

MANITOBA-MINNESOTA TRANSMISSION PROJECT

Socio-Economic Technical Data Reports

2.3 Heritage Resources



**Manitoba-Minnesota
Transmission Project
Technical Data Report –
Heritage Resources**

Final Report



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Abbreviations

| | |
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| DIHRT | Data Inventory Heritage Resources Tracking |
| D604I | Dorsey to Iron Range Transmission Line |
| EIS | Environmental Impact Statement |
| FPR | final preferred route |
| GIS | Geographic Information System |
| Ha | hectares |
| HRB | Historic Resources Branch |
| HRIA | heritage resources impact assessment |
| HBC | Hudson's Bay Company |
| kV | kilovolt |
| LAA | local assessment area |
| MMTP | Manitoba-Minnesota Transmission Project |
| PAR | proposed alternative route |
| PDA | project development area |
| PR | Public Road |
| PTH | Provincial Trunk Highway |
| RAA | regional assessment area |
| ROW | right-of-way |
| RPA | route planning area |
| SLTC | Southern Loop Transmission Corridor |
| TDR | Technical Data Report |
| UTM | Universal Transverse Mercator |
| VC | valued component |

Glossary

| | |
|--------------------|--|
| Artifact | Any object showing evidence of manufacture, alteration or use by humans; also referred to as cultural or archaeological material |
| Assemblage | A group of artifacts recurring together at a particular time and place, and representing the sum of human activities |
| Burial Site | Indicated by the presence of human skeletal remains, wooden supports, mounds, etc. |
| Campsite | Indicated by the presence of generalized debris such as stone flakes and tools, pottery fragments, hearths, bone fragments, etc. |
| Centennial Farm | A farmstead greater than 20 ha in size that has been held in continuous ownership by direct descendants of the original owner for 100 years or more |
| Cultural landscape | Areas or locations that are important in exemplifying human utilization or shaping of the natural landscape such as quarry sites, gardens, or trap lines Areas or locations with little tangible evidence of human events yet are culturally important owing to the activities that are known to have taken place there (e.g., battlefields, landing sites) |
| Designated site | A site of provincial or municipal importance that has been legally protected under Part I of <i>The Heritage Resources Act</i> (1986) |
| Diagnostic | An artifact that is indicative of a particular time period and/or cultural group |
| Ecoregion | Characterized by distinctive regional ecological factors, including climate, physiography, vegetation, soil, water, and fauna |
| Ecozone | An area of the earth's surface representative of large and very generalized ecological units characterized by interactive and adjusting abiotic and biotic factors |
| Farmstead Site | Indicated by structural and/or artifactual remains relating to agricultural occupations or activities |

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| Heritage Resource | Any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof. |
| Historic Period | The period following the arrival of Europeans, and specifically, the period corresponding with Euro-Canadian fur trade commerce and settlement. The period is generally divided into Early (A.D. 1700 to 1821), Middle (A.D. 1821 to 1870) and Late (A.D. 1870 to 1945). |
| Industrial Site | Indicated by structures and/or artifacts related to specialized manufacturing activities |
| Isolated Find | An individual artifact collected from the surface of a site with no other artifacts nearby |
| Multi-component | The presence of two or more temporally or culturally distinct groups at one site based on diagnostic artifacts |
| Permanent Settlement Site | Structures indicating a permanent settlement site |
| Precontact Period | The period of First Nation occupation and settlement prior to the arrival of Europeans. The period is generally divided into Early (12,000 to 6,500 BP), Middle (6,500 to 2,500 BP) and Late (2,500 to 300 BP). |
| Seasonal round | First Nation and Métis pattern of movements between different locations on the landscape timed to the seasonal availability of plant and animal resources |
| Structural Site | Indicated by constructed features whose functions are not evident based on the structural remnants and/or artifacts |
| Uninterpreted Site | Sites that are not readily described by one of the above categories |
| Workshop Site | Indicated by a concentration of stone flakes and/or discarded stone tools |

MANITOBA-MINNESOTA TRANSMISSION PROJECT TECHNICAL DATA REPORT – HERITAGE RESOURCES

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1.0 INTRODUCTION

Manitoba Hydro is proposing construction of the Manitoba-Minnesota Transmission Project (MMTP) that includes construction of a 500 kV alternating current (AC) transmission line in southeastern Manitoba. The proposed Project would originate at the Dorsey Converter Station northwest of Winnipeg, then travel south around Winnipeg within the Existing Transmission Corridor including the Southern Loop Transmission Corridor (SLTC) and the Riel-Vivian Transmission Corridor (RVTC) to just south of Anola. The line then continues southward on a New Right-of-way (ROW) across the rural municipalities (RMs) of Springfield, Taché, Ste. Anne, La Broquerie, Stuartburn and Piney to the Manitoba-Minnesota border crossing located south of the community of Piney. The Project also includes the construction of terminal equipment at the Dorsey Converter Station, and electrical upgrades within the Dorsey and Riel converter stations, and modifications at the Glenboro South Station requiring re-alignment of transmission lines entering the station.

