GIS-Based Archaeological Potential Model for Whitehorse City Limits: Phase 1

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Stantec would also like to thank project partners Natalie Leclerc, Land Use Planning Coordinator Ta'an Kwäch'än Council, Mike Ellis, Senior Planner City of Whitehorse and Greg Hare, Acting Yukon Archaeologist Yukon Government.

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The opinions, omissions, and/or errors in this report are those of Stantec Consulting Ltd. alone and do not necessarily reflect the positions held by our client, Government of Yukon, or the project partners.

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Executive Summary

This report details the results of Phase 1 of an archaeological potential modeling project of the City of Whitehorse municipal limits by Stantec Consulting Ltd. The project was conducted at the request, and on behalf, of Kwanlin Dün First Nation (KDFN). In Phase 1 the following steps were proposed:

Task 1: Compile and correct existing archaeological site data for the study area. Gather relevant and readily available spatial data.

Task 2: Analyze known archaeological site locations using available spatial data to determine which variables are the strongest predictors for known site locations.

Task 3: Compile information gained in Tasks 1 and 2 to construct a preliminary draft model.

Task 4: Prepare a brief report that details what was accomplished, what data sets were used and recommendations for future steps.

Tasks 1 was completed and is further described in this report. For Task 2, the archaeological site locations were analyzed using available spatial data but missing data sets and incompatibility between datasets prevented an analysis of which variables have strongest predictors of known site locations. However, this exercise highlighted important data gaps and issues that are discussed in Sections 4 and 5. Task 3 could not be advanced because of missing datasets.

The intended scope of an archaeological potential model is to assess the potential for physical evidence of past human use, or archaeological resources that pre-date contact. It is not the intent of this phase, future phases or any end-product derived from this phase to evaluate or comment on, or model traditional aboriginal use of the study area. The results of this study should not be considered valid for that purpose.

Traditional Knowledge (TK) and Traditional Land Use (TLU) information was not gathered or included in this phase.

1.0 INTRODUCTION

Phase 1 of the archaeological potential modeling project for the City of Whitehorse municipal limits was conducted by Stantec Consulting Ltd at the request, and on behalf, of Kwanlin Dün First Nation (KDFN). KDFN is seeking a GIS-based archaeological potential model as a planning tool to assist their lands and resources department and future heritage department. The study area was defined by KDFN and includes the City of Whitehorse municipal limits. Stantec proposed a phased approach to modeling. The rationale for this approach is contained in Section 2.

The goals of Phase 1 included:

- gathering readily available and relevant biophysical data sets for the model (e.g., LiDAR, TPI, vegetation cover, etc.)
- compilation and correction (if necessary) of existing archaeological site data
- analysis of known site locations to determine what variables are correlated with known site locations
- construction of a preliminary draft GIS model
- completion of a brief report that details what was accomplished, what data sets were used and recommendations for future steps

The following tasks were completed in Phase 1:

- compilation of biophysical data sets
- compilation of existing archaeological site data
- correction of archaeological site data
- removal of some archaeological sites for modeling purposes
- compilation of historic site data
- bibliography of previous heritage assessment permit reports
- bibliography of documented culture history/research reports
- analysis of known archaeological site locations' intersections with available biophysical data sets
- report outlining work to date, data gaps and recommendations for future steps

1.1 REPORT FORMAT

This report is divided into seven sections and three appendices.

Section 1: Introduction
This section introduces the project and discusses the work undertaken, the relevant legislative references and definitions.

Section 2: Project Description
This section briefly describes the project area and discusses the project design.

Section 3: Methodology
This section discusses the methods used to correct the existing archaeological site database and compile the spatial datasets necessary for this project.

Section 4: Results
This section describes the data gaps discovered during the study.

Section 5: Recommendations
This section describes recommendations on how to move forward.

Section 6: Future Steps
This section outlines some potential future phases.

Section 7: References Cited
This section lists bibliographic information for all references cited in this report.

Appendices
Appendices included in this report: Appendix A is a bibliography of published cultural research projects that have been conducted in the study area. Appendix B is a bibliography of archaeological/heritage assessment reports for projects conducted within the study area and Appendix C is a list of historic sites recorded in the area.

1.2 LEGISLATIVE REFERENCES

Several acts, agreements and regulations apply to Heritage Resources within the City of Whitehorse. These include the *Historic Resources Act* (Government of Yukon 2002) and Archaeological Sites Regulation (Government of Yukon 2003a), the Yukon *Territorial Lands Act* Land Use Regulations (Government owf Yukon 2003b), the Umbrella Final Agreement (Government of Canada et al. 1993), and the Yukon *Environmental and Socio-Economic Assessment Act* (YESAA, Government of Canada, S.C. 2003).

The *Historic Resources Act* and Archaeological Sites Regulation contain legislation that mandates the management and protection of Yukon archaeological, historical, and paleontological resources. This legislation applies to Heritage Resources on both private and public land and archaeological and historical resources that are older than 45 years. Archaeological, historical and paleontological resources are protected from unpermitted surveys, disturbances, alterations, or excavations.

Chapter 13 of the Umbrella Final Agreement provides regulations for the ownership and management of Heritage Resources found within First Nation Settlement Lands and Traditional Territories. Section 3.1 states that each Yukon First Nation shall own and manage Heritage Resources found on its Settlement Land. Under Section 3.2, ethnographic moveable Heritage Resources recovered from its traditional territory that are not public records or private property, are owned and managed by the First Nation.

The *Territorial Lands Act* Land Use Regulation contains regulations regarding operations around, and the discovery of, archaeological sites. Section 9(a) of the Regulation stipulates that "no permittee shall, unless expressly authorized in their permit or expressly authorized in writing by an inspector, conduct a land use operation within 30 m of a known monument or a known or suspected archaeological site or burial ground." Furthermore, Section 15 states that "Where, in the course of a land use operation, a suspected archaeological site or burial ground is unearthed or otherwise discovered, the permittee shall immediately (a) suspend the land use operation on the site; and (b) notify the engineer or an inspector of the location of the site and the nature of any unearthed materials, structures, or artifacts."

The Yukon *Environmental and Socio-Economic Assessment Act* (YESSA) requires that potential effects to heritage resources are considered during review of proposed projects. The Heritage Resource Information Requirements for Land Application Proposals Policy (Operational Policy No. 2011-01) developed by the Yukon Environmental and Socio-Economic Assessment Board outlines the requirement for a heritage resource assessment to be included with any proposal that includes disposition of land.

1.3 DEFINITIONS

The archaeological potential model described herein is designed to assess the potential for archaeological sites. The following definitions apply.

'Archaeological Site' means a site where an archaeological object is found (Government of Canada 2003a: 2). archaeological sites are sites with a pre-contact

'Heritage Resource' is defined under YESAA (s. 2.) as:

a. A moveable work or assembly of works of people or of nature, other than a record only, that is of scientific or cultural value for its archaeological, palaeontological, ethnological, prehistoric, historic or aesthetic features;

b. a record, regardless of its physical form or characteristics, that is of scientific or cultural value for its archaeological, palaeontological, ethnological, prehistoric, historic or aesthetic features; or
c. an area of land that contains a work or assembly of works referred to in paragraph (a) or an area that is of aesthetic or cultural value, including a human burial site outside a recognized cemetery.

This definition is based on the definition of "heritage resources" in Yukon First Nation Final Agreements and is generally broader than the definition of "historic resources" under the *Historic Resources Act*.

The Government of Northwest Territories Traditional Knowledge Policy (53.03, March 2005) defines traditional knowledge as "…knowledge and values, which have been acquired through experience, observation, from the land or from spiritual teachings, and handed down from one generation to another."

Traditional Land Use (TLU) data is defined here as cumulative and dynamic information resulting from historical continuity with local land and resources that focuses on specific locations and resources of cultural significance. Typically, TLU sites and areas include: harvesting areas, habitation areas, spiritual sites and sacred landscapes, and transportation and travel corridors.

1.4 USE OF ARCHAEOLOGICAL DATA

Archaeological site location information is contained within the deliverables of this project. For Commissioner's Land, the Yukon Archaeology Programme maintains this data in accordance with the Historic Resources Act and Archaeological Sites Regulations. On First Nation Settlement Lands, the First Nation maintains this information in accordance with Chapter 13 of the Umbrella Final Agreement (Government of Canada *et al*. 1993). Please note that archaeological site location information cannot be distributed to any third parties without the written permission of the relevant authority.

Archaeological site data has been compiled from archaeological site forms and permit reports for modeling purposes and to serve as an overview of archaeological site information. This data has been isolated from the original documentation surrounding its discovery and recording. Readers of this report and users of the (forthcoming) archaeological potential model are advised to contact the relevant authority regarding the protection and management of individual sites.

1.5 DATA CURRENCY

Archaeological site data used during this project is current as of February 17th, 2017. It is important to note that the archaeological data pertinent to this project may change through time as more archaeological work is conducted and sites are located or updated. The utility of a model of this type is enhanced by periodic updates as new data become available.

2.0 PROJECT DESIGN

Stantec endorses an approach to GIS-based archaeological potential modeling that combines inductive and deductive reasoning. An inductive approach uses bottom-up logic and extrapolates general rules from observed sets of data. Sets of data are analysed for patterns and new theories are generated, or general conclusions are drawn from evidence. The sets of data used here include locations of known archaeological sites. By analyzing the locations of known sites we can make general predictions about where other sites are likely to be found. A deductive approach, conversely, uses top-down logic to generate specifics about site locations from broad or generalized theory. This approach is aimed more at testing a theory, rather than generating theory and the focus is on causality, or finding evidence to support a general theory.

The theory derived from the deductive approach here is that certain traditional land and resource use activities result in the creation of specific types of archaeological sites. By modeling for the locations where those activities are most likely to have occurred we can also model for archaeological site locations. The approach makes use of existing archaeological data to inductively model for undiscovered archaeological sites based on the locations of known sites and uses traditional land use data to deductively model for undiscovered sites based on traditional land use activities and the locations where those activities are most likely to have occurred. These approaches are naturally complementary as both rely heavily on geospatial data for effective model formulation. The modeling approach suggested here mirrors the approach used by Arcas Consulting Archeologists Ltd. in their *GIS Model of Archaeological Potential for the Quesnel Forest District* (Arcas 1998), by Matrix Research Ltd. in their *Quesnel Forest District GIS Model of Archaeological Potential Revision Project, 2008/09* (Heffner 2009) and by Matrix, now Stantec in their 2013/14 *Archaeological Potential Model for Portions of the Klondike Plateau and Yukon Plateau North* (Heffner et al, 2014 and Heffner and Nelson, 2014)

This approach relies on local knowledge and an understanding of past human land use activities in the study area, with a particular focus on those activities that leave physical remains and thus create archaeological sites. Environmental and landscape features that are associated with those traditional land use activities are then identified. If the right combination of attributes exists at a location then it is assigned a high potential value for the type of archaeological site that could result from that activity.

Examining existing archaeological data in a study area is a necessary step to potential modeling. Site locations are analysed to see which biophysical data sets they are correlated with. Analysis of various attributes of the archaeological site locations allow for a greater understanding of site features on the landscape and helps to determine which biophysical and cultural variables (and therefore which GIS datasets) are the most effective for modeling. These features are then considered in the construction of the model script and when establishing buffer sizes placed around the biophysical and cultural features represented by the various GIS layers. These buffers provide the foundation for the queries made using the TK-derived model script. Distance

measurements (near analysis) of archaeological sites and various biophysical features, particularly hydrological features, can also be used to establish buffer classes for those GIS datasets. The following steps can be taken in this blended approach:

Inductive Approach

Step 1: Compile and correct archaeological site data.

Step 2: Analyze site locations to determine which variables have the best potential for predicting site locations.

Near Analysis: calculate how far each site is from certain biophysical (e.g., water) or cultural (e.g., trails) features. This information helps in setting buffer widths and is done for various site types.

Correlative Analysis: conduct spatial queries using GIS layers to look for correlations between site locations and other biophysical attributes (e.g., elevation, slope, aspect, soils, vegetation, etc.).

Step 3: Use this information to construct a draft model.

Deductive Approach

Step 1: Compile a list of traditional land use activities through ethnographic research and community consultation.

Step 2: Determine what the archaeological signatures of those activities might be and compile list of site types.

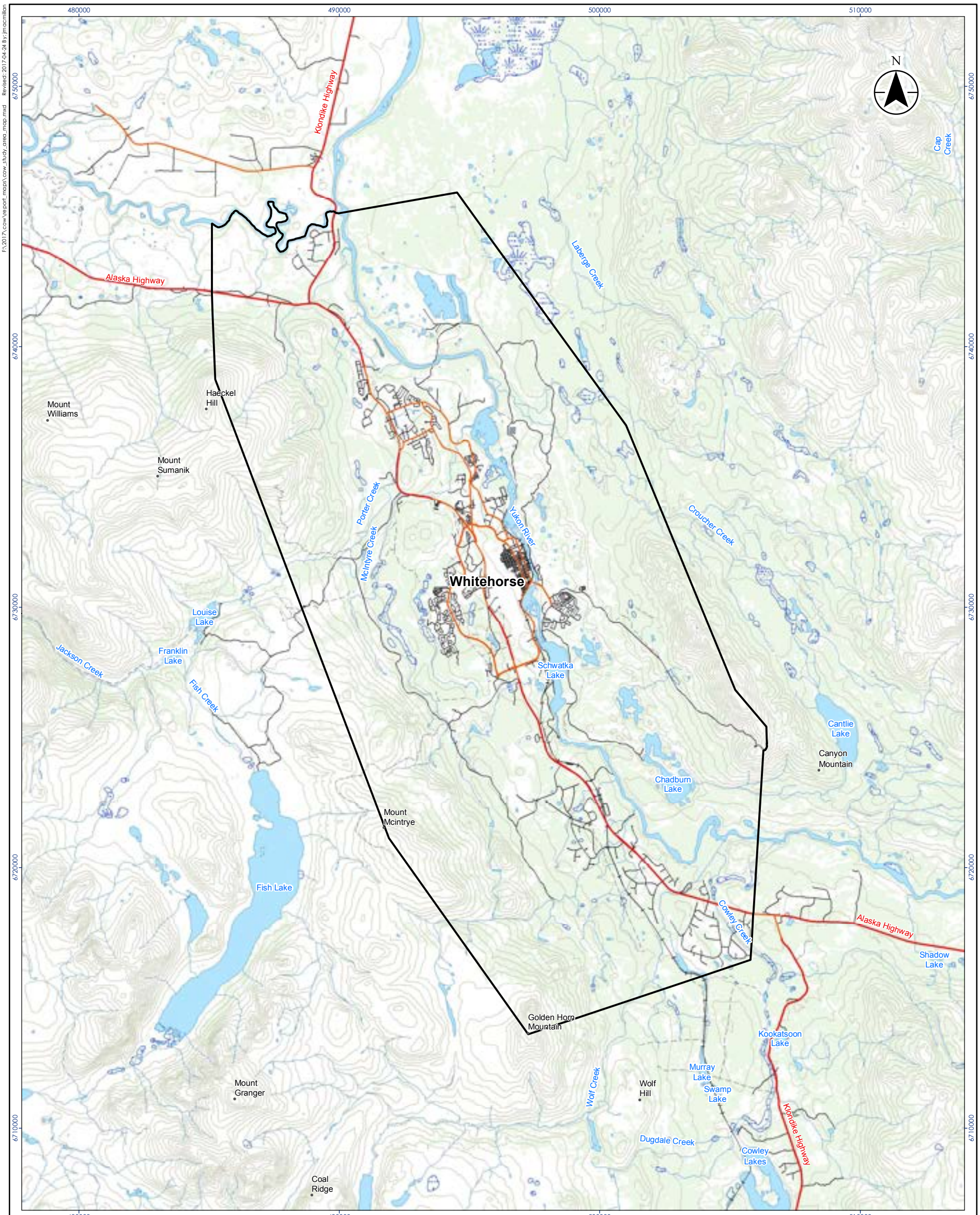
The following criteria are recommended for an archaeological potential model.

