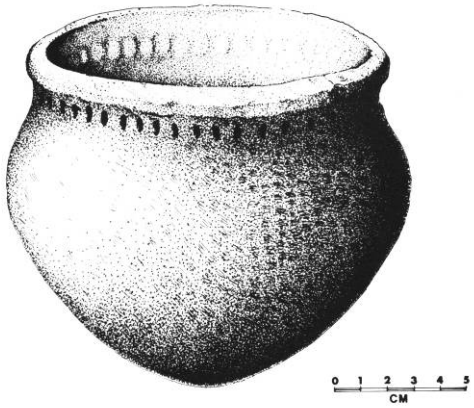

Figure 3-6: Clearwater Lake Punctate pottery (from Pettipas 1984)

The Selkirk composite is well known throughout the boreal forest, extending from northwestern Ontario through to northern Saskatchewan, and is generally considered to represent ancestral Western Woods Cree (Meyer 1987; Meyer and Russell 1987). Selkirk pottery findings in north-eastern Manitoba include a single rim sherd found at the mouth of the Hayes River (Dawson 1976:79) along with a number of fabric-impressed ceramic body sherds indicative of Late Woodland material culture found along the Nelson River, including Gull Lake, and Clark Lake.

Other items that have been recovered from Selkirk and Clearwater Lake sites include triangular and side-notched projectile points, scrapers and bifaces, and hammerstones. A large number of bone tools including awls, needles, fleshers, and spatulas have also been found.

Blackduck vessels, associated with Proto-Ojibwa inhabitants, are identified by their globular body shapes constricted necks and flared lips. The exterior body of the vessel was surfaced treated by “paddle-and-anvil” technique or netted/woven bag. Unlike the Laurel ceramics, however, the paddle used in Blackduck ceramics was wrapped with a cord to give the exterior an uneven appearance. A second possible manufacturing technique formed the pot inside a woven or netted bag which left imprints in the malleable clay. The upper portions of Blackduck vessels were elaborately decorated with a combination of vertical or oblique cord-wrapped stick impressions and punctates (Figure 3-7). Geologist Dr. Robert Bell in 1878-79, reportedly found two rim sherds of Blackduck pottery at the mouth of the Nelson River near Hudson Bay (Wright 1968:66).

Figure 3-7: Blackduck pottery (from Pettipas 1984)

3.1.4 Early Historic Period (1640 - 1821 A.D.)

Although earlier explorers such as Thomas Button and Jens Munk wintered along the Manitoba shores of Hudson Bay, the first European in the immediate vicinity of the study area was probably Pierre Esprit Radisson. In 1682 Radisson and his crew paddled up the Hayes River meeting up with a group of Cree men at or near the confluence of the Hayes and Fox rivers. It is highly likely that the local Cree knew of the presence of Europeans along the coastal waters since 1612 when Button wintered at the Nelson River estuary (Manitoba Historical Society 2002) and 1619 when Jens Munk and his crew wintered over at the mouth of the Churchill River (Kenyon 1980). Later, after the establishment of York Fort I, Henry Kelsey in 1690, was assigned to explore the interior of the country. He ascended the Hayes River in the company of Cree, branched off to the Fox River and eventually made his way onto the Nelson River system via an ancient connecting waterway through Fox Lake, the Cyril River and into the Landing (Aiken) River to Split Lake. From there he continued up the Saskatchewan River and onto the prairie (Figure 3-8)(Kelsey 1929:2).