This report discusses the existing heritage resources data sources within the Project area, describes the methods of analysis of the data sources including predictive modeling to address information gaps, the cultural background of the Project area based on available heritage resources data, the results of the data analysis, and the results of the heritage resources impact assessment (HRIA) conducted to assess the project's potential to disturb known and potential heritage resources. The analysis of the data and the HRIA provided information that assisted in determining pathways for disturbance of heritage resources by the final preferred route (FPR).

Heritage resources include objects and/or properties that are of interest for their architectural, historical, cultural, environmental, archaeological, palaeontological, aesthetic, or scientific value. Heritage resources are the tangible remains of past land use activities, are non-renewable and are susceptible to loss or damage as a result of project activities. The value of heritage resource sites is measured not only by the individual artifacts they contain, but also in terms of the information about the past that might be obtained from studying the objects, the spatial relationships of artifacts within sites, the context of assemblages and sites across the landscape and their identity within the cultural landscape. In this assessment, heritage resources include:

- Archaeological sites
- Provincially and Municipally designated sites
- Centennial farms
- School sites
- Burials
- Cemeteries

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Heritage resource sites are fragile and the product of unique processes and conditions of preservation. The vertical and horizontal provenience of artifacts provides insights into the time and space continuums. As a result, removing or mixing artifacts and soils without scientific recording results in the loss of important information about the activities at an archaeological site.

Human remains that have been found in areas outside a cemetery setting are recorded in the Manitoba Historic Resources Branch (HRB) database as "Burials". Burials consist of isolated burials, abandoned homestead cemeteries, multiple interred individuals and individual skeletal elements, such as teeth, digits, and partial bone elements.

Cemetery locations are included with heritage resources in this assessment because there is the potential for unmarked burials to be present along the perimeter of abandoned and active cemeteries. Community and church cemeteries were often developed shortly after homestead settlement and before local government infrastructure were developed and records were maintained. Experience in other rural areas across the province has shown that fencing to encapsulate the cemetery often failed to encompass the first burials. The approach of this assessment therefore recognizes the potential for unmarked burials to be present at active/abandoned cemeteries.

The locations of known heritage resources were considered during the three routing selection analyses with avoidance as the analytical determinant. Preliminary alternative routes, the preferred route and the Final Preferred Route were analyzed for proximity of known heritage resources with avoidance the key determining factor.

Manitoba Hydro expects to file an application with the National Energy Board (NEB) and submit an Environmental Impact Statement (EIS) in support of an Environment Act Proposal to Manitoba Conservation and Water Stewardship in 2015. Subject to regulatory approvals, the projected in-service date is mid-2020.

1.1 BACKGROUND

1.1.1 Project Overview

The Project's primary component is the construction of a 500 kV AC transmission line named Dorsey to Iron Range Transmission Line with a line identification code of "D604I". D604I will originate at the Dorsey Converter Station, located near Rosser, northwest of Winnipeg, MB and travel south around Winnipeg within the existing SLTC then head east within the existing Riel-Vivian Transmission Corridor (RVTC) to just south of Anola, MB. From south of Anola, the transmission line will continue southeast in a new Right-of-Way (ROW), crossing the Manitoba-Minnesota border near Piney, MB. It will then connect to the Great Northern Transmission Line, which will be constructed by Minnesota Power, and ultimately terminate at a new station called Iron Range Station adjacent to the existing Blackberry Station located northwest of Duluth,



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Minnesota. The Project also includes additions and modifications to associated existing stations at Dorsey, Riel and Glenboro South in Manitoba. An overview of the project components are described below.

MMTP consists of three components:

- development within an Existing Transmission Corridor
- development within a New Right-of-Way (ROW)
- station upgrades

1.1.1.1 Existing Transmission Corridor

The Existing Transmission Corridor (Existing Corridor) is made up of the existing planned multi-ROW corridors of the Southern Loop Transmission Corridor (SLTC) and the Riel-Vivian Transmission Corridor (RVTC). The SLTC originates at Dorsey and egresses around the west and south sides of the City of Winnipeg to Riel (Appendix Map 1-1). The SLTC is a dedicated transmission corridor where Manitoba Hydro has been acquiring easement and ownership rights for the past number of decades. The existing SLTC is up to 245 m wide and is designed to accommodate multiple transmission lines necessary for system reliability and to meet future energy demands in southern Manitoba.

The RVTC is a utility corridor that extends from Riel Converter Station east to just south of Anola. The existing Riel-Vivian transmission corridor is 177 m wide. Within this corridor there is currently one 500 kV AC (M602F - Riel to Forbes) and one 500 kV DC (Bipole III) line, which is under construction. With the addition of the Dorsey to Iron Range (D604I) 500 kV transmission line there will be three lines in this corridor.

