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Technical Memo

Date: August 4, 2015

To: Sylvie Le Blanc, Territorial Archaeologist, Government of Nunavut

CC: David Broughton , Zach Flood, Tundra Copper Corp.

From: Julie M. Ross, Points West Heritage Consulting Ltd.

Introduction

Tundra Copper Corp. contracted Points West Heritage Consulting Ltd. (Points West) to assess 28 proposed drill locations identified in their application to the Nunavut Impact Review Board (NIRB 15EN009). Points West addressed concerns expressed by the Department of Culture and Heritage on May 11, 2015, as well as screening conditions contained within Appendix C of the Screening Decision Report issued by NIRB on July 7, 2015. The Department of Culture and Heritage stipulated that lands within a 50 m diameter of each proposed drill location as well as their associated waterline routes, be assessed for archaeological sites; and that a buffer of 50 m be maintained between the three previously recorded sites (MiPn-1, MiPn-2 and MiPn-3), and all land use activities.

The assessment of the proposed drill locations was completed between July 16 and July 18, 2015 by Julie M. Ross and Sean Desjardins of Points West, under the authorization of Nunavut Archaeologist Permit 2015-37A. Jeffery Niptanatiak, of the hamlet of Kugluktuk, Nunavut, assisted as bear monitor and local guide. The purpose of this technical memorandum is to summarize the results of this work.

The Coppermine River region is an important area for understanding past land use and the history of several archaeological cultures. Sites in the region are affiliated with the Arctic Small Tool Tradition, Thule, Inuit, Thattheilei Complex, and perhaps Paleo-Indian culture; the latter may date back as far as 7500 Before Present (McGhee 1970).

Methods

Archaeological aerial reconnaissance by helicopter was carried out on July 16, 2015. Each drill location, as well as the nearest water source suitable for drilling activity, was evaluated at an average elevation of 320 m, and representative photographs of the areas examined were taken, while each location was circled during this reconnaissance. The objective was to determine the potential for archaeological sites and to rate them from low to high.

Drill locations with moderate archaeological potential were subject to a pedestrian reconnaissance. The highest potential landforms near the proposed drill locations were the focus of examination. Shovel testing was not required at the drill locations because there was sufficient areas without vegetation cover.

A number of factors are considered in assessing the potential of an area to contain archaeological sites. High potential for archaeological sites is assigned to locations with several of the following attributes:

- proximity to previously recorded archaeological sites;
- relatively level and well drained terrain that is suitable for construction of known types of archaeological features and types of activities expected;
- near to preferential topographic features, such as larger lakes or rivers, esker or esker remnants, boulder fields or bedrock outcrops;
- near known subsistence or raw material resources;
- located along possible travel routes; and
- documented or oral evidence of past or current land use.

Moderate potential for archaeological sites is assigned to locations that have a few of the above listed attributes, or an attribute that is not as well defined. For example, usually eskers are assigned high archaeological potential, but a small or discontinuous remnant esker located far from a well-defined water body may be assigned moderate potential because the absence of freshwater and more difficult access makes the location less desirable.

Low potential is typically assigned if lands are wet, previously disturbed, low lying and not associated with preferential topographic features. Low potential may also be assigned if an area was previously and relatively recently subjected to a pedestrian reconnaissance by a professional archaeologist, with no sites being identified.

Results

A total of 28 proposed drill locations were assessed; of these, 25 were assessed as having low and three were assessed as having moderate archaeological potential (Table 1); no high potential locations were identified during aerial reconnaissance.

Table 1. Summary of Helicopter Assessment of Tundra Copper's Proposed Drill Locations and Associated Water Sources

Drill Identification	Northing	Easting	Land Status	Archaeological Potential Assessment	Comments
PROP_DD001	554194	7501317	Crown	Low	High ground with bedrock outcrops near the edges of drill location. Drill location is a wetter area, but was subject to pedestrian reconnaissance as a test of the aerial assessment. No archaeological sites found.
PROP_DD002	548065	7494217	IOL	Moderate	High ground with bedrock outcrops; there is also late-lying snow and substantial water sources nearby. Area subject pedestrian reconnaissance. No archaeological sites found.
PROP_DD003	550955	7493069	IOL	Moderate	High ground with stones available for feature construction, as well as a sizeable nearby water source. Low area could have been used for travel. Area subject to pedestrian reconnaissance. No archaeological sites found.
PROP_DD004	552340	7494757	IOL	Low	Moderate elevation, but no substantial water bodies.
PROP_DD005	559662	7502119	Crown	Low	Immediate drill location is low lying; however, there is a cabin in the vicinity.
PROP_DD006	561396	7499701	IOL	Low	Low lying and wet with heavy vegetation cover.
PROP_DD007	571241	7502528	Crown	Low	Low lying, though there is a small, raised esker with some potential located outside the proposed drill location.
PROP_DD008	525556	7506770	Crown	Low	Potential is lower the further away from the Richardson River. The proposed drill location is over 500 m from the river Landform is gently elevated.
PROP_DD009	533750	7501407	Crown	Low	Low lying. Outcrops found in the vicinity (~500 m), but drill area has low potential.
PROP_DD010	542891	7496703	Crown	Low	Overall, low lying. Some outcrops in vicinity, but none associated with drill location.
PROP_DD011	540503	7500111	Crown	Low	Low lying and flat; there is standing water on the land.
PROP_DD012	514531	7506229	Crown	Low	Outcrops near drill location, but few stones for feature construction. Location's distance from the river contributes to its low potential.
PROP_DD013	505363	7515110	Prospecting Permit	Low	Low lying and rocky; not situated near substantial water bodies.
PROP_DD014	489445	7516788	Prospecting Permit	Low	Low lying area with lots of standing water. Some elevated areas are located more than 50 m from the drill location.