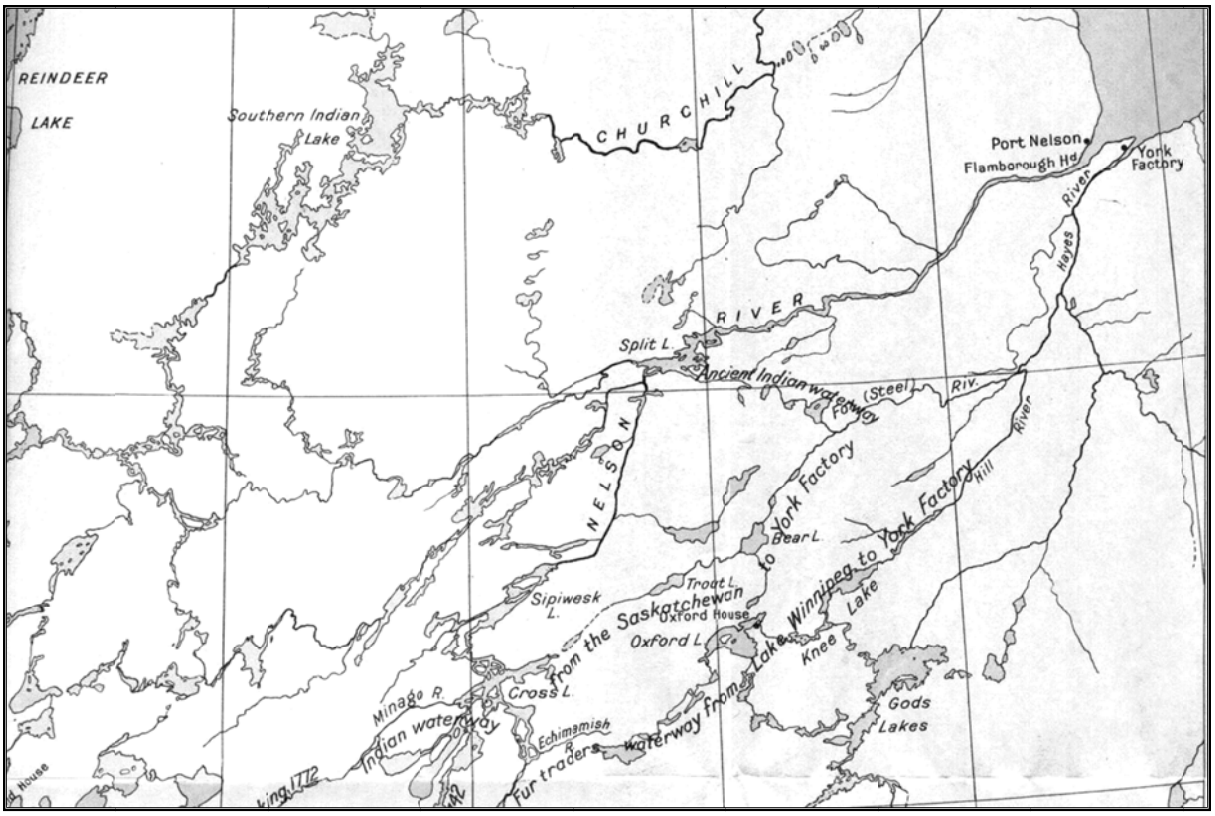

Figure 3-8: Canoe routes used by early HBC explorers from York Factory (from Kelsey 1929)

For the initial period of contact, little evidence of European goods has been found at Aboriginal archaeological sites and these usually consist of metal items that were reworked for a secondary use. Indeed, many European goods were traded via an ancient and active Aboriginal trade networks into the interior long before Europeans arrived. With the introduction of copper and brass kettles native clay pots appear to have been quickly discarded in favor of the more durable metal.The flintlock rifle gradually replaced the bow and arrow and metal knives succeeded stone scrapers. Personal adornment, which formerly had consisted of locally available resources or exotic material acquired through trade, now contained a realm of European goods including glass beads, copper rings, tinkling cones, and silver bands. Often these were given as gifts to secure trade relations.

According to archival records the Hudson's Bay Company did not establish any post at Gull Rapids (Keeyask); but a trading house was built at nearby Split Lake in 1790; this operated until 1794. When it was abandoned for several years. It was reopened by the HBC in 1797 and remained open until the 1940s (HBCA B.207a). Additional outposts were also situated near the entrance of Moosenose Creek into the Nelson River in the early 1800s but the archaeological

record of this site was destroyed during the creation of the Kettle Generating Station forebay (Stephens Lake) (HBCA E.3/4 fo.8B). Peter Fidler's 1809 map identified a log tent which may have acted as an outpost ca. 1790 at the mouth of the Assean River where it drains into Clark Lake (HBCA E.3/4 fo.7B).