1.1.1.2 New Right-of-Way

From the Existing Corridor, as described above, south of Anola, MB, the D604I transmission line will proceed southeast within a new ROW for approximately 121 km. The new ROW as designed, passes through a portion of southeast Manitoba that has a variety of land uses including agriculture, rural residential, and Crown land. The ROW width requirement will be approximately 80 m for self-supporting towers and 100 m for guyed towers. The typical 500 kV structure height is expected to range between 50 and 60 m, depending on terrain conditions and environmental sensitivities. The tower spacing is estimated to be approximately 400 m to 500 m but may extend outside of this range, depending on topographic and geological features, proximity to existing infrastructure, soil conditions, environmental considerations and land use. In cultivated agricultural areas, this transmission line will be constructed primarily of self-supporting lattice steel structures to mitigate effects on both agricultural and rural residential land uses through reduced tower footprints and ROW width. In non-agricultural areas, the transmission line will be constructed primarily of guyed lattice steel structures to mitigate effects on tower stability caused by saturated soils in wetlands, along with financial savings associated with reduced materials and construction costs.

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1.1.1.3 Dorsey Converter Station

To connect and integrate the D604I 500 kV AC transmission line to the existing electrical network, modifications and additions will be required at the existing Dorsey Converter Station northwest of Winnipeg in Rosser, MB. The station modifications include the addition of circuit breakers to permit line termination of D604I as well as reactors. The station site requires modification to accommodate the new equipment and line termination. The station fence line will be expanded to the west for a total of 15,902 m² on Manitoba Hydro-owned property. In addition to the above, the Dorsey to Portage South (D12P) 230 kV transmission line will need to be relocated along with minor modifications required at the 230 kV switchyard on the property.

1.1.1.4 Riel Converter Station

The Riel Converter Station is located east of the Red River Floodway and north of the City of Winnipeg's Deacon Water Supply Reservoir in the RM of Springfield. There will be additional electrical construction at the Riel Converter Station as a result of the Project. All additions will be contained within the current fenced area of the 500 kV switchyard portion of the station. The additions primarily include three auto transformers and associated equipment. The additions of the autotransformers at Riel Converter Station allow both Riel and Dorsey converter stations to operate in a balanced manner, especially in the event that the Dorsey to Riel (D602M) 500 kV AC transmission line is out of service.

1.1.1.5 Glenboro South Station

Manitoba Hydro's Glenboro South Station is located 1.5 km south of the junction of PTH 2 and PTH 5. This station is a component of the Glenboro International Power Line that transmits power from Glenboro South to Harvey station via the 230 kV AC Glenboro-Rugby International Transmission Line. The principal electrical component additions are two phase shifting transformers. A phase shifting transformer is a special type of transformer that controls the flow of electricity in a transmission line. With the addition of the Dorsey to Iron Range (D604I) 500 kV transmission line, there will be addition power injected into the U.S. grid, which could result in increased power flow back into the Manitoba Hydro electrical system. Energy takes the path of least resistance and hence the flow back of this energy could manifest itself through the Glenboro International Power Line. The phase shifting transformer functions like a control switch to block this undesirable power flow and is used for electrical congestion management purposes. To accommodate the new phase shifting transformers, the site will need to be modified. The Glenboro South Station fence line will be expanded 130 m x 91 m east of the existing 230 kV switchyard on Manitoba Hydro owned property. In addition, two transmission lines as well as termination equipment will need to be relocated.

The sections below outline the major components of the project. Individual components are subject to change based on final engineering design.

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1.1.2 Spatial Boundaries

The spatial scope is selected to consider the geographic extent over which project activities and their effects are likely to occur. The spatial boundaries consist of the Project development, the local assessment, and the regional assessment areas.

- **Project development area (PDA):** the PDA for all components of the Project encompasses the Project footprint and is the anticipated area of physical disturbance associated with the construction and operation and maintenance of the Project (see Map Series 12-100 – Heritage Resource Locations)
- **Local assessment area (LAA):** the LAA for the portion of the proposed transmission line that is within the existing corridor (SLTC and RVTC) is equal to the current extent of the ROW for these corridors. The LAA for the New ROW is a 200-m-wide corridor (to a maximum of 245 m) that includes the PDA. The LAA for each of the proposed station expansions is the PDA. Development at all three locations will be confined to areas that have been previously disturbed by past land uses (see Map Series 12-100 – Heritage Resource Locations).
- **Regional assessment area (RAA):** the RAA for all components of the Project is the Lake Manitoba Plain Ecoregion of the Prairies Ecozone (Agriculture and Agri-Food Canada 1999) (see Map 12-200 – Heritage Resources Regional Assessment Area). This ecoregion encompasses the seasonally available resource locations that were harvested by the Precontact Period and Early Historic Period cultural groups in the southeast portion of the province.

1.2 PURPOSE

The purpose of this TDR is to describe the existing conditions for heritage resources and cemeteries in the region that would support the Environmental Assessment of the proposed Project. Heritage resources were selected as a valued component (VC) because of legislated requirements, scientific relevance interest, First Nation and Metis interest, public concern, and because they provide people from the past the opportunity to be heard in the present.