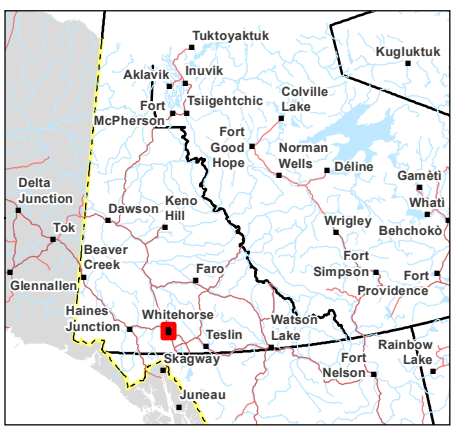
•Effective and efficient. High potential polygons should capture ground-truthed high potential ground and known archaeological sites while classifying as little land base as possible as high potential. This can be measured through use of the Kvamme Gain Statistic.

•Easily updatable. As new or improved data sets become available it should be simple to incorporate them into the model, rerun the script and update the output, with minimal review.

•Reviewable and replicable. Archaeological professionals should be able to view the theoretical foundation of the model as well as the data and script to examine how it functions.

•Queriable. The model should not be a black box. Every raster cell assigned a value of high archaeological potential should be queriable to determine the basis for that assignment. This information could also inform any archaeological assessment conducted at that location.





- Terrain Feature
- Primary Road
- Secondary Road
- Local Road
- Access Road
- Trail
- Topographic Contour
- Watercourse
- Liquid waste
- Waterbody
- Waterbody, intermittent
- Forested area
- Wetland
- City of Whitehorse Municipal Boundary

0 2.5 5 Kilometers

1:150,000 (At Original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 8N
2. Data Source: Government of Canada

Stantec

Project Location

NTS Map Sheet(s):
105 D/10, 105 D/11,
105 D/14, 105 D/15

123220806
Prepared by J. MacMillan on 2017-04-18
Independent Review by Susie Heffner on 2017-04-24
Quality Review by xxxx

Client/Project

Client: Kwanlin Dün First Nation
Project: GIS-Based Archaeological Potential Model for Whitehorse City Limits: Phase 1

Figure No.

1

Title

Study Area

3.0 METHODOLOGY

For optimal results, GIS-based modeling projects require the most complete and up-to-date spatial information that is readily available. Considerable efforts were taken during Phase 1 to research and obtain the most up-to-date datasets relevant to the study area and archaeological potential modeling. Two categories of data were sought: biophysical spatial data (i.e., digital elevation models, vegetation data, stream data); and archaeological data (site locations and attributes of known sites, previous assessment areas). Section 3.1 includes a description of archaeological data that was sought and complied for the study area and Section 3.2 includes a description of the biophysical spatial data. Note, heritage assessments in the Yukon include both archaeological (pre-contact) and historic (post-contact) sites. A search of previous heritage work is necessary to compile a list of known archaeological assessments and archaeological sites.

3.1 PREVIOUS HERITAGE WORK

Constructing an archaeological potential model requires a comprehensive understanding of the current archaeological site distribution in the study area. Correlations between known site areas and biophysical features are reviewed and this information is used to inform where areas with the highest potential for as of yet discovered archaeological sites may be located within the study area. Also noted earlier, the archaeological potential model only indicates which areas have the potential for pre-contact archaeological sites not historic (post-contact) or traditional land use (TLU) sites. However, a fulsome understanding of pre and post contact land use activities contributes greatly to the overall understanding of the cultural landscape of the study area.

3.1.1.1 Historic Sites

Historic sites are recorded in the Yukon Historic Sites Inventory (YHSI) database and/or the Yukon Archaeological Sites Inventory (YASI) database. Historic sites records were compiled for the study area because they form an important historic record of the study area and some sites have both a historic and pre-contact components (i.e. Canyon City/JdUr-5) and are recorded in both the YHSI and YASI. Historic sites are not included in the site database used for archaeological potential modeling and their locations are only considered relevant when there is a pre-contact component associated with the site. The locations of historic sites not included in YASI were therefore not reviewed for accuracy. A list of historic sites within the study area is found in Appendix C.

3.1.1.2 Heritage Assessments

A list of the archaeological sites regulations permits and non-permit overview level heritage assessments conducted within the study area is on file with Yukon Heritage Resource Unit, Yukon Tourism and Culture. A bibliography of these reports can be found in Appendix B.

Archaeological and heritage overview and impact assessments have largely been conducted for infrastructure (roads, recreational sites and campgrounds, buildings, subdivision planning) and natural resource development within the study area. The level of assessment conducted during these studies varies; meaning some areas have been completely assessed in the field (including surface, subsurface inspection and site assessments), while other areas have been inventory surveyed (combination of surface and subsurface inspection but not completely assessed to understand site size/characteristics or whether areas suspected to be high potential contained archaeological resources). Large portions of the study area, particularly in the southwestern and southeastern portions, have not undergone a heritage assessment.

Archaeological excavations within the study area include those at Canyon City (JdUr-5; Hammer 1996 and 1997; Castillo 2013) and McIntyre Creek (JeUs-7, Hammer 1997; JeUs-28, Rutherford 1995, 1996 and 1997 and JeUs-44, Castillo 2014, 2015 and 2016).

Unpublished heritage overview assessments that are not associated with a permit are included in Appendix A if we were aware of them at the time of this study. For example, the Chadburn Lake area management plan report (3 Pikas, 2016), was not conducted under permit but includes a heritage overview assessment. Table 3 lists all projects in the study area where a permit was obtained to conduct an archaeological/heritage field assessment.

Table 1 Previous Archaeological Assessments within Study Area

Permit Number	Year	Author	Title
57-02ASR	1961	MacNeish, Richard	Summary Report: Site Survey of Southwest Yukon
75-03ASR	1975	Morlan, Richard	Archaeological Investigations in Yukon
77-08ASR	1977	Van Dyke, Stan	Historical Site Reconnaissance: Alaska Highway Gas Pipeline Route
78-08ASR	1978	Van Dyke, Stan	Historical Site Reconnaissance: Alaska Highway Gas Pipeline Route
78-11ASR	1979	Van Dyke, Stan	Historic Properties Study: Proposed Dempster Lateral Pipeline Route
79-13ASR	1979	Van Dyke, Stan	Archaeological Reconnaissance: Rancheria River, Ibex Valley and Canyon, Yukon Territory
79-10ASR	1979	Hunston, Jeff and Kirby, J	Archaeological Investigations in Yukon
81-01ASR	1981	Van Dyke, Stan	Archaeological Inventory: Alaska Highway Pipeline Project, Yukon Territory
83-05ASR	1983	Hunston, Jeff	Excavations of JeUs-3 and Survey in the Whitehorse Area
86-03ASR	1987	Easton, Norman A	Heritage Resources Inventory: 1986 Final Report
90-08ASR	1990	Gotthardt, Ruth	Archaeological Assessment of the Five Proposed Campground Developments in Yukon

Table 1 Previous Archaeological Assessments within Study Area

Permit Number	Year	Author	Title
91-10ASR	1991	Gotthardt, Ruth	Archaeological Assessment of Proposed Campground and Recreation Site Developments in Yukon
93-12ASR	1993	Rutherford, Douglas E	Final Report: Archaeological Impact Assessment of the City of Whitehorse Sewage Facility Upgrade
93-12ASR	1993	Rutherford, Douglas E	Preliminary Report: Archaeological Impact Assessment of the City of Whitehorse Sewage Facility Upgrade
93-09ASR	1994	Gotthardt, Ruth	Archaeological Investigations at Canyon City, 1993
93-05ASR	1994	Gotthardt, Ruth	The Fish Lake Archaeology Project, 1993
94-02ASR	1994	Hare, Greg	Final Report on the Archaeological Survey of Six Developments in the Greater Whitehorse Area
95-10ASR	1996	Gotthardt, Ruth	The Lake Laberge Archaeology Project 1995
96-03ASR	1996	Hare, Greg	Archaeological Survey of the Proposed McIntyre Creek West Country Residential Subdivision
95-14ASR	1996	Rutherford, Douglas E	Final Report on the 1995 Excavations, JeUs-28 MacIntyre Creek, (Chasan Chua) City of Whitehorse, Southwest Yukon
97-09ASR	1997	Gotthardt, Ruth	Archaeological Overview Assessment at Three Yukon Campgrounds
96-12ASR	1997	Hammer, Thomas J	The Canyon City Archaeology project 1996
97-04ASR	1997	Hare, Greg	Archaeology Assessments at Various Locations within the Greater Whitehorse Area, Yukon Territory: Final Report
97-08ASR	1997	Rutherford, Douglas E	Interim Report of the 1997 MacIntyre Creek Archaeology Project, City of Whitehorse, Southwest Yukon
97-01ASR	1997	Hammer, Thomas J	Archaeological Investigations at JeUs-7, Whitehorse, Yukon
96-17ASR	1997	Rutherford, Douglas E	Final Report on the 1996 Excavations, JeUs-28 MacIntyre Creek, (Chasan Chua) City of Whitehorse, Southwest Yukon
97-06ASR	1998	Hammer, Thomas J	The Canyon City Archaeology Project 1997
98-05ASR	1999	Hare, Greg	Archaeological Assessments at Various Locations in Southern Yukon Territory
99-09ASR	2000	Hare, Greg	Archaeological Assessments at Various Locations Within the Greater Whitehorse Area, Yukon Territory
02-08ASR	2003	Hammer, Thomas J	Whitehorse Copper Development Area Overview Heritage Assessment, Stage II Final Report
00-09ASR, 01-14ASR,	2003	Hare, Greg	Archaeological Assessments at Various Locations Within the Greater Whitehorse Area, Yukon Territory

Table 1 Previous Archaeological Assessments within Study Area

Permit Number	Year	Author	Title
02-06ASR, 03-11ASR			
03-02ASR	2004	Thomas, Christian D and Coppard, Barbara J	Sleeping Giant Project: 2003: Archaeological and Historic Sites Impact Assessment
05-19ASR	2005	Thomas, Christian D	Heritage Sites Inventory of the Proposed Pine Street Extension of Porter Creek Subdivision
05-18ASR	2006	Thomas, Christian D	Heritage Sites Inventory and Impact Assessment: Proposed Raven's Ridge Subdivision
Non-permit	2008	Gotthardt, Ruth	Archaeological Overview Assessment of the Whitehorse Affordable Family Housing Project
07-10ASR	2008	Heffner, Ty and Ross, Michael	Heritage Resources Impact Assessment Conducted Under Permit 07-10ASR on a Proposed Subdivision Development on Settlement Land Parcel TKC-23B
07-10ASR	2008	Heffner, Ty and Ross, Michael	Heritage Resources Impact Assessment Conducted Under Permit 07-10ASR on a Proposed Subdivision Development on Settlement Land Parcel KDFN-15B
07-10ASR	2008	Heffner, Ty and Ross, Michael	Heritage Resources Impact Assessment Conducted Under Permit 07-10ASR on a Proposed Subdivision Development on Settlement Land Parcel CTFN C-82B
07-03ASR	2008	Thomas, Christian D	Heritage Sites Inventory and Impact Assessments of Various Localities throughout the Yukon Territory
08-04ASR	2009	Davison, Erin	Heritage Resources Impact Assessment Conducted Under Permit 08-04ASR on the Proposed Whistle Bend Subdivision Development, City of Whitehorse
09-04ASR	2009	Heffner, Ty	Heritage Resources Impact Assessment Conducted Under Permit 09-04ASR for the Proposed Takhini North Phase 2 Subdivision
09-04ASR	2010	Burkmar, Richard and Heffner, Ty	Heritage Resources Inventory of the McIntyre Creek Study Area Conducted Under Permit 09-04ASR
09-04ASR	2010	Burkmar, Richard and Heffner, Ty	Heritage Resources Impact Assessment Conducted Under Permit 09-04ASR for the Proposed Whistle Bend Connector Study Area
09-15ASR	2010	Davison, Erin and Heffner, Ty	Heritage Resources Impact Assessment Conducted Under Permit 09-15ASR for the Proposed Whistle Bend Transmission Line
10-12ASR	2010	Farnell, Gillian N	Archaeological Investigations of McIntyre Creek
11-27ASR	2012	Heffner, Ty	Heritage Resources Impact Assessment of the Proposed Tamarack Infill Area Conducted Under Permit 11-27ASR
11-16ASR	2012	Kasstan, Steve	Alaska Pipeline Project – Historic Resource Impact Assessment: Permit Report 11-16ASR