To date Clark Lake is the only lake within the study area where Early Historic Period goods have been found. No other sites have been recorded in the Keeyask study area. It is likely that historic trails, resting areas and perhaps overnight camping areas dating to this period are present given the importance of the river as a major transportation artery from Hudson Bay to the interior of western Canada and the need to portage around the Gull Rapids.

3.1.5 Middle Historic Period (1821 - 1870 A.D.)

The origin of the family hunting territory, whether a construct of the fur trade or an institution already in place prior to contact, has received considerable attention by social scientists (Speck 1915; Smith 1971; 1974; 1981; Martin 1982). The origin of this type of land tenure system is important to archaeologists who use ethnographic analogy to study the social organization and land use practices of Pre European contact period populations. The hunting territory debate is equally important to social anthropologists particularly when remnants of this system are visible in today's registered traplines.

Only previously identified site, HbKu-9, was identified between Birthday Rapids and Gull Lake and contained Middle Historic Period artifacts. Types of artifacts that would be expected at camp sites of this period would consist of the remnants of metal pots and pans, gun parts, gunflints, musket balls, shot gun shot, tinkling cones, silver bands, thimbles, beads, rings, clay pipe fragments and metal tools. Further south at Clark Lake on the Nelson River, the Pointe West site HbKx-2 contains a wide variety of items from this time period.

3.1.6 Late Historic Period (1871 - 1920 A.D.)

Details of life ways during the post-1870 period are not entirely known but, based on informal oral narrative from Tataskweyak Cree Nation; family/kin-based satellite settlements were distributed throughout the traditional lands and are still known to the Elders and resource-users. In general, a seasonal round of activities was maintained whereby summer coalescence at important fisheries and winter dispersal within the forest at predetermined locations took place. Fishing and hunting were important activities for daily sustenance, while organized traplines were sustained to acquire furs to trade for additional European commodities as well as traps, guns and ammunition.

A number of sites are situated along the Nelson River in the region of Gull Rapids. Cabins, tepees, tent frames, and portages show the presence of Cree people throughout the region.

These site types are usually situated inland from major waterways and trails may lead further to the interior.

The period commonly referred to as the Recent Historic commences *ca.* 1920 and ends ca. 1970. The distinguishing feature of this period is the introduction of mechanical technology in the forms of outboard motors, chain saws and snowmachines (including the Bombardier).

Today's current use sites are documented because of their potential heritage value and interpretation in the future.

4.0 EVALUATION OF ALTERNATIVE ROUTES AND OTHER INFRASTRUCTURE

4.1 DESCRIPTION AND EVALUATION OF ALTERNATIVE ROUTES AND OTHER INFRASTRUCUTRE

4.1.1 Construction Power Line and Station

4.1.1.1 Construction Power Transmission Line

The proposed routes for the Construction Power Transmission lines were initially assessed through a predictive model which focused on environmental characterisitics that have the potential for archaeological site location. Proximity to ater crossings served as the main environmental attribute for the locating of heritage resources. The results of the predictive model are as follows:

Table 4-1: Predictive Model Values for Keeyask Construction Power Water Crossings

Water Crossing	Calculated Value	Ranking*
Route #1; Crossing 1	32	High
Route #1; Crossing 2	19	Low
Route #1; Crossing 3	23	Moderate
Route #1; Crossing 4	19	Low
Route #1; Crossing 5	23	Moderate
Route #1; Crossing 6	22	Moderate
Route #1; Crossing 7	19	Low
Route #1; Crossing 8	25	Moderate
Route #1; Crossing 9	19	Low
Route #2; Crossing 1	35	High
Route #2; Crossing 2	33	High
Route #2; Crossing 3	30	High
Route #2; Crossing 4	27	Moderate
Route #2; Crossing 5	20	Moderate
Route #2; Crossing 6	23	Moderate

Table 4-1: Predictive Model Values for Keeyask Construction Power Water Crossings

Water Crossing	Calculated Value	Ranking*
Route #2; Crossing 7	22	Moderate
Route #2; Crossing 8	19	Low
Route #2; Crossing 9	22	Moderate
Route #2; Crossing 10	22	Moderate
Route #2; Crossing 11	28	Moderate

* Calculated values are based out of a maximum value of 40; with High (40-30); Moderate (29-20); and Low (19-0)

Once specific areas were identified, a refined pedestrian survey was conducted with minimal shovel testing because of super-saturated ground conditions and inaccessible areas.