The TDR contains information used to guide the transmission line route selection process and inform EIS predictions of potential Project-related effects on changes to heritage resources. It describes how desktop data were gathered, and how information gaps were identified and addressed through additional desktop research, predictive modeling, and field studies. This information will support the MMTP EIS.

2.0 ASSESSMENT OVERVIEW

2.1 GENERAL APPROACH

The heritage resources impact assessment examined the existing database of known heritage resources within the initial route planning area (RPA) to determine the chronological range, the geographical distribution, and site condition at the time the site was recorded. The assessment also analyzed the locations of provincially and municipally designated sites, centennial farms, former school sites and cemetery locations. Archival data such as land grants, Red River parish lot files and Dominion Land township plans were also examined to record land ownership, nature of homestead improvements, cart trail corridors and surveyed rail line right-of-ways.

These data were compared with the proposed alternative routes (PARs), the final preferred route (FPR) and the station expansions to determine points of interaction, to identify any information gaps in the existing data and to identify areas that required a site assessment. Predictive modeling was completed to address information gaps and to also identify areas along the PAR and FPR that required an assessment.

2.2 KEY ISSUES AND TOPICS

Heritage resources are the tangible remains of past land use activities, are non-renewable and susceptible to loss or damage as a result of project activities. The value of heritage resource sites is measured not only in terms of the individual artifacts they contain, but also the information about the past that can be obtained from studying the objects, the spatial relationships of artifacts within sites, and the context of assemblages and sites across the landscape. Heritage resource sites are fragile and the product of unique processes and conditions of preservation. The vertical and horizontal provenience of artifacts provides insights into the time and space continua. As a result, removing or mixing artifacts and soils without scientific recording results in permanent loss of critical information.

Several issues regarding potential pathways for project components to interact with heritage resources were documented during the Public Engagement Process. Specific areas of concern consisted of potential heritage resource sites at the Rat River crossing and along the Bedford Ridge. Concerns were also raised about the proximity of one of the alternative routes to the Ridgeland Cemetery north of Sundown, MB. Assessment of these areas was incorporated into the work plan.

2.3 VALUED COMPONENTS, POTENTIAL ENVIRONMENTAL EFFECTS AND MEASURABLE PARAMETERS

Potential effects from the Project on heritage resources include alteration or removal of known archaeological or cultural sites, exposure of previously unrecorded archaeological sites and/or human remains, and inadvertent alteration to unmarked burials adjacent to active/abandoned cemeteries.

Primary and secondary potential effects from the Project on heritage resources include:

- Primary effects occur during construction, including loss or disturbance to site contents and site contexts through brush or topsoil removal, compaction, vehicle traffic, grading for access roads, tower construction and station modification or expansion
- Secondary effects may include vandalism if the project creates new human access opportunities, or damage to surface sites through artifact collection.

2.3.1 Effect Pathways: Construction

Brushing activities for access roads, staging areas, transmission line ROW and tower locations could disturb known or potential heritage sites by dislocating artifacts that are within or just beneath tree roots. The removal of standing vegetation could also create unstable soil environments and associated surface runoff that would result in the horizontal and vertical displacement of surface or shallowly buried artifacts.

Soil removal for tower footings, staging areas, or to facilitate stream crossing points could disturb known or potential heritage resource sites by removing artifacts from their horizontal and/or vertical context.

Grading for access roads could also disturb known or potential heritage resource sites by removing artifacts from their horizontal and/or vertical context.

Compaction from vehicular traffic could disturb surface or shallowly buried heritage resources, particularly in areas of sandy soils such as in the Sandilands Provincial Forest.

Construction of access roads would also provide increased entry to areas of intact heritage resource sites by vandals or unauthorized site collection.

Expansion of existing or excavation of new borrow areas and any required haul roads have the potential to disturb intact heritage resource sites through the removal of artifacts.

Spoil piling of excavated soils and rock may damage known or unknown heritage resources below surface.

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2.3.2 Effect Pathways: Operation and Maintenance

Brushing activities to maintain access roads, transmission ROW or tower locations could disturb known or unknown heritage resource sites if areas that were not previously cleared during construction are accessed during operation and maintenance.

Brushing activities to expand access roads, transmission ROW or tower locations could disturb known or unknown heritage resource sites by dislodging artifacts within or just below tree roots.

Subsoil removal or regrading of access roads in areas that were not developed during construction could result in disturbance to heritage resources by disturbing the horizontal and/or vertical context of artifacts.

2.4 ROUTING ANALYSIS

The compiled heritage resources database was primarily used during the alternative, preferred and final preferred routing process for the New Right of Way. The heritage resources that were located within the Existing Corridor identified areas that may be of concern during construction and/or operation depending on tower location.