Table 1 Previous Archaeological Assessments within Study Area

Permit Number	Year	Author	Title
11-19ASR	2012	Kasstan, Steve	Alaska Pipeline Project – Historic Resource Impact Assessment: Permit Report 11-19ASR
12-15ASR	2012	Thomas, Chris	Yukon Wide Archaeological Impact Assessments
12-08ASR	2013	Castillo, Victoria	Yukon College Archaeology Field School Project 2012
11-21ASR	2013	Hare, Greg and Gotthardt, Ruth	Archaeological Overview Assessment of Various Land and Agricultural Applications in Yukon, 2011
13-12ASR	2013	Mooney, James	Heritage Resource Impact Assessment of the Ibex Agricultural Reserve
13-25ASR	2013	Thomas, Christian	Burial Sites Assessment of Block 56 Whitehorse Yukon
13-05ASR	2014	Castillo, Victoria	Yukon College Canyon City Archaeology Field School Project 2013
14-02ASR	2014	Staveley, Gillian	Interim Report: Hillcrest Water Line HRIA
13-23ASR	2014	Heffner, Ty and Young, Mark	Heritage Resources Inventory of the Northern Urban Containment Boundary
13-23ASR	2014	Heffner, Ty and Young, Mark	Heritage Resources Inventory of the Southern Urban Containment Boundary
14-05ASR	2015	Castillo, Victoria	Yukon College McIntyre Creek Field School 2014
15-01ASR	2015	Mooney, James	Final Report: Heritage Resource Impact Assessment Whitehorse Municipal Services Building
14-27ASR	2015	Mooney, James	Heritage Resource Impact Assessment of the ATCO Electric FH Collins Substation
14-02ASR	2015	Mooney, James	Final Report: Heritage Resource Impact Assessment of the Hillcrest Water Main
Non-permit	2015	Bennet, Tim	Heritage Resource Overview Assessment: Chadburn Lake Park Area
15-15ASR	2016	Bennet, Tim and Mooney, James	Final Report: Heritage Resources Impact Assessment Proposed Whitehorse Alaska Highway Corridor Improvements
15-02ASR	2016	Castillo, Victoria	Yukon College McIntyre Creek Field School 2015
15-18ASR	2016	Bennet, Tim	Interim Report: Utah Gravel Pit HRIA

3.1.1.3 Heritage Sites

The Yukon Archaeological Sites Inventory (YASI) database for all previously recorded heritage sites situated within the study area was requested and obtained from the Yukon Heritage Resources Unit. The database used in Phase 1 is current to February 17, 2016. The YASI included a total of 134 previously recorded sites within the study area. Table 3 lists all heritage sites located within the study area.

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
JdUr-10	Pre-contact	97-04ASR	No	Moderate
JdUr-11	Pre-contact	97-09ASR	No	Moderate
JdUr-3	Pre-contact	83-05ASR 91-10ASR	No	Moderate
JdUr-4	Undetermined (Fragmented Bone and fire-cracked rock)	83-05ASR	Yes	High
JdUr-5	Pre-contact, historic	13-05ASR 83-05ASR 93-09ASR 94-07ASR 95-15ASR 96-12ASR 97-06ASR	No	High
JdUr-7	Pre-contact	94-02ASR	Yes	High
JdUr-8	Pre-contact	94-02ASR	No	Low
JdUs-10	Pre-contact	13-23ASR	No	High
JdUs-11	Pre-contact	13-23ASR	No	High
JdUs-12	Pre-contact	13-23ASR	No	High
JdUs-13	Pre-contact	13-23ASR	No	High
JdUs-14	Pre-contact	13-23ASR	No	High
JdUs-15	Pre-contact	13-23ASR	No	High
JdUs-16	Pre-contact	13-23ASR	No	High
JdUs-17	Pre-contact	13-23ASR	No	High
JdUs-18	Pre-contact	13-23ASR	No	High
JdUs-19	Pre-contact	13-23ASR	No	High
JdUs-2	Pre-contact	03-02ASR 13-23ASR 84-02ASR	No	High
JdUs-20	Pre-contact	13-23ASR	No	High
JdUs-21	Pre-contact	15-18ASR	No	High
JdUs-3	Pre-contact	90-08ASR	No	Moderate
JdUs-4	Pre-contact	03-02ASR 13-23ASR 91-10ASR	No	High
JdUs-5	Pre-contact	93-09ASR	Yes	High
JdUs-7	Pre-contact	13-23ASR	No	High
JdUs-8	Pre-contact	13-23ASR	No	High

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
JdUs-9	Pre-contact	13-23ASR	No	High
JeUs-1	Pre-contact		No	Low
JeUs-10	undetermined (Hearth Feature with fire-cracked rock and burnt bone)	83-05ASR	No	Moderate
JeUs-11	Pre-contact	01-14ASR 12-08ASR 83-05ASR 98-05ASR	No	High
JeUs-12	Pre-contact	83-05ASR	Yes	High
JeUs-13	Pre-contact	83-05ASR	Yes	High
JeUs-14	Pre-contact	83-05ASR	No	Low
JeUs-15	Pre-contact	12-08ASR 83-05ASR	No	Moderate
JeUs-16	Pre-contact	83-05ASR	No	Low
JeUs-17	Pre-contact	83-05ASR	No	Moderate
JeUs-18	Pre-contact	83-05ASR	Yes	High
JeUs-19	Pre-contact	83-05ASR	No	Low
JeUs-2	Pre-contact	75-03ASR	No	Low
JeUs-20	Pre-contact	83-00ASR 83-05ASR 97-08ASR	No	Moderate
JeUs-21	Pre-contact	79-10ASR	No	Low
JeUs-22	Pre-contact	09-04ASR 86-01ASR	No	High
JeUs-23	Historic	86-03ASR	No	High
JeUs-24	Historic	86-03ASR	No	High
JeUs-25	Historic	86-03ASR	No	Moderate
JeUs-26	Pre-contact	03-02ASR13-23ASR 91-10ASR 93-00ASR	Yes	High
JeUs-27	Indigenous historic, Pre-contact	91-10ASR	No	Moderate
JeUs-28	Pre-contact	95-14ASR 96-17ASR 97-08ASR	No	Moderate
JeUs-29	Pre-contact	96-03ASR	No	Moderate

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
JeUs-3	Pre-contact	82-00ASR 83-05ASR	Yes	High
JeUs-30	Pre-contact	97-04ASR	No	Moderate
JeUs-31	Pre-contact	97-08ASR	Yes	High
JeUs-32	Historic	97-08ASR	No	Moderate
JeUs-33	Pre-contact	97-08ASR	No	Moderate
JeUs-34	Pre-contact	05-18ASR 98-05ASR	Yes	High
JeUs-35	Historic	05-18ASR	No	Moderate
JeUs-36	Pre-contact	05-19ASR	No	High
JeUs-37	Pre-contact	05-19ASR	No	High
JeUs-38	Pre-contact	05-19ASR 09-04ASR 10-06ASR 11-27ASR	Yes	High
JeUs-39	Pre-contact	08-04ASR 16-00ASR	No	High
JeUs-4	Pre-contact	82-00ASR	No	Moderate
JeUs-40	Pre-contact	08-04ASR	No	High
JeUs-41	Pre-contact	08-04ASR	No	High
JeUs-42	Pre-contact	09-04ASR 10-06ASR 10-12ASR	No	High
JeUs-43	Pre-contact	09-04ASR 10-06ASR	No	High
JeUs-44	Pre-contact	09-04ASR 09-15ASR 10-12ASR 14-05ASR 15-02ASR	No	High
JeUs-45	Pre-contact	09-04ASR 09-15ASR 10-12ASR	No	High
JeUs-46	Pre-contact	09-15ASR	Yes	High
JeUs-47	Pre-contact	09-15ASR	No	High
JeUs-48	Pre-contact	02-00ASR	No	Moderate
JeUs-49	Pre-contact	09-04ASR	No	High
JeUs-5	Pre-contact	82-00ASR 83-00ASR	No	Moderate

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
		83-05ASR 95-10ASR		
JeUs-50	Pre-contact	09-04ASR	No	High
JeUs-51	Pre-contact	09-15ASR	No	High
JeUs-52	Pre-contact	09-15ASR	No	High
JeUs-53	Pre-contact	09-04ASR	No	High
JeUs-54	Pre-contact	09-04ASR	No	High
JeUs-55	Pre-contact	09-04ASR	No	High
JeUs-56	Pre-contact	09-04ASR	No	High
JeUs-57	Pre-contact	09-04ASR	No	High
JeUs-58	Pre-contact	09-04ASR	No	High
JeUs-59	Pre-contact	09-04ASR	No	High
JeUs-6	Pre-contact	02-00ASR 08-04ASR 09-00ASR 82-00ASR 83-00ASR 83-05ASR 97-08ASR	Yes	High
JeUs-60	Pre-contact	09-04ASR	No	High
JeUs-61	Pre-contact	09-04ASR	Yes	High
JeUs-62	Pre-contact	09-04ASR	No	High
JeUs-63	Pre-contact	09-04ASR	No	High
JeUs-64	Pre-contact	13-00ASR	No	Low
JeUs-65	Pre-contact	13-23ASR	No	High
JeUs-66	Pre-contact	13-23ASR	No	High
JeUs-67	Pre-contact	13-23ASR	No	High
JeUs-68	Pre-contact	13-23ASR	No	High
JeUs-69	Pre-contact	13-23ASR	No	High
JeUs-7	Pre-contact	11-00ASR 16-00ASR 82-00ASR 83-05ASR 97-01ASR	No	Low
JeUs-70	Historic	13-23ASR	No	Moderate
JeUs-71	Pre-contact	13-23ASR	No	High
JeUs-72	Pre-contact	13-23ASR	No	High
JeUs-73	Pre-contact	13-23ASR	No	High

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
JeUs-74	Pre-contact	13-23ASR	No	High
JeUs-75	Pre-contact, historic	13-23ASR	No	High
JeUs-76	Pre-contact	13-23ASR	No	High
JeUs-77	Pre-contact	13-23ASR	No	High
JeUs-78	Pre-contact	13-23ASR	No	High
JeUs-79	Pre-contact	13-23ASR	No	High
JeUs-8	Pre-contact	83-05ASR	No	Low
JeUs-80	Historic	13-23ASR	No	High
JeUs-81	Pre-contact	13-23ASR	No	High
JeUs-82	Pre-contact	13-23ASR	No	High
JeUs-83	Pre-contact	13-23ASR	Yes	High
JeUs-84	Historic	13-23ASR	No	High
JeUs-85	Historic	13-23ASR	No	High
JeUs-86	Historic	13-23ASR	No	High
JeUs-87	Pre-contact	15-00ASR	No	Moderate
JeUs-88	Pre-contact	15-15ASR	No	High
JeUs-89	Pre-contact	15-00ASR	No	Moderate
JeUs-9	Pre-contact	83-05ASR	Yes	High
JeUt-13	Pre-contact	83-05ASR	No	Low
JeUt-14	Pre-contact	94-02ASR	No	Moderate
JeUt-15	Pre-contact	94-02ASR	No	Low
JeUt-17	Pre-contact	07-10ASR 97-04ASR	No	High
JeUt-2	Pre-contact	77-08ASR 83-05ASR	Yes	High
JeUt-20	Pre-contact	07-10ASR	No	High
JeUt-21	Pre-contact	07-10ASR	No	High
JeUt-22	Pre-contact	07-10ASR	No	High
JeUt-23	Pre-contact	07-10ASR	No	High
JeUt-24	Pre-contact	07-10ASR	Yes	High
JeUt-25	Pre-contact, historic	07-10ASR	Yes	High
JeUt-31	Pre-contact	12-15ASR	No	High
JeUt-32	Pre-contact	14-10ASR	No	High

Table 2 Previously Recorded Heritage Sites Within Study Area

Borden Number	Site Type	Permit Number	Location Updated	Confidence Level
JfUs-4	Pre-contact	03-11ASR	No	Moderate
JfUt-15	Pre-contact, historic	07-10ASR	No	High
JfUt-16	Pre-contact	07-10ASR	Yes	High
JfUt-17	Pre-contact	07-10ASR 97-04ASR	No	High
JfUt-2	Pre-contact	78-11ASR	No	Low
JfUt-7	Indigenous historic	95-10ASR	No	Moderate

3.1.2 Site Review

Previously recorded heritage sites located within the study area were reviewed. Each site was reviewed to determine whether it should be included in the dataset for modeling purposes. To be considered applicable to the modeling dataset the following criteria needed to be met:

1. pre-contact heritage site (i.e., archaeological)
2. high degree of confidence that the site's physical location matches the geospatial location

The objectives of the second point were twofold: ensure that only sites that were accurately plotted spatially would be used in subsequent potential modeling efforts; and identify archaeological sites that may be candidates for revisit in the field to confirm location.

Data sources used to review and assess accuracy of location included the following: site form records, permit reports and associated site maps (if any) as provided by Yukon Heritage; site and survey data on file with Stantec for projects completed by Stantec (or Matrix Research Ltd.) within the study area and base data and imagery retrieved from the City of Whitehorse, GIS Open Data web page.

Site information was examined and each site was assigned a 'confidence rating' which corresponds to either 'Low', 'Moderate' or 'High' confidence in the accuracy of the site location. An initial confidence level was determined based on responses to the following five yes/no (logical) queries, which were recorded for each site during the review.

- Was the site recorded with GPS (yes/no)
- Is there a site map (minimum 1:15 000 scale) for the site (yes/no)
- Was the site recorded or relocated during a permitted heritage study (yes/no)

- Does the site have a subsurface component (yes/no)
- Do the plotted location of the site and the site location descriptions agree (yes/no)

The rational for selecting these five attributes is described below.

3.1.2.1 Was the site recorded with GPS?

Archaeological sites within the YASI database that were recorded prior to when the use of GPS became commonplace were generally hand plotted as points on 1:25 000 (or in some cases 1:50 000) NTS maps. Given that one millimeter on a 1:25 000 map equates to 25 m on the ground, even the most diligently plotted locations on an NTS map have a much wider margin of error than that present in a consumer grade GPS unit (for a discussion of average error present in common GPS units see Wing 2011). Consequently, the location of sites recorded with GPS were attributed as being more accurate.