The Construction Power route Option #1 is more favourable due to the lesser number of water crossings and fewer 'High' potential designations. This route also avoids proximity to known archaeological sites, including burials that were identified during the Keeyask Generation Project HRIA studies. No heritage resources were noted during the ground-truthing of specific areas along either route and therefore no substantial concerns with the proposed site were identified from a heritage perspective.

4.1.1.2 Construction Power Station

Similar to the above, the general location of the station was investigated by aerial survey and was found to be of no heritage concern. The area has undergone extensive clearing of vegetation via the Keeyask Infrastructure Project and therefore no substantial concerns with the proposed site were identified from a heritage perspective.

4.1.2 Generation Outlet Transmission and facilities

4.1.2.1 Generation Outlet Transmission Lines

Four alternative routes were considered for the Generation Outlet Transmission lines. Route D was added as an alternative route at the request of FLCN. The proposed routes were initially assessed through a predictive model which focused on water crossings as the main environmental attribute for the locating of heritage resources. Once specific areas were identified, a refined pedestrian survey was conducted with minimal shovel testing because of super-saturated ground conditions and inaccessible areas. The results of the predictive model are as follows.

Table 4-2: Predictive Model Values for Keeyask Generation Outlet Transmission Water Crossings

Water Crossing**	Calculated Value	Ranking*
Option A; Crossing 1	13	Low
Option A; Crossing 2	15	Low
Option A; Crossing 3	17	Low
Option A; Crossing 4	16	Low
Option A; Crossing 5	18	Low
Option A; Crossing 6	16	Low
Option A; Crossing 7	17	Low
Option B; Crossing 1	16	Low
Option B; Crossing 2	15	Low
Option B; Crossing 3	14	Low
Option B; Crossing 4	20	Moderate
Option B; Crossing 5	17	Low
Option B; Crossing 6	16	Low
Option B; Crossing 7	12	Low
Option B; Crossing 8	14	Low
Option B; Crossing 9	16	Low
Option D; Crossing 1	11	Low
Option D; Crossing 2	9	Low
Option D; Crossing 3	9	Low
Option D; Crossing 4	21	Moderate

* Calculated values are based out of a maximum value of 40; with High (40-30); Moderate (29-20); and Low (19-0)

**Option C was not calculated due to the fact that the majority falls within Options B and had no appreciable water crossing

For the Generation Outlet Transmission Lines all routes received an overall low ranking based on the predictive model attributes; however Route D is preferred from a heritage perspective due to its distance from higher valued environmental features such as the Nelson River, fewer number of water crossings, and absence of moderate or high water crossings.

4.1.2.2 Keeyask Switching Station

The site of the Keeyask Switching Station has not undergone ground survey investigation as site location was not identified at the time of the field survey. However, aerial survey of the general area of the proposed switching station did not provide evidence of favourable environmental characteristics which may indicate the presence of heritage resources. At present there is no concern for the presence of heritage resources within this site property due to its distance from any navigable watercourse and the high ground water saturation in the general area.

4.1.2.3 Radisson converter station upgrade

The site of the Radisson converter station upgrade has not been investigated by NLHS, however the site is considered to have no heritage concerns due to previous impacts of site development and associated activities at the site property which have reduced heritage concerns.

4.1.3 Unit Transmission Lines

Four 138-kV ac Unit Transmission lines will transmit power from the seven generators located at the Keeyask Generating Station to the new Keeyask Switching Station. The four lines will each be approximately 4 km long. There are no heritage concerns that would require a revised alignment.