Avoidance of known heritage resources and cemetery locations was the key attribute during all routing phase analyses to reduce the potential project effects. Heritage resource locations were plotted in comparison to the various route segments as areas of least preference and then the segments were subsequently rejected to avoid the sites. Once the routing analysis identified the PARs, all routes were compared with the heritage resources database to identify areas that would require a field assessment based on the predictive model. The FPR was also selected to avoid known heritage resource locations and areas of potential heritage resources. No fieldwork was completed to assess the final FPR because not only did the route avoid areas of known and potential heritage resources but many of the segments comprising the FPR had been assessed during the HRIA. Furthermore, sufficient data had been collected during the HRIA to complete an informed assessment of the FPR segments that had not been examined during the HRIA.

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3.0 REVIEW OF EXISTING DATA SOURCES AND BASELINE DATA GAPS

3.1 SUMMARY OF EXISTING DATA SOURCES

Preliminary baseline data acquired from the Historic Resources Branch (HRB) of Manitoba Tourism, Culture, Heritage, Sport and Consumer Protection consisted of previously recorded archaeological sites and Centennial Farms. These data were augmented by accessing the HRB website (www.gov.mb.ca/chc/hrb) for a list of provincially and municipally designated sites within the study area (Map 3-1).

Dominion Lands Office township plans, compiled during the first land surveys of Manitoba between 1872 and 1910, were reviewed to record cart trails, developed and undeveloped rail lines, and any homestead locations (Manitoba Land Initiative 2006).

Original landowner data were amassed from Land Grants of Western Canada (1870 to 1930) on the Library and Archives Canada website at <http://www.bac-lac.gc.ca/eng/discover/land/land-grants-western-canada-1870-1930>. These records indicate the type of land acquisition such as Métis Land Grant, Military Bounty Grant or sale. River lot landownership records for the Parishes of Lorette, St. Norbert and Headingley were examined at the Provincial Archives of Manitoba.

Topographic maps (1:50,000 scale) were accessed on the Natural Resources Canada website to plot cemetery locations within the Project area (www.geogratis.gc.ca/geogratis). Data were also collected by reviewing the interactive map of historic sites produced by the Manitoba Historical Society available at <http://www.mhs.mb.ca/docs/sites/index.shtml> and The Cemetery Project interactive website at <http://cemetery.canadagenweb.org/MB>. While it is anticipated that the selected transmission route will not extend through a known cemetery, there is the potential for unmarked burials to be located around the periphery of cemetery enclosures. These graves often relate to individuals interred when the fledgling community or rural area was in the early stages of settlement and records were either poorly kept or not maintained at all.

3.2 DATA GAPS AND LIMITATIONS

The majority of the previously recorded archaeological sites within the provincial database are surface sites. That is, they represent sites that have been recorded on the basis of artifacts collected from the surfaces of cultivated fields. The data provide insights into the cultural and temporal diversity of the collections to place the site, and by extension that portion of the study area, within the Manitoba chronological framework. Sites that were located in cultivated fields or modified hayland were not subjected to scientific collection or subsurface testing but were photographed and present land use recorded. The potential for cultural strata below the plow

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zone was also determined, and based on the any factors that would result in sedimentation or soil development at that location.

The archaeological data also contain inconsistencies for site size, condition and type. For example, site size is either given as a length by width measurement or an area measure in either hectares or acres.

A second data gap observed was the paucity of heritage data for the southern portion of the project area particularly in the Sandilands Provincial Forest. This area is primarily under native vegetation.

The Land Initiative township plans span a period of the mid-1870s to the early 1900s and while some have detailed information regarding existing vegetation, trails and landowners, other maps simply show the measurements of the land sections with no additional details. Furthermore, cadastral data were not present for all townships.

Gaps in the Land Grants of Western Canada were recorded for a number of land sections in the southern portion of the Project area. These sections were listed as “Swampland” and were Crown Land at the time of the record.

Data gaps were addressed during the fall 2014 field assessments. In the fall of 2014, previously recorded sites that were within the LAA were revisited to update information such as current status, a more exact geo-referenced location, and any additional heritage resources. Predictive modeling to identify areas of potential heritage resources within the LAA was a second method of addressing data gaps particularly in the southeast portion of Project area.

4.0 METHODS

4.1 DESKTOP DATA COLLECTION METHODS

All heritage data received from HRB or available on the HRB website were plotted through conventional GIS mapping to compare the distribution of these sites with the alternative routes and preferred route to determine areas of potential intersection. Cemetery locations recorded from topographic maps and the Cemetery Project website were located on *Google Earth Pro*[®] satellite imagery to obtain a UTM reference point for the centre point of the graveyard. A similar method was used for former school locations found on the Manitoba Historical Society website.

The trail and rail data obtained from Dominion Land Survey townships were plotted on *Google Earth Pro*[®] satellite imagery as linear tracks and compared with the alternative routes, the preferred route and the station expansion footprints to determine areas of potential heritage concerns. Trails used during the Late Historic Period were often existing pedestrian corridors that were used by First Nation groups during the Precontact Period. Furthermore, human remains have been uncovered in areas adjacent to or near former trails in southern and central Manitoba (McLeod 2000). The cultural groups affiliated with these previously recorded sites also share material culture traits and, as evidenced by historical documents, linguistic affiliations with cultural groups who would have incorporated the PDA, LAA and RAA into their seasonal round.