3.1.2.2 Is there a site map for the site?

Large scale site maps that depict detailed features and local topography assists with establishing the accuracy of a site's plotted location. A scale of 1:15 000 was selected as the minimum scale for a site map.

3.1.2.3 Was the site recorded, relocated or updated during a permitted heritage study?

This attribute was selected to bias the dataset towards sites that were most likely to be recorded in an archaeological context. A higher number of chance find sites were expected given that the study area is the City of Whitehorse. The locations of sites recorded during a permitted heritage study were attributed as being more accurate than those recorded by the public.

3.1.2.4 Does the site have a subsurface component?

This attribute was selected as a proxy to determine if collections from the site were found within their original context, with the rationale being that artifacts found along the surface are more likely to have been displaced than those found in a subsurface context. The locations of sites with a subsurface component were assumed to have a corresponding site form/map and permit report with which to cross-reference the current geospatial location.

3.1.2.5 Do the plotted location of the site and the site location descriptions agree?

Consistency between the plotted site location and the site location descriptions found in the permit report and/or site form/map records was selected because it is an indicator if the site plotted accurately. Some ambiguity was evident while evaluating this attribute due to the varying scales at which sites are described. For example site JeUS-1 is described in its site record as being located at the 'S. end of airport overlooking valley'. This description generally matches

the plotted location of the site, but is not useful in determining its accurate location. Sites with overly general descriptions were noted and further examined during subsequent reviews of the data. Sites were given a 'yes' response to this query in cases where site locations were corrected using location descriptions.

3.1.2.6 Confidence Rating

Responses to each of these queries were recorded as either 'yes' or 'no' in the site attribute table. Yes and no values were converted to 1 or 0, where yes = 1 and no = 0. The values for each site were summed to produce a numerical confidence level score. Responses were weighted equally when tabulating the confidence score. Sites were assigned either a 'Low', 'Moderate' or 'High' confidence level based on their score, where Low = 0 – 1, Moderate = 2 – 3, and High = 4 – 5.

The numerically/logically assigned confidence level (low, moderate or high) for each site was reviewed. In some cases, the confidence level was raised or lowered to reflect unique situations or site attributes that were not captured during the logic-based review of the data. An example of this is site JeUs-48, which was discovered as an unpermitted surface find, has no site map, and was not recorded using GPS. The plotted location of site and its described location matched, so the site was assigned a score of 1, or low confidence per the schema described above. Further review of the site record revealed that the site was discovered by an archaeologist while walking a well-established path and that the location was plotted using Google Earth. The site confidence level was elevated to moderate based on these attributes.

Sites that were determined to not be plotted accurately in YASI were corrected when sufficient information was available to confidently do so. A total of 20 site corrections were made during the review. Sites that were determined to be in an inaccurate location but had insufficient information to make a site correction were assigned a low confidence rating. These sites are candidates for future site re-visits to collect site location information. Figure 2 shows sites that were corrected during the study.

All low confidence sites were excluded from the model dataset. Furthermore, all historic sites recorded in the YASI database were excluded from the model dataset. A total of 24 sites retrieved from the YASI database were excluded from the model dataset. A list of excluded sites and corresponding rationale for exclusion is provided in the following table. Site corrections and confidence levels were reviewed by senior archaeological staff prior to adding site information to the model dataset. The final number of archaeological sites included in the model dataset is 110. Table 4 lists the sites removed for modeling. Figure 3 shows sites that were removed during the study.

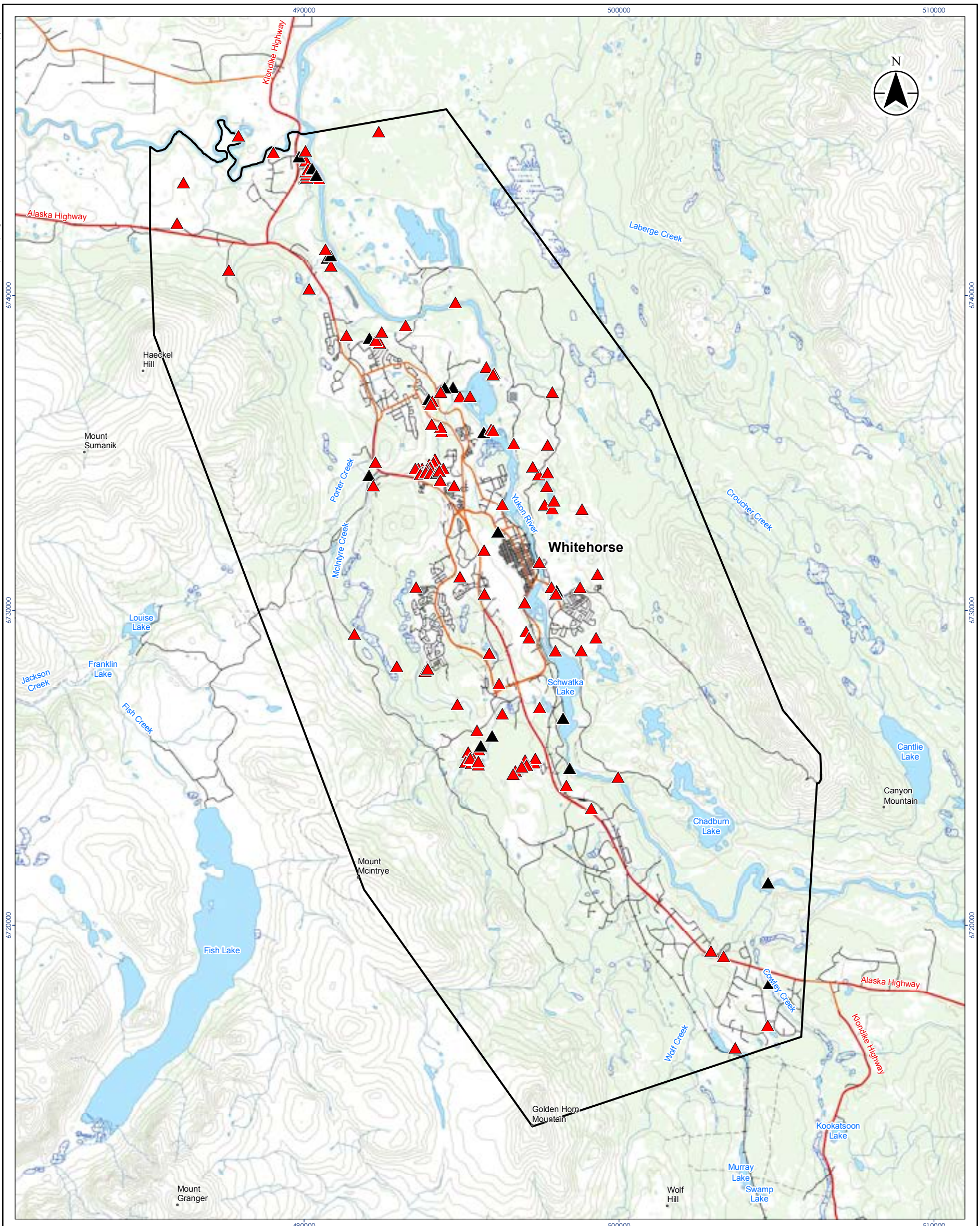
Table 3 Previously Recorded Heritage Sites Removed for Modeling Purposes

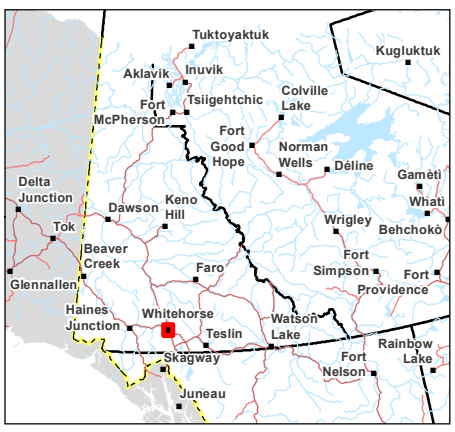
Borden Number	Site Type	Location Updated	Confidence Level	Reason for Excluding
JeUs-1	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, no subsurface finds).
JeUs-2	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, ambiguous site description).
JeUs-14	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, ambiguous site description).
JeUs-16	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JeUs-19	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Chance find, not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JeUs-21	Pre-contact	No	Low	Low Confidence. Site form indicates location is inaccurate. Not enough information to verify location (Chance find, not recorded by GPS, no site map, no subsurface finds, ambiguous site description, site may have been destroyed).
JeUs-23	Historic	No	High	Historic Site
JeUs-24	Historic	No	High	Historic Site
JeUs-25	Historic	No	Moderate	Historic Site
JeUs-32	Historic	No	Moderate	Historic Site
JeUs-35	Historic	No	Moderate	Historic Site
JeUs-64	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Chance find in disturbed area, not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JeUs-7	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, ambiguous site description).
JeUs-8	Pre-contact	No	Low	Low Confidence. (Not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JeUs-70	Historic	No	Moderate	Historic Site
JeUs-80	Historic	No	High	Historic Site
JeUs-84	Historic	No	High	Historic Site
JeUs-85	Historic	No	High	Historic Site

Table 3 Previously Recorded Heritage Sites Removed for Modeling Purposes

Borden Number	Site Type	Location Updated	Confidence Level	Reason for Excluding
JeUs-86	Historic	No	High	Historic Site
JeUt-13	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JeUt-15	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, ambiguous site description).
JdUr-8	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, no subsurface finds, ambiguous site description). Site likely destroyed, house constructed over top of site point location.
JfUt-2	Pre-contact	No	Low	Low Confidence. Not enough information to verify location (Not recorded by GPS, no site map, no subsurface finds, ambiguous site description).
JfUt-7	Indigenous historic	No	Moderate	Historic site. Cottonwood dugout canoe, removed for curation by TKC.

F:\2017\cow\report_maps\fig2_arch_sites_database_corrected_sites.mxd Revised: 2017-04-24 By: jmacmillan





- Heritage Site
- Heritage Site - Corrected
- Terrain Feature
- Primary Road
- Secondary Road
- Local Road
- Access Road
- Trail
- Topographic Contour
- Watercourse
- Liquid waste
- Waterbody
- Waterbody, Intermittent
- Forested Area
- Wetland
- City of Whitehorse Municipal Boundary

0 2,500 5,000 metres

1:125,000 (At Original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 8N
2. Data Source: Government of Canada
3. Archaeological Site Data provided by the Government of Yukon, Archaeology Program; © Government of the Yukon, Department of Tourism and Culture.

Stantec

Project Location 123220806

NTS Map Sheet(s):
105 D/10, 105 D/11,
105 D/14, 105 D/15

Prepared by J. MacMillan on 2017-04-18
Independent Review by Susie Heffner on 2017-04-24
Quality Review by xxxx

Client/Project

Client: Kwanlin Dün First Nation
Project: GIS-Based Archaeological Potential Model for Whitehorse City Limits: Phase 1

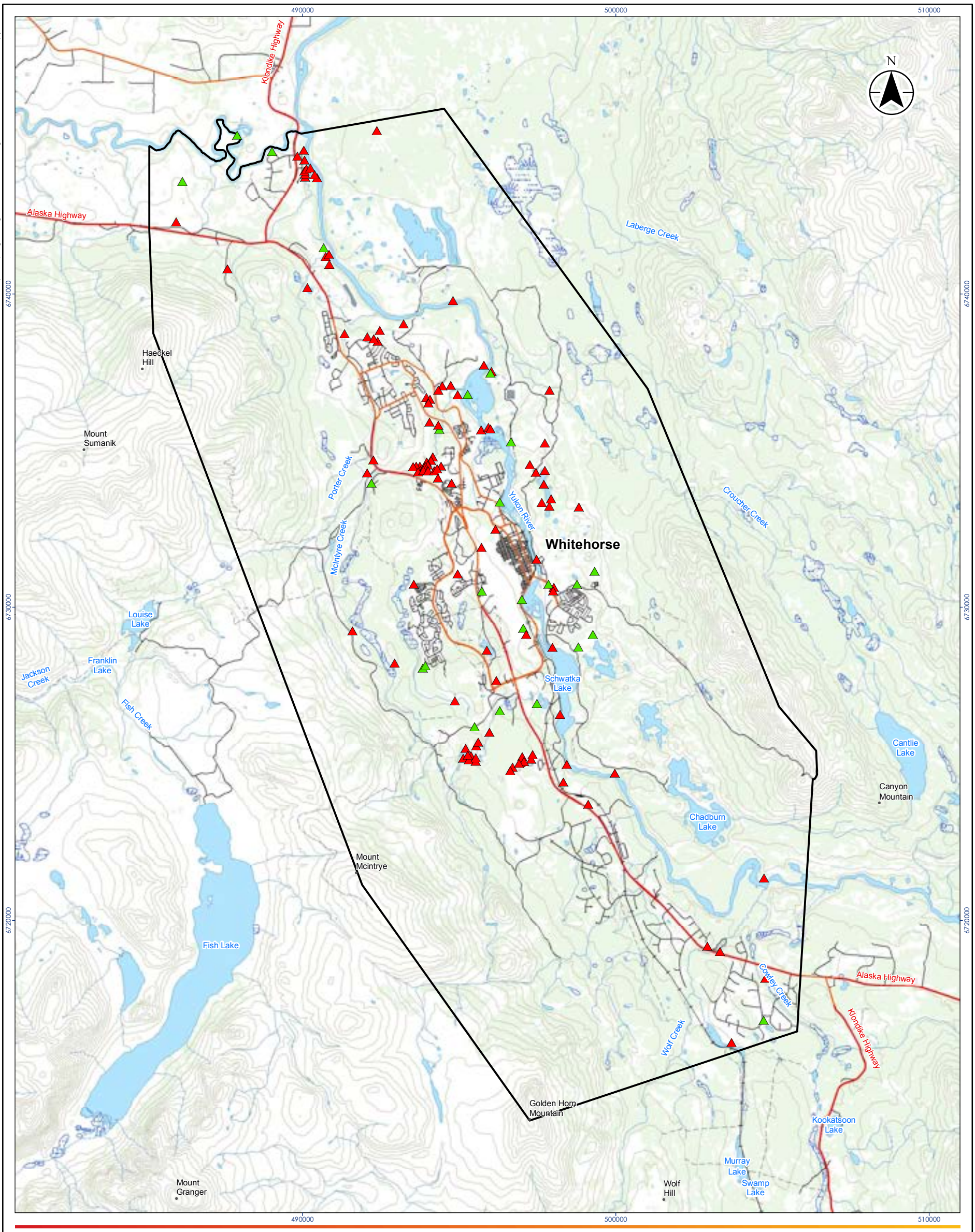
Figure No.