5.0 EFFECTS AND MITIGATION

5.1 OVERVIEW

The Keeyask Transmission Project is within an area of Aboriginal land use that spans at least 6000 years of general occupation by the ancestors of the Cree people who inhabit the area today (NLHS 2009). However, much of the Project occurs within a landscape not conducive to spring through fall living. There is the potential for winter cabins and satellite trapping camps to be located within this area. Discussions with Fox Lake Cree Nation members indicates that they actively hunt and trap along the south shore of the Nelson River in the Project area. Cache Lake , in particular, has been identified specifically by FLCN as an area of heritage concern. However, to date ATK has not provided specific information on locations of areas containing tangible remains of historic resource.

ATK shared by TCN indicates that within the Project Study Area there is concern that changes to the physical environment, the loss of traditional lands and alteration to the cultural landscape will have an effect on heritage resources and the historical relationships with the land that TCN members value.

5.2 VALUED ENVIRONMENTAL COMPONENTS

Heritage resources are non-renewable resources that are the tangible remains of human endeavour which have survived through time and which indicate evidence of past human activities. All heritage resources are protected under Provincial legislation and as such have been categorized under a single VEC. There are no existing archaeological sites within the planned development areas of the Project study area; therefore there are no measurable concerns to the VEC heritage resources. However, there is the potential for heritage resources to be unearthed during construction activities.

Based on the in-field assessment of the Project study area, two areas water crossings were identified to be of heritage concern due the potential for locating heritage resources in proximity to water features, and for the reason that a Preferred Route had not been selected at the time of field survey. These areas are Kettle River and the Butnau Division Channel water crossings. The Preferred Route has been selected and does cross both water bodies. Cache Lake has been identified by FLCN as an area utilized for cultural and economic activities, therefore any tributaries to this lake have the potential for cultural or heritage resources. The Kettle River traditionally has been an important waterway and was identified during predictive modeling as an area of high probability. Evidence of the high potential for heritage resources along the Kettle River include culturally modified trees as well as the slumping remains of a small cabin structure were noted on the south bank of the Kettle River at its confluence with the Nelson River during early Keeyask Generation Project investigations in 2003 (NLHS 2003b). Traditional knowledge

described a small Cree settlement at this location some 50 years ago.River bank erosion has caused much of the structural evidence to slump into the Nelson River. The second location is the Butnau Diversion Channel crossing. The river was once the outlet of the Butnau River into the Nelson River. The river was diverted into the Kettle River through a man-made channel. The river has high potential for heritage resources containing favourable environmental attributes associated with predictive modeling;furthermore, the river was once a travel route into Cache Lake which is identified by FLCN as a traditional land use area.

Both locations have the potential for heritage resources within 50 m of the embankment on either side of the river. Traditional knowledge indicates that the Project has the potential to disrupt the cultural and historical connection to the cultural landscape. However, without specific and locational information from the ATK, the development of mitigation measures are insufficient for this scope of concern. If specific information on a spiritual or heritage resource are identified within the scope of the Project, then mitigation in the form of avoidance. salvage or other measures will be recommended by the Project Archaeologist in consultation with the Provincial Archaeologist and the concerned First Nation. A Heritage Resource Protection Plan will address these concerns during the monitoring and follow-up components of the Project (see Section 5.5).

5.3 RESIDUAL EFFECTS

At this time no residual effects are expected to known heritage resources since there were no archaeological sites identified during the Keeyask Transmission Project HRIA that fall within the Preferred Route or associated infrastructure. However, there is potential for the discovery of unknown heritage resources to be impacted through construction. Table 5-1 provides a summary of effects with respect to the VEC Heritage Resources.

Table 5-1: Summary of Effects on Valued Components

Potential Effect	Project Phase	Mitigation	Residual Effect	Assessment Characteristics
Heritage Resources				
Disturbance to unknown heritage resources	Construction	Monitoring of Kettle River and Butnau Diversion Channel crossings. Also registered archaeological sites HcKs-01 and HcKt-02, , although not within the Preferred Route, should be avoided.	Potential discovery of unknown heritage resources.	Direction: Neutral Magnitude: Small Geographic Extent: Small Duration: Short-term.