4.2 MODELING

Predictive modeling relies on either inductive or deductive logic and requires the researcher to consider how past resource users made decisions in terms of where and how they would conduct their adaptive strategies and daily activities (Hamilton *et al.* 1994a). Archaeological predictive modeling studies for the boreal forest have been conducted in Manitoba (Ebert 2002), northwest Ontario (Hamilton *et al.* 1994b) and northern Saskatchewan (Gibson and McKeand 1996). Predictive modeling in the prairie region is similar to that of the boreal forest in that, in general, important proxy variables that determine high archaeological site potential are distance to water, slope, elevation and vista (Ebert 2002).

Predictive modeling does not always apply to certain site types. Butchering sites, which involve the initial processing of the animal, are usually predicated on the location where a kill has occurred. Generally, these sites are randomly distributed, occupied for a short time and are seldom horizontally or vertically extensive.

Predictive modeling is primarily designed to identify areas of moderate to high heritage resource potential areas for Precontact Period sites within a given study area. It draws on the previously recorded archaeological site data to determine if there are relationships between site location and the proxy variables. Modeling for Historic Period sites draws heavily from historical records such as homestead settlement patterns, community histories and Dominion Land records. The

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implications of historic settlement patterns will be discussed in the cultural background portion below.

4.2.1 Previous Predictive Modelling in Project Area

Saylor (1975) conducted an archaeological survey in the Sandilands Provincial Forest to test predictive modelling based on landforms. The objective of the survey was to discern specific correlations and interrelationships between site distribution and the ecological characteristics of the region; namely that site distribution and density may be a result of certain ecological factors such as resource distribution and availability. Specific attention was paid to the various Lake Agassiz beach strand lines as these were considered to be important pedestrian corridors for Early Precontact Period groups. Using the physiographic areas developed by Ehrlich and Smith (1964), Saylor divided the study area into three zones: Upland, Plateau and Lowland based on topography, soil, drainage and vegetation. He then completed a detailed analysis of the various types of flora and fauna available in each zone. The Upland region correlated with the Bedford Hills region, the Plateau region with the Whitemouth Lake Plateau, and the Lowlands consisted of the remaining low-lying areas surrounding the Upland and Plateau regions. This third area had a relief that varied from 335.5 to 350.75 m above sea level and most of the area was an expanse of peat broken only by small islands of gravel bars or beaches. His research showed that the Plateau and Lowland areas produced the most sites and rationalized that these locations were the preferred habitation areas because they provided the maximum amount of seasonally available resources for First Nation hunter gatherers.

Heintzelman (1976) expanded on Saylor's research to develop a technique for predicting archaeological site distribution and density as ancillary research to a heritage assessment of the proposed Manitoba Hydro 230 kV transmission line from Winnipeg to Sprague. The objective of the research design was to establish the statistical probability of the spatial distribution of archaeological sites within the transmission line project area. Heintzelman's approach utilized various combinations of fixed natural phenomenon with attention focused on existing landforms and known ethnological patterns of Precontact hunter/gatherer groups who were predominantly pedestrian.

Physiographic features used included relict beach ridges, outwashed deposits, till and lacustrine plain, streams and riverbanks, bogs and bog sides, and Aeolian sand. The features were then combined to determine a high-moderate-low potential for heritage resources. Three archaeological sites along the Seine River were located when the various features were tested.

The Saylor and Heintzelman approaches were integrated in the MMTP modeling with the topography and soil type variables, as discussed below.

4.2.2 Predictive Modelling MMTP Project

The predictive modeling approach taken for the MMTP heritage assessment was to identify proxy variables that included proximity to water, topography, soil type, proximity to known sites, past land use, and proximity to historical features.

4.2.2.1 Predictive Modeling Variables

Proximity to water, particularly for a summer occupation, is probably the most important site determining factor within the predictive modeling process (Walker 1992). The importance of water is reflected in its use for transportation, harvestable resources, subsistence, and in the integral role it plays for most of the various orders within the life chain cycle. Locations where the alternative routes, the preliminary preferred route, and the Final Preferred Route extended adjacent to or across a stream or adjacent to a body of water were considered to have moderate to high potential.

Landforms and general topography influenced people's movements, faunal forage habits and settlement patterns. An elevated terrace overlooking a location of potable water is the most common landform where past populations would locate their settlements and camps in the prairie region. Low-lying or marshy areas were often selected as kill sites as game can be mired in the wet substrate and harvested.

Low-lying areas such as bogs or marshes were considered to have low potential for heritage resources. Relict beach ridges, such as the Bedford Ridge and the beach strands in the Sandilands area, were considered to have moderate to high potential. The lowland areas along the west edge of the LAA were also considered to have moderate to high potential.