Drill Identification	Northing	Easting	Land Status	Archaeological Potential Assessment	Comments
PROP_DD015	537855	7502132	Crown	Low	Low ridge is present, though surrounded by wet and patterned ground.
PROP_DD016	509927	7480259	Crown	Low	Low lying. Wood debris--likely from previous exploration--in the vicinity.
PROP_DD017	545870	7495388	IOL	Low	Low lying areas near drill location, with isolated rocky outcrops.
PROP_DD018	539386	7502167	Crown	Low	Low lying and flat; no stones for feature construction.
PROP_DD019	515914	7482840	Crown	Moderate	Archaeological site TC ¹ -1 recorded within 120 m of the proposed drill location. Other land use and archaeological features surround the drill location.
PROP_DD020	541640	7468630	Crown	Low	The location is far from substantial water or other useful resources.
PROP_DD021	511575	7483299	Crown	Low	Area is low lying and wet. Some elevated areas nearby, though these are some distance from the drill location.
PROP_DD022	547676	7500477	Crown	Low	Immediate drill site area low lying. Nearby ridge has moderate potential.
PROP_DD023	524207	7506533	Crown	Low	Potential is lower the further away from Richardson River. Proposed drill site located on an elevated location, though more than 500 m from water's edge.
PROP_DD024	511359	7477980	Crown	Low	Low lying, patterned ground evident.
PROP_DD025	536332	7499396.01	Crown	Low	Low lying, patterned ground in the area; few rocks or large stones in the area. No outcrops were evident.
PROP_DD026	529310	7504326.93	Crown	Low	Low lying and flat.
PROP_DD027	547580	7492781.46	IOL	low	Well-elevated location, far from sustainable water resources. Initially assessed as low, a potential archaeological feature was viewed from the helicopter. Area was then subject to pedestrian reconnaissance with no sites or features located.
PROP_DD028	549032.	7491893.02	IOL	Low	Well elevated, with no visible features. Few rocks present for feature construction.

¹¹ During field work report numbers are assigned to previously unrecorded archaeological feature. Archaeological feature were recorded at TC to indicate they affiliation with the Tundra Copper program and then with a numerical identifier. These report numbers will be replaced by Borden numbers and once assigned a Borden number the use of the sites Borden designation is the legally correct means of identifying them.

Surface reconnaissance at the moderate potential locations resulted in the identification of one previously unrecorded archaeological site. Features associated with this site are situated at distances of 120 m to 185 m from the proposed drill location, which is identified as PROP_DD019. In addition, the archaeological features are protected by a bedrock ridge, and will not likely be disturbed by activity at the drilling site. Land use features such as a can dump and recent stone markers might be affected by drilling activities, but these recent feature are not archaeological. Drill locations PROP_DD02, PROP_DD03, and PROP_DD19 were identified as having moderate archaeological potential and were subject to a pedestrian survey. Drill sites PROP_DD01 and PROP_DD27, which were assigned low potential during the aerial reconnaissance, but were subjected to pedestrian reconnaissance to 'spot test' the aerial assessments.

Three archaeological sites were recorded within walking distance of the camp location. Further, land use sites are located within walking distance of the camp. There is a cabin in the vicinity of PROP_DD05. The archaeological and land use sites will be reported on in the Final Archaeological Impact Assessment Report.

Recommendations

It is recommended that the drilling activity proposed by Tundra Copper Corp. be permitted to proceed from the perspective of risk posed to archaeological sites provided the position of the drills are within 50 m of the original locations identified to Points West (Table 1). Care should be taken at PROP_DD019, as there are recorded archaeological features in the vicinity; however, none of these features is within 100 m of the drill location and are separated from drilling activity by natural topographic features. Should drillers or wildlife monitors construct stone markers, or Inuksuit, during work at any drill site within the project area, these new features should be dismantled prior to the completion of work. In the event archaeological sites or artifacts are encountered during Tundra Copper Corp. activities, all work in the vicinity of the discovery should cease, and the Territorial Archaeologist should be consulted.