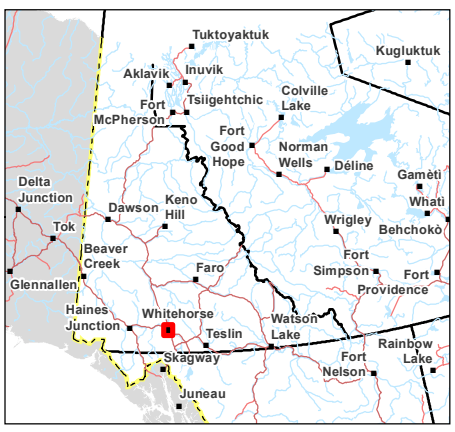
2

Title

Heritage Site Database – Corrected Sites

F:\2017\cow\report_maps\fig3_heritage_sites_database_modelling_dataset.mxd Revised: 2017-04-24 By: jmacmillan





- Heritage Site
- Heritage Site - Removed
- Terrain Feature
- Primary Road
- Secondary Road
- Local Road
- Access Road
- Trail
- Topographic Contour
- Watercourse
- Liquid waste
- Waterbody
- Waterbody, Intermittent
- Forested Area
- Wetland
- City of Whitehorse Municipal Boundary

0 2,500 5,000 metres

1:125,000 (At Original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 8N
2. Data Source: Government of Canada
3. Archaeological Site Data provided by the Government of Yukon, Archaeology Program; © Government of the Yukon, Department of Tourism and Culture.

Stantec

Project Location 123220806

NTS Map Sheet(s):
105 D/10, 105 D/11,
105 D/14, 105 D/15

Prepared by J. MacMillan on 2017-04-18
Independent Review by Susie Heffner on 2017-04-24
Quality Review by xxxx

Client/Project

Client: Kwanlin Dün First Nation
Project: GIS-Based Archaeological Potential Model for Whitehorse City Limits: Phase 1

Figure No.

3

Title

Heritage Site Database – Modelling Dataset

3.1.3 Bibliographic Sources

As part of the inventory of available datasets, a non-exhaustive reference list was compiled for heritage research associated with the study area. Published works relating to the following themes as they relate to the study area were researched: history, ethnography, traditional land use, archaeology, geography, natural history and environment. Sources that described either the study area or its wider context were selected and compiled for the bibliography contained in Appendix A. Key sources of research for the study area included reports on file with Yukon Heritage Resource Unit, the Yukon Tourism and Culture publications web page and references lists of publications relating to the study area. Archival and/or traditional knowledge sources were not consulted during phase 1.

3.2 SPATIAL DATA SETS

3.2.1 Source Data

A variety of spatial datasets of varying quality and scale exist for the study area. Table 4 lists all readily available and relevant spatial datasets for the study area.

Table 4 GIS Source Datasets

Dataset	Provider	Description	Scale	Usable (Y/N)
Lakes [vec]	City of Whitehorse (data.whitehorse.ca) ; Surface Water Inventory, Gartner-Lee 2001	Lakes and associated attribute data. Polygon geometries.	1:20k	Yes; lines up with WAVI, not SCVI
Rivers [vec]	City of Whitehorse (data.whitehorse.ca) ; Surface Water Inventory, Gartner-Lee 2001	Rivers and associated attribute data. Polygon geometries.	1:20k	Yes; lines up with WAVI, not SCVI
Watersheds [vec]	City of Whitehorse (data.whitehorse.ca) ; Surface Water Inventory, Gartner-Lee 2001	Stream watersheds and areas of closed drainage. Polygon geometries.	1:20k	Yes; lines up with WAVI, not SCVI
Streams [vec]	City of Whitehorse (data.whitehorse.ca) ; Surface Water Inventory, Gartner-Lee 2001	Stream locations and data for all verified streams. Polyline geometries.	1:20k	Yes; polylines don't agree with National Hydrology Network

Table 4 GIS Source Datasets

Dataset	Provider	Description	Scale	Usable (Y/N)
Wetlands [vec]	City of Whitehorse (data.whitehorse.ca) ; Surface Water Inventory, Gartner-Lee 2001	Wetlands of southern 3⁄4 of the City of Whitehorse (from Mougeot and Agriculture and Agri-Food Canada 1997). Areas not mapped within the City Limits include north from Cousins Airfield to the Takhini River and east of the Yukon River, north of Croucher Creek. Polygon geometries.	1:20k	Yes; Not as good as WAVI, SCVI
National Hydrology Network	NRCan	Linear drainage network, subdivided by NHN work units. Polyline, point and polygon geometries.	1:50k	Yes; agrees with Placer
Land Cover [ras]	Southern Lakes, Yukon Territory Earth Cover Classification; Ducks Unlimited Canada, 2002	A baseline earth cover inventory using Landsat TM imagery for a portion of southwestern Yukon.		Yes; low resolution representation
Whitehorse Area Vegetation Inventory (WAVI) [vec]	Forest Management branch, Dept. of Energy, Mines and Resources, Yukon Government, 2005	Whitehorse Area Vegetation Inventory polygons contain a variety of detailed information on, for example, the age and type of trees growing on the land base in Whitehorse, Yukon. Polygon geometries.	1:10k	Yes; agrees with SWI, doesn't' agree with SCVI
Yukon Vegetation Inventory (SCVI) [vec]	Forest Management branch, Dept. of Energy, Mines and Resources, Yukon Government, 2013	Forest and vegetation stands. Includes South Central Vegetation Inventory updates (Timberline, 2013). Polygon geometries.	1:5k, varying	Yes; doesn't agree with other datasets
Digital Elevation Model [ras]	Kwanlin Dun First Nation, 2016	Raster from bare earth LAS classification. Ideal for modeling slope, aspect, and other landscape features.	1m pixel	Yes
Archaeological Sites [vec]	Kwanlin Dun First Nation, 2016	Corrected archaeological site locations. Point geometries.	Varying	Yes
Soil, Terrain, and Wetland Survey [vec]	Planning Services, City Of Whitehorse, 1997	City planning scale soil and terrain conditions database (Mougeout GeoAnalysis)	1:20k	? unsure how to decipher codes
Building Footprints	City of Whitehorse, 2011	Building footprints traced from aerial photos, 2011. Polygon geometries.	~1:25k	Yes

Table 4 GIS Source Datasets

Dataset	Provider	Description	Scale	Usable (Y/N)
TK Trails [vec]	Kwanlin Dun First Nation, 2016	General traditional trail locations, digitized from hand-drawn map markup. Polyline geometries.	Varying	Yes; but very coarse
Predictive Ecosystem Model [ras]	Kwanlin Dun First Nation, PEM, 2014	Input datasets vary, and output consists of raster pixels snapped to the Ducks Unlimited land cover product (2002). NTDB wetland polygons, added Karen Mckenna airphoto interpretation, added Vegetation Inventory (SCVI; Cosco) "wetlands" (query)	1:100k, varying	Not completed as of time of report
Satellite Orthophoto [ras]	City of Whitehorse, 2013	Orthophoto prepared by McElhanney Consulting Services. High-resolution imagery for use in base mapping.	20cm pixel	Yes
Placer Stream Classification Dataset	Department of Fisheries and Oceans Canada (DFO)	Proprietary dataset belonging to DFO, only applicable to Placer operations	1:50K	Yes, if can get permission to use BUT only agrees with National Topographic Database (NTDB)

3.2.2 Model Layers

In order make reliable determinations of the presence or absence of landscape features in the study area expected to be correlated with archaeological sites, intermediate data layers are also required (referred to here as modeled layers). These layers are derived from other spatial data sets and are used to construct the model script and refine and/or determine the buffer sizes for certain features (e.g. rivers, eskers). Ultimate decisions about which derived datasets should be used in the model are made during construction and refinement of the model. This is an iterative process and the list and type of modeled layers is refined as knowledge about site types expected in the study area and the range of biophysical features in the study area increases. However, previous modeling exercises using the same approach have determined a general list of modeled layers necessary for archaeological potential modeling.

To analyze the utility of these layers and availability of their datasets for modeling, we conducted a correlative analysis between available modeled layers and archaeological sites (corrected modeling dataset). Table 5 lists the types of modeled layers along with proposed

input datasets. A description of the results where/when we had enough data to run the analysis is found in Section 4.

Table 5 Derived Data

Modeled Layer	Proposed Inputs
Stream Confluences	National Hydrology Network "HydroJunctions" layer
TPI Landforms	KDFN Digital Elevation Model
Stream Classifications	<missing>
Forested Areas	Yukon Vegetation Inventory (incl South Central Vegetation Inventory), Whitehorse Area Vegetation Inventory
Water	City of Whitehorse Surface Water Inventory: Lakes, Rivers; Yukon Vegetation Inventory
Wet Areas	City of Whitehorse Surface Water Inventory: Wetlands; Yukon Vegetation Inventory
Landscape Position	Yukon Vegetation Inventory (incl South Central Vegetation Inventory)
Slope and Aspect	KDFN Digital Elevation Model
Lookouts	TPI Landforms, Landscape Position
Potential CMT Areas	Whitehorse Area Vegetation Inventory, Yukon Vegetation Inventory (incl South Central Vegetation Inventory)
Travel Resistance Index	KDFN Digital Elevation Model, City of Whitehorse Surface Water Inventory

4.0 RESULTS

As noted earlier, not all of the goals set for this phase were achieved. We were not able to analyze known archaeological site locations to determine which variables are the strongest predictors for known site locations due to missing datasets (namely TPI, stream classification data), and uncertainty about which vegetation and water datasets were complete and ready for use in the model; and importantly, the most representative of the study area (i.e., most accurate water or vegetation layers for stream locations, confluences and wetland borders). We did however conduct a correlative analysis between the corrected archaeological site locations and the model layers for available datasets. The correlative analysis, although incomplete, highlighted important data gaps and data issues that are further discussed below and in Section 5. Task 3, a draft model was likewise not completed due to missing datasets, namely stream classification data.

4.1.1 Stream Confluences

Locations where streams converge are associated with archaeological potential. Stream confluences in the study area are modelled in the National Hydrology Network (NHN) HYDROJUNC_O layer. As seen in orange below, NHN junctions are snapped to NHN aquatic network linework. Unfortunately, this linework is topologically inconsistent with the City's Surface Water Inventory (SWI; blue, below), the best spatial representation of stream features within the study area.

In order to make use of the stream junction points, they will need to agree with the actual stream linework. To this end, it would be easier to create a stream junction dataset from the SWI layer, rather than try to use both of these layers.

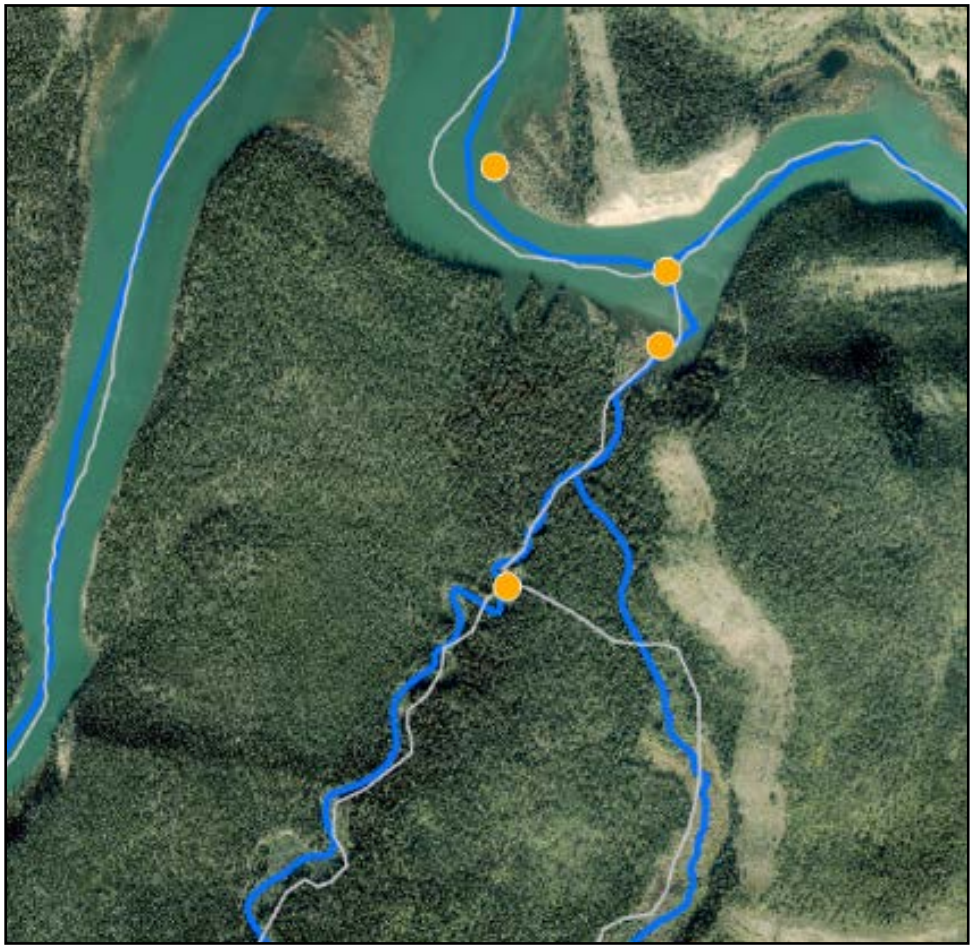


Photo 1 Text to come

4.1.2 TPI Landforms

A topographic position index (TPI) is being created for the City of Whitehorse study area. TPI is a great resource to locate land surfaces at various scales on the landscape (i.e., ridge, esker, terrace features). TPI classifications should be able to pick features of archaeological interest, (i.e., extinct shorelines, upper terraces/ridges, glacial moraines, eskers, glaciofluvial gullies), not easily distinguished from other datasets like DEM.