Soil types are important considerations regarding locations where certain activities would be conducted by past populations, particularly during the summer months. Soil type during the winter would not be as important as, conceivably, the ground would be frozen and covered with snow. It is probable that sands, silts and clays would be best preferred habitation sites, while excessively stony sites or locales with large boulders would be avoided. However, given the nature of the architecture used by prairie-adapted people, stony areas would be used as a source of large cobbles to secure the bottom circumference of a tipi dwelling.

Areas with glacial fluvial, glacial lacustrine, alluvial and sandy (aeolian) soils were considered to have moderate to high potential. Glacial fill was considered to have moderate potential, as these could be source areas for lithic tool production. Organic and peat deposits were considered to have low potential for heritage resources.

Proximity to known sites indicates that past cultural activity has been recorded within the PDA, LAA and/or RAA. For predictive modeling, locations where any of the routes and the FPR extended between or were within 500 m of a known heritage sites were considered to have moderate to high potential.

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Magnitude of previous impacts by past land use is another variable integral to predictive modeling. Occasionally the nature and extent of the past impact cannot be ascertained until a detailed archaeological assessment of the property has been completed. Available historical documentation or information from who have knowledge of the site or area can also assist in obtaining baseline information. Past development that has generally occurred in the study area is agricultural land use. Cultivation of archaeological sites usually results in a vertical mixing of the site components and, depending on the nature of cultivation, can result in horizontal displacement of site materials.

Areas that were under native vegetation were considered to have moderate to high heritage potential. Areas that had been cultivated or previously disturbed by past development (residential, commercial, road, hydroelectric transmission, etc.) were considered to have low potential.

Proximity to historic trails is a variable that factors the importance of past transportation routes and extrapolates that cart trails used in the Historic Period where probably originally Precontact Period pedestrian routes. Human remains have often been uncovered in areas adjacent to or near former trails in southern and central Manitoba (McLeod 2000). The cultural groups affiliated with these previously recorded sites also share material culture traits and, as evidenced by historical documents, linguistic affiliations with cultural groups who would have incorporated the PDA, LAA and RAA into their seasonal round.

Locations where the alternative routes, the preliminary preferred route, and the Final Preferred Route intersected or were within 500 m of a cart trail as identified in the Dominion Land township plans were considered to have moderate to high potential for heritage resources.

4.3 FIELD DATA COLLECTION METHODS

4.3.1 Field Methods

A windshield survey of all alternative routes was conducted in September 2014. The survey objective was to compare the PARs with the locations of previously recorded sites and moderate to high potential locations identified from predictive modelling to identify areas that required a more detailed field assessment.

Field data were collected based on standard heritage resource assessment practices developed by Stantec Consulting Ltd. for other HRIAs, data requirements for inclusion in Data Inventory Heritage Resources Tracking (DIHRT), and the HRB guidelines (Badertscher 1990).

Shovel tests averaged 40 cm by 40 cm and were excavated to various depths depending on soil types exposed. Tests were generally suspended when the C-soil horizon was exposed. Tests were placed randomly in areas determined to have moderate to high potential for heritage resources with the testing confined to the maximum proposed ROW for the New ROW and within

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the Existing Transmission Corridor. Soil strata data were recorded manually as were data such as vegetation ground cover, canopy cover, and any topographical features such as sand ridge, elevated area adjacent to a wetland, etc. Landscape photographs were taken in the four cardinal directions at tests where the vegetation and/or landscape were different from that recorded at the previous test. Similarly, a representative wall profile was photographed at tests where there was a change in soil strata from the previous test.

GPS tracks were maintained for all vehicular and pedestrian transects and the locations of all shovel tests, photograph locations and surface features were recorded by GPS waypoint.

4.4 ANALYTICAL METHODS

The heritage resources were initially analyzed by plotting the geo-spatial information and comparing the data with the alternative routes and preferred route to determine areas of interaction. The data were also analyzed for cultural affiliation, which would suggest time period, and nature and extent of previous disturbances. A baseline characterization of archaeological site integrity was necessary because one of the project effects to be assessed for the EIS is change to heritage resource sites. If a particular site was recorded as being totally or partially disturbed as a result of past land use or natural factors, the residual effect of the Project would be minimized because the site had already been, or was partially, compromised.

The cemetery locations were also geo-spatially plotted to determine areas of interaction with any of the alternative routes or the preferred route. No differential analysis of cemeteries that were abandoned or still active was completed because the project effect that was assessed in the EIS was change to cemeteries. Therefore, current status of cemetery use was tangential to the effects assessment.

The cart trail data were analyzed to determine those routes that remained intact, those that were modified by agriculture or development, and those trails that were subsequently developed into permanent roads. Trails that were disturbed or developed into modern highways with flanking drainage ditches were considered to have low potential for intact heritage resources and therefore the original track had a minimal concern for residual effects from the Project.

5.0 CULTURAL BACKGROUND MMTP

The cultural history of the RPA is presented below to provide a background and context for the analytical results of the heritage resources database. The summary is based on existing knowledge of the past environment and cultural chronology of southeastern Manitoba.