Effects of the Project on heritage resources during construction are expected to be neutral, small in magnitude, limited to the Project extent, and short-term.

5.4 INTERACTIONS WITH OTHER PROJECTS

Based on the available information in conjunction with the field assessments, the Project is unlikely to disturb heritage resources. The potential interactions of the Project with other projects in close proximity to the Project will not have a combined effect on heritage resources.

Other projects considered in the analysis include:

- Bipole III Transmission Project (including the Keewatinoow Convertor Station)
- Keeyask Generation Project
- Gillam Redevelopment
- Conawapa Generation Project

Past projects that have affected the Study area include the Kettle Generating Station which created the Stephens Lake reservoir and included the construction of the Butnau Dam. Much of the original shoreline of the Nelson River has been lost by the creation of Stephens Lake.

5.5 MONITORING

Supplementary to the *Heritage Resources Act* and Manitoba's Policy Respecting the Reporting, Exhumation and Reburial of Found Human Remains (1987) which provides guidelines for managing human remains,the Environmental Protection Plan and the Heritage Resource Protection Plan will provide a monitoring program for the Keeyask Transmission Project. Required monitoring will focus on the Generation Outlet Transmission line water crossings of the Kettle River and Butnau Diversion Channel. Monitoring will include on-site shovel testing of the Preferred GOT line route right-of-way within 50 metres of each water crossing to determine the presence of *in situ* heritage resources or features. Monitoring could occur immediately prior to or during tree clearing activities and before any ground disturbing activities, such as tower footing excavation, takes place, or at the time of footing excavation.

Following principles of best practice, the Heritage Resource Protection Plan (HRPP) will include implementation of Environmental Inspectors to protect discovered heritage resources during construction and operations of the Project. The role of the Environmental Inspectors is to be present for all on-site during construction activities and to be the initial contact if heritage resources are discovered during construction activities. The Environment Inspector will immediately contact the Project Archaeologist who will then work with the Construction Supervisor and Site Manager to ensure that all in-field workers are informed of and understand the process of implementing heritage protection measures.

6.0 CONCLUSIONS

NLHS conducted archaeological predictive modeling and field investigations to complete the HRIA for the proposed Keeyask Transmission Project proposed GOT lines and Construction Power Transmission Lines routes. There are no existing archaeological sites within the planned development areas of the Project study area; therefore there are no measurable concerns to the VEC heritage resources. The effects of the Keeyask Transmission Project on heritage resources are considered to be minimal at this point. Field studies conducted as part of the HRIA did not reveal any tangible evidence of past occupations. However, the study area is part of a cultural landscape that includes existing traplines, winter camps and associated activities. Associated with the natural environment is the intangible qualities that the landscape offers in the way of cultural values. There is the potential for archaeological sites of antiquity to be buried below the peat in areas that were once more habitable (post Glacial Lake Agassiz). Deep testing was not possible due to the ground conditions. Should heritage resources and/or human remains be discovered during the clearing and construction of the Construction Power or Generation Outlet Transmission lines, in particular the tower footings, Manitoba's *Heritage Resources Act* (1986) and Policy Concerning the Reporting, Exhumation and Reburial of Found Human Remains (1987) and terms of the Heritage Resources Protection Plan would be implemented.

7.0 GLOSSARY

Aboriginal Traditional Knowledge (ATK) – Aboriginal knowledge related to natural and cultural environments. Provides a within living memory understanding of what people recall as well as what they remembered being told by other people. By this means both the oral history (that which is experienced by the individual within three generations) and the oral tradition (that which is related as the experience of another beyond three generations) is captured.

Predictive Model - a tool used in archaeological research that indicates the relative probability of locating archaeological sites within a specified area.

Project Study Area - the geographic extent of the project which includes all project structures and facilities.

Regional Study Area – the geographic extent of the project which contains comparative archaeological sites and a setting for an overall cultural characterization.

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