Both a 5 metre and a 2 metre TPI product were evaluated in phase 1 but the final TPI product and classification system is still pending. Classifications are being drafted to augment and extend the original Weiss (2006) landforms for use in the Whitehorse area.

The table below shows the initial draft effort to reclassify template values to better represent land facets of interest to this model.

Facets – Descriptions	New Class	Mapcode	GRID
Canyons, Deeply Incised Streams	Steep Lower Slopes	SLS1	4
	Gentle Lower Slopes	GLS1	3
	Gentle Valley Bottom	GVB	2
Midslope Drainages, Shallow Valleys	Mid-slope	MS	6
Upland Drainages, Headwaters	Upland Drainages, Headwaters	HW	8
U-shaped Valleys	Plains	PLS2	1
	Gentle lower Slope	GLS2	3
	Steep Lower Slopes	SLS3	4
Plains	Plains	PLS1	1
Open Slopes	Gentle Open Slope	GOS	5
	Steep Open Slope	SOS	11
Upper Slopes	Gentle Upper Slopes	GUS	10
	Steep Upper Slopes	SUS	7
Local Ridges/Hills in Valley	Ridge	RDG	9
Midslope Ridges, Small Hills in Plains	Ridge	RDG	9
Mountain Tops, High Ridges	Ridge	RDG	9

An initial review of the draft TPI indicates that the 5m product provides a relatively noise-free classification of the landscape, but misses some of the smaller scale ridges and promontories that are of interest in this project, notably it does not display continuous features like river terraces.

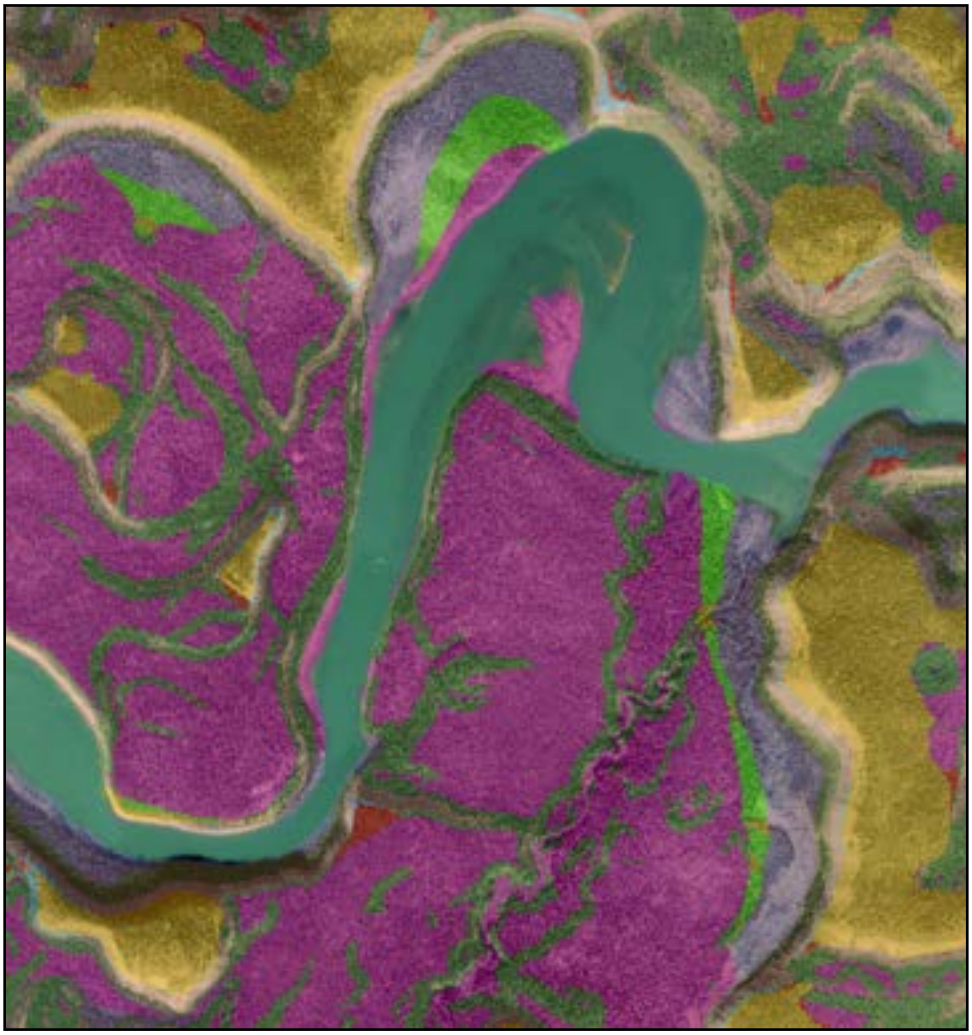


Photo 2 TPI at 5m pixel

When run using 2 m pixel windows, the TPI produces a far more varied landscape, but continuous ridges in valley bottoms are correctly delineated.

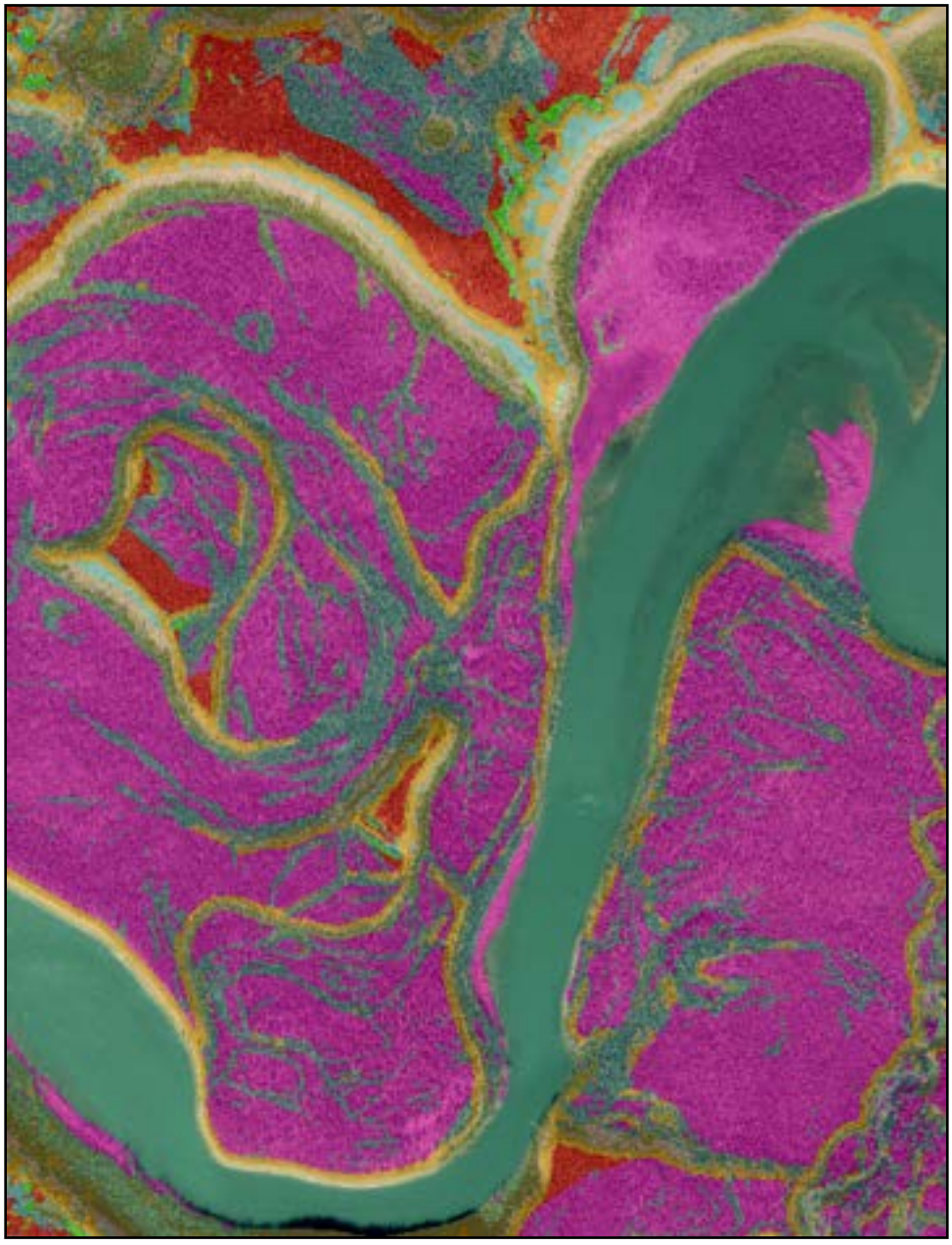


Photo 3 TPI at 2m pixel

4.1.3 Stream Classifications

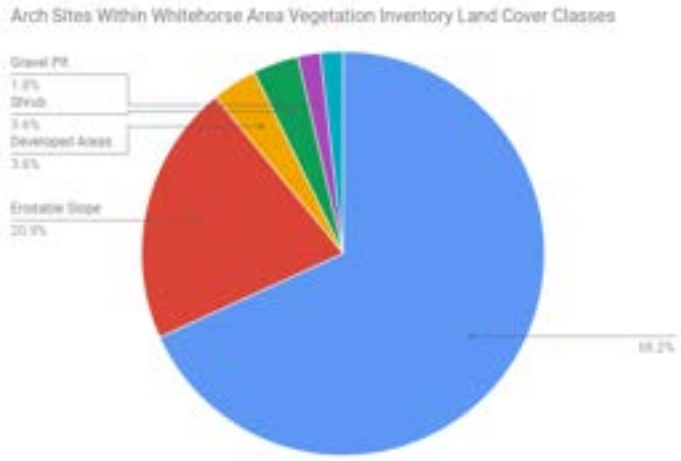
There is no readily available stream class data for the study area. Previous modeling exercises relied heavily the ability to meaningful classify stream magnitude and the presence or absence of fish. These classifications, along with stream order data assist in determining whether or not the stream is seasonal and the presence/absence of various species of fish.

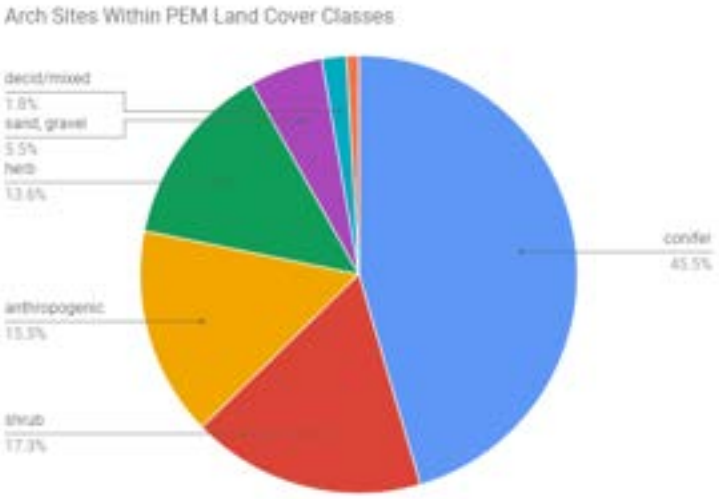
Several attempts were made at creating a flow accumulation model using readily available data (KDFN DEM) as input. Had we been successful we could have calculated upstream area extents for each stream, which would act as a reasonable proxy for stream magnitude and therefore size. What was noted during this exercise were limitations using the DEM as a proxy because of inconsistent flow channels due to anthropogenic disturbance like roads, culverts, etc.

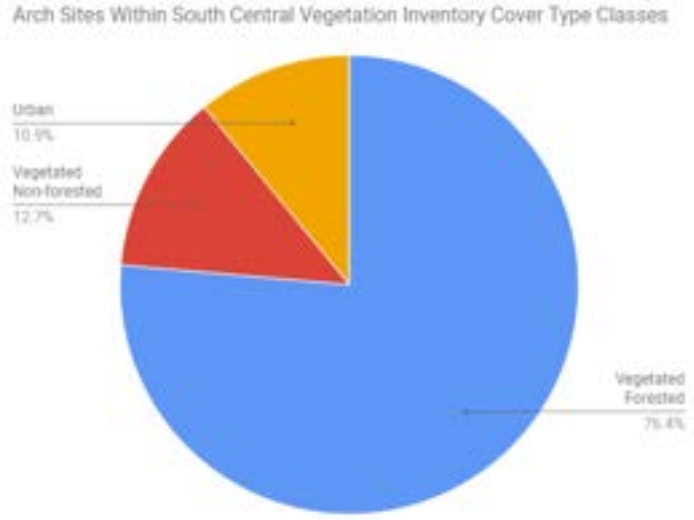
In order to correctly "weigh" various stream features for eventual archaeological potential assignment, a reliable stream magnitude dataset would need to be created or otherwise obtained. Primary sources would be useful in creating such a dataset.

4.1.4 Forested Areas

Forest cover data is a useful layer to query and use in correlative analysis. Each of the WAVI and SCVI datasets for the study area contains a notation of "landcover type" (COVER_TYPE_CLASS in SCVI and LAND_COVER_TYPE in WAVI). For phase 1 we queried the PEM, WAVI and SCVI datasets to see what types of forest cover known archaeological sites were associated with. The following pie charts display the results of this analysis. Gaps in the data sets that were revealed during this analysis are further explained in Section 4.2.




Arch Sites Within PEM Land Cover Classes
decid/mixed
1.8%
sand, gravel
5.5%
herb
13.6%
conifer
45.5%
anthropogenic
15.3%
shrub
17.3%


Arch Sites Within South Central Vegetation Inventory Cover Type Classes
Urban
10.9%
Vegetated
Non-forested
12.7%
Vegetated
Forested
76.4%

4.1.5 Water

Water is a crucial layer for archaeological potential modeling. River and Lake spatial features are explicitly represented by several data sets in the City of Whitehorse study area. An analysis of the datasets revealed that the linework contained in the City's Surface Water Inventory (SWI) layer (blue, below) is topologically consistent with the Whitehorse Area Vegetation Inventory (WAVI) polygons (white, below), despite the nominal difference in mapping scales.

Photo 4 SWI water layer

Linework in the Yukon Vegetation Inventory (SCVI; white, below) does not agree with SWI polygons, but does provide a more accurate and complete spatial representation of class boundaries when verified against the 2013 orthoimage product. It will likely be more useful to rely on the WAVI product for lakes and rivers, rather than the City's SWI.

Photo 5 SCVI water layer

4.1.6 Wet Areas

Wetland delineation remains a crucial part of landscape classification for archaeological potential. The City's SWI ("Lakes", blue, and "Wetlands", purple, below) is the poorest spatial representation of wetlands available, because it incorrectly classifies prominent dry, elevated areas amidst wetlands as "wet". The WAVI dataset however (white, below, seen with both SWI Lakes and Wetlands) provides a spatially accurate representation of land cover that is superior to the SWI. The SCVI linework contained in YVI also provides a reasonable representation but, as is visible in the easternmost portions of the image below, that dataset is missing a small portion of the study area.

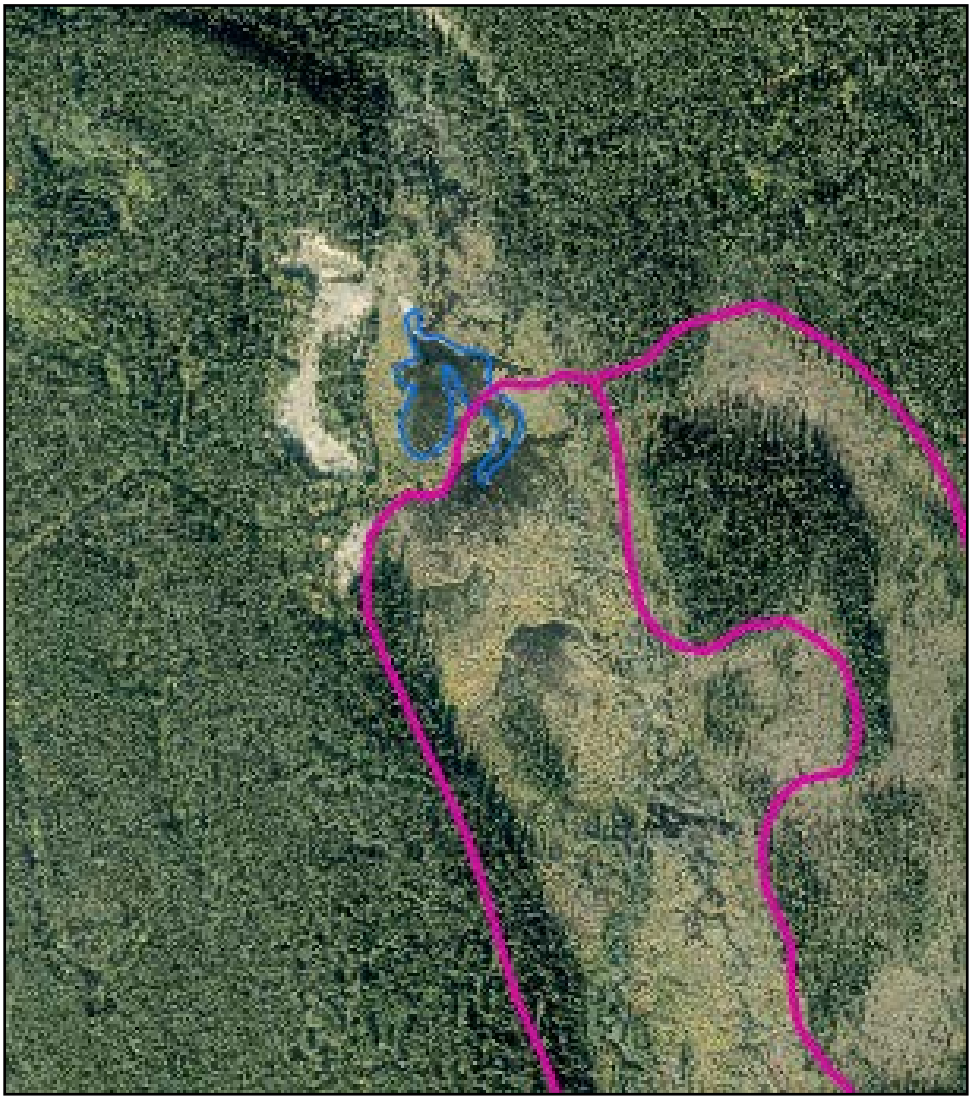


Photo 6 Wetlands in SWI. Blue is lakes, wetlands are purple above.

Photo 7 Wetlands in WAVI in white above.

KDFN owns a Predictive Ecosystem Model raster layer which classifies landcover, including wetland areas. The PEM output itself is a raster product of 30m pixel size, making the data themselves undesirably coarse compared to the other model data sets. If the source data sets and processing methodology can be obtained, this could provide the most reliable and consistent means of delineating wet areas, and a higher resolution output product could be created for modeling purposes.

Name	Moisture	Landcover
cool, shrub, tall	moist	shrub
cool, tundra, sparse	moist	herb
cool, treed	moist	conifer
cool, mesic-moist, tundra	moist	herb
cool, moist, shrub, dwarf to low	moist	shrub
cool, tundra, sparse	moist	herb
wetland, graminoid	wet	herb
wetland, shrub	wet	shrub
wetland, conifer	wet	conifer
water	wet	water
wetland, graminoid	wet	herb
wetland, shrub	wet	shrub
wetland, conifer	wet	conifer
water	wet	water
wetland, graminoid	wet	herb
wetland, shrub	wet	shrub
wetland, conifer	wet	conifer
water	wet	water
ice and snow	wet	ice and snow
wetland, graminoid	wet	herb
wetland, shrub	wet	shrub
water	wet	water
ice and snow	wet	ice and snow

4.1.7 Landscape Position

Landscape position helps distinguish between upland and lowland areas. Landscape position attributes exist in both the SCVI and WAVI datasets for the study area. Unfortunately, the terms are used inconsistently. For example, the WAVI dataset marks *depressed* areas at higher elevations as "Lowland" (orange, below). As discussed in Section 4.2, this gap could potentially be filled through TUS data if vertical seasonal land use data was targeted during interviews and site visits. The following photos how each polygon geometries are all marked as "Upland" in SCVI

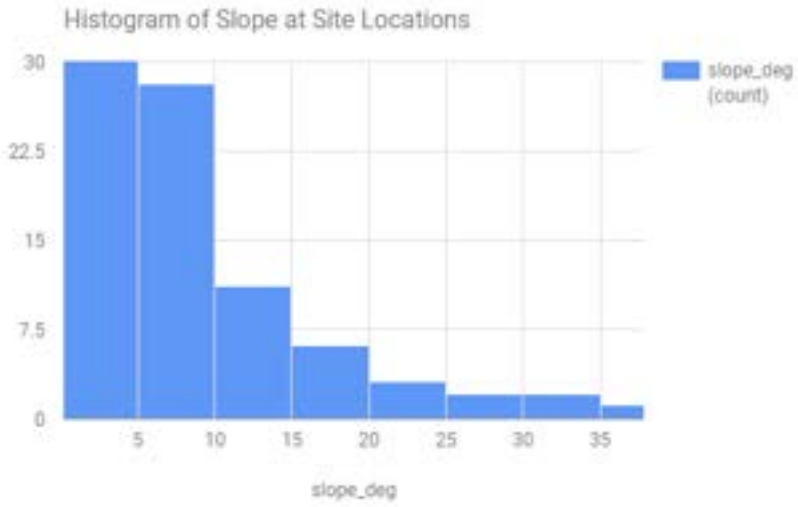
Photo 8 Upland in SCVI

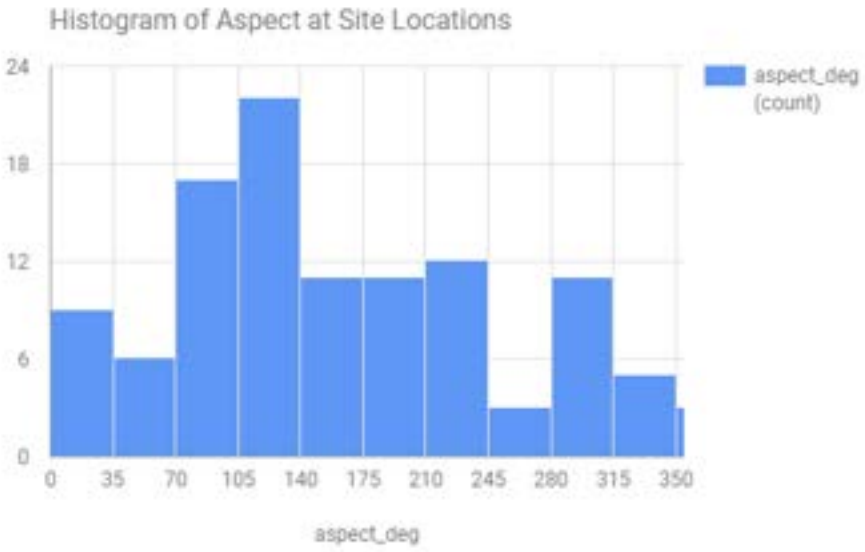
Photo 9 Upland in SCVI

4.1.8 Slope and Aspect

The KDFN Digital Elevation model provides an excellent resource against which to build slope and elevation models for the entire study area. Corrected existing archaeological site locations can also be used to determine favourability of specific aspects at specific slopes. The following histograms show the number of sites (X axis) associated with slope and then aspect (Y axis). These results show that a higher percentage of sites on 20+ degree slopes than anticipated. This

result can be used in future phases to refine the archaeological site corrections. As expected, most sites have a southern aspect.





While the elevation model provides a high resolution picture of the landscape, it does so to a fault in areas where there is urban development or other anthropogenic disturbance. Artificial slopes, such as those created adjacent to modern road building efforts (Western portion of hillshade image, below), betray the original landforms and would need to be accounted for in subsequent modeling steps.

Photo 10 DEM and Alaska Highway

4.1.9 Lookouts

It is expected that lookout areas could be derived from the TPI, once completed.

4.1.10 Potential CMT Areas

The potential presence of CMTs can be modelled using a combination of forest stand attributes from either of the vector vegetation inventory layers at our disposal. Both the WAVI and SCVI geometries contain the attributes LAYER_1_AGE and LAYER_1_SPECIES_1_CODE which, when used in concert, map areas of desired tree type and age.

4.1.11 Travel Resistance Index

A travel resistance index can help to determine the most likely route for travel given the local topography. The index searches for the path of least resistance (and therefore most likely used for travel), between various points on the landscape. However, this will need to be derived in consideration of the numerous anthropogenic features in the study area. If this is not accounted for, it's likely highways and roads will be selected by the index as the path of least resistance.

4.2 KNOWN DATA GAPS

The following data gaps were noted during Phase 1 of the study:

- No readily available stream class data.
- No readily available spatial datasets for landscape position to distinguish between upland and lowland areas in meaningful ways for archaeological potential modeling.
- TPI Classifications were incomplete for Phase 1. Continuous features (i.e., terraces) show up differently at different scales.
- Five different data sets include wetland data. WAVI is most contiguous with surface water inventory and the ortho imagery.
- Landcover datasets between WAVI and SCVI don't agree spatially. In terms of anthropogenic disturbances it is unclear which one is the most representative but can't easily cross- reference with available landcover data.
- Unclear which dataset will best represent forested areas.
- One site lands in water in WAVI and PEM landcover which is likely a product of water levels. If these datasets are used, will need to account for seasonal water level changes.
- SCVI is the best spatial representation for water but using it might tie you to using it for the vegetation inventory (due to compatibility issues).
- Elevation model includes anthropogenic features.
- Lookouts are a current gap - assume fill with TPI and landscape position.
- Travel resistance index will be impacted by anthropogenic features (i.e., highways).
- Neither WAVI or SCVI covers entire study area – gaps in each.

5.0 RECOMMENDATIONS

Based on the known data gaps we recommend the following:

- Stream classification should be considered a priority dataset and decisions to use other datasets should be measured against this dataset (i.e., if using placer dataset what vegetation layer works best with placer).
- Traditional Land Use (TLU) data could be used to target the landscape position data gap - upland and lowland.
- TPI classifications should target data gaps for extinct shorelines, upper terraces/ridges, glacial moraines, eskers, glaciofluvial gullies.
- TPI classifications must consider anthropogenic disturbances.
- Further refined archaeological site corrections should be conducted based on preliminary statistical analysis (i.e. sites in areas > 20°).
- The desired outcomes and implementation of the model should be revisited and used to guide the next steps.

6.0 POTENTIAL FUTURE PHASES

If the proposed modeling approach meets the objectives of the model the following subsequent phases are proposed.

Phase 2: Gap Analysis and Site Type Table

- Archival research (focus on trail locations and documented land use for the study area)
- Inventory of available Traditional Knowledge information (note: TK data is used to build on theory about the types of sites within the study area and where these will be located)
- Identification of data gaps and recommendations on how to fill them
- Construction of a detailed table of expected archaeological site types to be used in the model script
- Construct draft model

Phase 3: Fieldwork and Elder Interviews

This phase targets information gaps found in phase 2, including fieldwork to gather more archaeological and traditional knowledge data, and ground-truthing to test the theories generated in phases 1 and 2. Note: the scope of this phase will be determined from the results of Phases 1 and 2 and from the overall objectives.

Phase 4: Final Model and Final Report

This phase includes the incorporation of newly gathered data and model refinement followed by a final report.

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APPENDICES

Appendix A BIBLIOGRAPHY OF STUDY AREA RESEARCH PROJECTS AND DOCUMENTED CULTURAL HISTORY

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Appendix C HISTORIC SITES WITHIN STUDY AREA

YHSI ID (Borden)	YHSI Name	Site Type
105D/10/001	Tommy Gordon's Residence	Architecture, First Nation
105D/10/002	Solomon O'Brien Residence	Architecture, First Nation
105D/10/009 (JdUr-4)	Canyon City	Landscape, First Nation
105D/10/017	Boogaloo Cabin 1	Architecture
105D/10/018	Boogaloo Cabin 2	Architecture
105D/11/002	Motor Ship Neecheah	Shipwreck
105D/11/003D	Chantler House	Architecture
105D/11/004	Scott House	Architecture
105D/11/005	Grant House	Architecture
105D/11/006	Drury House	Architecture
105D/11/007D	Whitehorse Inn	Architecture
105D/11/008	Old Log Church	Architecture
105D/11/009	Old Log Rectory	Architecture
105D/11/010	Mast House	Architecture
105D/11/013	Old Firehall	Architecture
105D/11/014	Taylor And Drury Building	Architecture
105D/11/015	Telegraph Office	Architecture
105D/11/016	Sam McGee's Cabin	Architecture
105D/11/017	S.S. Klondike National Historic Site Of Canada	Industrial
105D/11/018	Burns Building	Architecture
105D/11/019D	O'Connor House	Architecture
105D/11/020	Klondike Airways Building	Architecture
105D/11/021	Krautschneider House	Architecture
105D/11/022	The Taylor House	Architecture
105D/11/023	Donnenworth House	Architecture
105D/11/024	T.C. Richards Building	Architecture
105D/11/025	Captain Martin House	Architecture
105D/11/026	Ryder House	Architecture
105D/11/027	Captain Campbell House	Architecture
105D/11/028	Captain Coghlan House	Architecture
105D/11/029D	Homer House	Architecture
105D/11/030	Cyr / McGee House	Architecture
105D/11/031	Chinery House	Architecture
105D/11/032	Harvey / Muirhead House	Architecture
105D/11/033	Puckett / McKinnon House	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/034	Swanson House	Architecture
105D/11/035	Smith House	Architecture
105D/11/036	Chamber's House	Architecture
105D/11/037	McPherson House	Architecture
105D/11/038	Garside House	Architecture
105D/11/039	Copper King	Industrial
105D/11/040	Carlisle Mine	Industrial
105D/11/043	Kodwat Residence	Architecture, First Nation
105D/11/044D	Florence Doris Residence	Architecture, First Nation
105D/11/045D	Jessie Scarff's Residence	Architecture, First Nation
105D/11/046	Joe Etzel's Residence	Architecture, First Nation
105D/11/047	Grace Johnson Residence	Architecture, First Nation
105D/11/048	Whitehorse Drama Club	Architecture
105D/11/049	Red (Roy) Piercy Cabin	Architecture
105D/11/050	Casey Car House	Architecture
105D/11/051	Train Crew's House 1	Architecture
105D/11/052	Train Crew's House 2	Architecture
105D/11/054	White Pass & Yukon Route Railway Depot	Architecture
105D/11/055	Us Army Latrine Building 6	Architecture
105D/11/056	White Pass & Yukon Route Trainshed/Roundhouse	Architecture
105D/11/057	Waterfront Building 8	Architecture
105D/11/058	Waterfront Building 9	Architecture
105D/11/059	Waterfront Building 10	Architecture
105D/11/060	Waterfront Building 11	Architecture
105D/11/061	Waterfront Building 12	Architecture
105D/11/062	Waterfront Building 13	Architecture
105D/11/063	Sewell House Building 14	Architecture
105D/11/064	Gatensby House Building 15	Architecture
105D/11/065	Waterfront Building 16	Architecture
105D/11/066	U.S. Army Float Plane Base	Architecture
105D/11/067	Eldon House Bdg. 18	Architecture
105D/11/068	Pioneer Hotel 1	Architecture
105D/11/069	Pioneer Hotel Two	Architecture
105D/11/070D	Old Legion Hall	Architecture
105D/11/075	Harry Chambers House	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/076	Reddick Residence	Architecture
105D/11/077	Weigand House	Architecture
105D/11/078	Firth House	Architecture
105D/11/080	Ukh Residence	Architecture
105D/11/081	Tung Lock Restaurant	Architecture
105D/11/082	Hancock House	Architecture
105D/11/083	Wilson House	Architecture
105D/11/084	Cane House	Architecture
105D/11/085D	Ike Taylor's House	Architecture
105D/11/086D	Taylor & Drury Employee Res.	Architecture
105D/11/087	Roberts House	Architecture
105D/11/088	Widdershin	Architecture
105D/11/089	Yukon Theatre	Architecture
105D/11/090	Weiland House	Architecture
105D/11/091	Hendrickson House	Architecture
105D/11/092	Rosenburg House	Architecture
105D/11/093	Pioneer Cemetery	Gravesite
105D/11/094D	Phelps House	Architecture
105D/11/095	Gen. O Connor House	Architecture
105D/11/096	Poppenheim Buildings	Architecture
105D/11/097	Sinclair House	Architecture
105D/11/098D	Harbottle House	Architecture
105D/11/099	S & A Club Cafe	Architecture
105D/11/100	Earle House	Architecture
105D/11/101	Whitehorse Physiotherapy	Architecture
105D/11/102	Cora Grant's Cabin	Architecture
105D/11/103D	Farley House/Catholic Rectory	Architecture
105D/11/104D	Elliott House	Architecture
105D/11/105	McLimon House	Architecture
105D/11/106	Belney House	Architecture
105D/11/107	Palmer House	Architecture
105D/11/108	Gaebe House	Architecture
105D/11/109	Blaker House	Architecture
105D/11/110	Capital Hotel	Architecture
105D/11/111	Hulland House	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/112	Prior House	Architecture
105D/11/113	B.Y.N. Co. Wharf Pier Pilings	Industrial
105D/11/115	Human Rights Commission Office	Architecture
105D/11/116	Gentleman Residence	Architecture
105D/11/117	Langholtz Cabin & Fox Pens	Architecture
105D/11/118	Langholtz Building 2	Architecture
105D/11/119	Langholtz Building 3	Architecture
105D/11/120	Whitney Black Silver Fox Farm	Architecture, Industrial, First Nation
105D/11/122	Macpherson Shed	Architecture
105D/11/123	Therapeutic Life Centre	Architecture
105D/11/124	Twilight Zone Log Shed	Architecture
105D/11/125	Twilight Zone	Architecture
105D/11/126	98 Hotel	Architecture
105D/11/128	Cyr Stable House	Architecture
105D/11/129	Hubbard & Elliott Gen. Store	Architecture
105D/11/130	Legal Aid Clinic	Architecture
105D/11/131	Sheardown House	Architecture
105D/11/132	CP Air Pan Abode 1	Architecture
105D/11/133	CP Air Panabode 2	Architecture
105D/11/134	CP Air Panabode 3	Architecture
105D/11/135	Log Cabin	Architecture
105D/11/136	CP Air Panabode 4	Architecture
105D/11/137	CP Air Panabode 5	Architecture
105D/11/138	CP Air Panabode 6	Architecture
105D/11/139	Berrigan Cabin 1	Architecture
105D/11/140	Mah Bing Cabin	Architecture
105D/11/141	Berrigan Cabin 2	Architecture
105D/11/142	Log Skyscrapers	Architecture
105D/11/142A	Log Skyscraper 1	Architecture
105D/11/143	Log Skyscraper 2	Architecture
105D/11/144	Nelson's Hardware	Architecture
105D/11/145	Nelson's Hardware Shed	Architecture
105D/11/146	Heritage North Funeral Home	Architecture
105D/11/147	Franco-Yukonnaise Hall	Architecture
105D/11/148	Franco-Yukonnaise Centre	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/149D	Black House	Architecture
105D/11/150	Gates House	Architecture
105D/11/151	Drexler House	Architecture
105D/11/152	Portlock House	Architecture
105D/11/153	A. Smith House	Architecture
105D/11/154	202 Motor Inn	Architecture
105D/11/156	Wann Residence	Architecture
105D/11/157	Camp House	Architecture
105D/11/158	Steeves Residence	Architecture
105D/11/159	Tuson House	Architecture
105D/11/161	Radar Apartments	Architecture
105D/11/162	Type A3	Architecture
105D/11/163	Type A4	Architecture
105D/11/164	Type A1	Architecture
105D/11/165	Type A2	Architecture
105D/11/166	Type B3	Architecture
105D/11/167	Type B1	Architecture
105D/11/168	Type B2 Valleyview	Architecture
105D/11/169	Type A5	Architecture
105D/11/170	Type B4	Architecture
105D/11/171	Type B5	Architecture
105D/11/172	Type B6	Architecture
105D/11/173	Type B7	Architecture
105D/11/174	Building 200	Architecture
105D/11/175	Transport & Engineering, Ytg	Architecture
105D/11/176	The Barracks	Architecture
105D/11/177	Public Works Canada	Architecture
105D/11/178	Power Plant	Architecture, Industrial
105D/11/181	DC-3 C-FPCA	Industrial
105D/11/182	Building 413	Architecture
105D/11/183	Hangar C	Architecture
105D/11/184	Us Army Incinerator	Industrial
105D/11/185	Roy Sam House	Architecture, First Nation
105D/11/186	Wells Building	Architecture
105D/11/187	Arctic Diamond Drilling	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/189	Capital Auto Building 1	Architecture
105D/11/190	Capital Auto Building 2	Architecture
105D/11/191	Capital Auto Building 3	Architecture
105D/11/192	McLeod House	Architecture, First Nation
105D/11/193	Kwanlin Dun Wood Shop	Architecture, First Nation
105D/11/194	Yukon Timber Services	Architecture
105D/11/195	Harvey Perrin Cabins	Architecture, First Nation
105D/11/196	Betty Smith House	Architecture, First Nation
105D/11/197	Tychynski House	Architecture
105D/11/198	Tychynski Workshop	Architecture
105D/11/199	Christ The King Elem. School	Architecture
105D/11/200	Whitehorse Elementary	Architecture
105D/11/201	Log Garage	Architecture
105D/11/202	Military Building	Architecture
105D/11/203	Baxter Building 1	Architecture
105D/11/204	Baxter Quonset	Architecture
105D/11/205	Nemanishen House	Architecture
105D/11/206D	Redman House	Architecture
105D/11/207	Quonset Shed	Architecture
105D/11/208	N. Smith Panabode	Architecture
105D/11/209	Gaensbauer Residence	Architecture
105D/11/210	Canol Refinery Structure 1	Industrial
105D/11/211	Canol Refinery Structure 2	Industrial
105D/11/212	Canol Refinery Structure 3	Industrial
105D/11/213	Canol Refinery Structure 4	Industrial
105D/11/214	Canol Refinery Structure 5	Industrial
105D/11/215	Canol Refinery Structure 6	Industrial
105D/11/216	Canol Refinery Structure 7	Industrial
105D/11/217	YTG Compound Building	Architecture
105D/11/218	Slonski Buildings	Architecture
105D/11/220	Williams Residence	Architecture
105D/11/221	Jameison Residence	Architecture
105D/11/222	Dharma House	Architecture
105D/11/223	Macbride House	Architecture
105D/11/224	Quonset Shed	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/225	Whitehorse General Hospital	Architecture
105D/11/226	Hospital Power Plant	Architecture
105D/11/227	Hospital Residence	Architecture
105D/11/228	Macrae Dump & Building Foundation	Architecture
105D/11/229	Macrae Washhouse Foundation	Architecture
105D/11/230	Grafter Mine	Industrial, Landscape
105D/11/231	Empress Of India Mine	Industrial, Landscape
105D/11/232	Pueblo Mine	Industrial, Landscape
105D/11/233	Rabbit Foot Mine	Architecture
105D/11/234	Spook Creek Cabin	Industrial
105D/11/235	Utah Flats Siding	Industrial
105D/11/237	116-118 Falaise	Architecture
105D/11/238	Rabbit Foot Mine Cabin	Architecture
105D/11/239	Grafter Mine Shed	Industrial
105D/11/240	Grafter Mine: Ore-Loading Trestle	Industrial
105D/11/241	Empress Of India: Log Shed	Industrial
105D/11/242	Empress Of India: Log Shed 2	Industrial
105D/11/243	Empress Of India: South Mine Shaft	Industrial
105D/11/244	Spring Creek Mine Shaft	Industrial
105D/11/247	Type C/54/S - 2	Architecture
105D/11/248	Type C/54/S - 3	Architecture
105D/11/250	27 Roundel	Architecture
105D/11/251	Type C - 2	Architecture
105D/11/252	Steelox Duplex 2	Architecture
105D/11/253	Steelox Duplex 1	Architecture
105D/11/254	Type C/54/C	Architecture
105D/11/255	Type C/54/T -1	Architecture
105D/11/256	Type C/54/T - 2	Architecture
105D/11/257	Ice Lake Trench	Industrial
105D/11/260 (JeUs-85)	Winze Cabin 2	Architecture
105D/11/263	2 Room Cabin	Architecture
105D/11/264	Old Log Church and Rectory Yukon Historic Site	Architecture
105D/11/265	Canadian Pacific Air Lines Staff House	Architecture
105D/11/266	Yukon Motors Building	Architecture

YHSI ID (Borden)	YHSI Name	Site Type
105D/11/267	F.H. Collins Secondary School	Architecture
105D/14/003	Haydon Woodruff'S Residence	Architecture, First Nation
105D/14/005	Gordon Sam'S Residence	Architecture, First Nation
105D/14/007	Upper Yukon River Foundations	Architecture
105D/14/008	Nine Mile Roadhouse	Industrial
105D/14/010	Croucher Creek Cabins	Architecture
105D/14/036	Croucher Creek Gravesite	Gravesite
105D/14/043	McIntyre Creek Cache	Architecture
105D/11/261	McLean Creek Midden	Landscape
N/A	McLean Lake Tributary Cabin	Architecture
105D/11/258	Rock Garden Midden	Landscape
N/A	Type C	Architecture
N/A	Type C/54/S - 1	Architecture
N/A	White Pass & Yukon Route Derrick Footings	Industrial
N/A	Winze Cabin	Architecture
JeUs-23	Canadian	Shipwreck
JeUs-24	Clara Monarch	Shipwreck
JeUs-25	Barge Carmacks	Shipwreck
JeUs-27	Whitehorse Hospital	Cemetery
JeUs-32	N/A	Architecture
JeUs-35	Copper King Mine	Architecture, Industrial
JeUs-70	N/A	Can Midden
JeUs-75	N/A	Campsite
JeUs-80	N/A	Architecture
JeUs-84	N/A	Architecture
JeUt-25	N/A	Architecture
JfUt-15	N/A	Can Midden
JfUt-7	N/A	Canoe