5.1 CULTURAL AND ARCHAEOLOGICAL ENVIRONMENT

5.1.1 Palaeo-Environment

The surficial nature of the RPA was shaped during the last ice age and subsequently by the formation and draining of glacial Lake Agassiz approximately 12,000 years ago. The areal dimensions and depth of the lake constantly fluctuated as a result of eroded overflow outlets and isostatic rebound. Whenever the level of Lake Agassiz remained stable for a period of several years, sand or gravel beach deposits were formed and are still visible today (Teller 1984:39). These tended to be laid down across the natural slope of the land, affecting and interfering with local drainage patterns in many places. For the main part, these beach deposits were oriented along a north-south axis.

Pollen studies from locations in south and central Manitoba indicate that coniferous vegetation, such as pine and spruce, developed shortly after Lake Agassiz receded. Four temporally diagnostic vegetation zones have been identified for the southern portion of Manitoba based on pollen studies in the Tiger Hills area approximately 150 km west of the study area (Ritchie 1976:1799). The oldest zone dates from about 13,000 to 10,000 years ago and the pollen assemblage is dominated by spruce and *Artemisia*, with significant but fluctuating amounts of poplar, elm, willow, buffalo berry, and grasses. *Artemisia* is a large, diverse genus of plants belonging to the daisy family and contains various plants such as mugwort, wormwood, and sagebrush (Figure 5-1).

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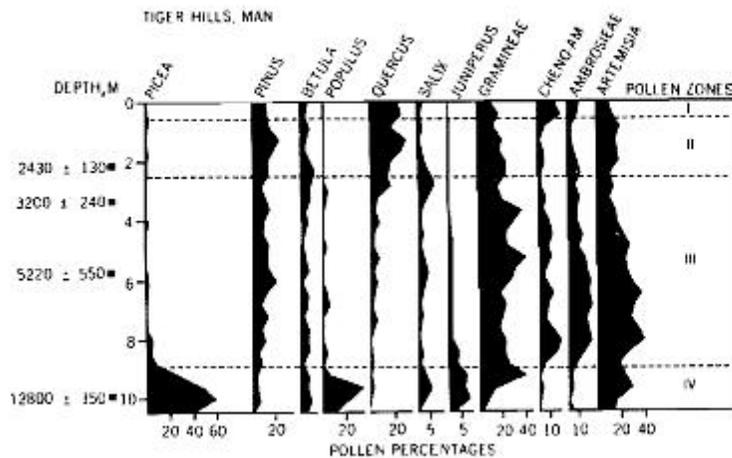


Figure 5-1 Pollen Diagram from Tiger Hills, Manitoba Area (from Ritchie 1976)

At about 10,000 years ago spruce declines and is replaced by a typical herb assemblage, with Artemisia, Gramineae, Chenopodiineae and Ambrosieae the dominant plant families. This increase in the percentage of herb plants corresponds with an expansion of the prairie grasslands that developed as a result of climatic conditions that were warmer and drier than present. The exact nature of the grasslands, such as tall-or mixed-grass, is difficult to distinguish as grass pollen grains cannot be identified to species (Shay 1984:103).

Zone 3 is characterized by a decline of the herbaceous proportions within the pollen record and an increase in oak. This corresponds with a southerly retreat of the grasslands and an expansion of a parkland environment at about 3,000 years ago.

The fourth vegetation zone, which dates to about 800 years ago, is distinguished by sharp increases in Ambrosieae and Chenopodiineae, and correlates to the development of the present vegetation. Modern vegetation, that being the vegetation prior to the advent of intense cultivation, consisted of a mixture of tall prairie, meadow-prairie and meadow grass associations the locations of which depended on the various degrees of natural drainage. Trees grew and continue to grow naturally as a wood fringe along unmodified stream channels. Oak and aspen with an undergrowth of snowberry, hazel and dogwood commonly occur on better-drained sites above and adjacent to the river channels. Elm, basswood, cottonwood, box-elder and ash with an undergrowth of willow, ferns and allied herbaceous plants are confined to alluvial deposits on the silty clay river terraces and flood plains. Since the late 1880s, agricultural crops have replaced the original vegetation throughout most of the project area, except on some of

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the poorly drained meadow soils and on the narrow wooded strips that remain as a fringe along the streams and intermittent water courses.

During the onset of vegetation Zone I, the decaying plant material mixed and was absorbed into the top layer of the glacial lacustrine clay and began to form various basic types of soils. The vegetation of Zone II, the grasses and herbs, grew and died annually on the clay sediments, and eventually built up a thick rich layer of black loamy soil. The study area is predominantly comprised of soil series within the blackearth zone (Ehrlich *et al.* 1953).

5.2 CULTURAL HISTORY

5.2.1 Precontact Period (12,000 – 300 BP)

The cultural chronology of Manitoba is generally divided into two periods, Precontact and Historic (Table 5-1). Each period is further divided into Early, Middle and Late. The Precontact Period dates from ca. 12,000 to 300 years ago and relates to the time when First Nation hunter/gatherer groups first moved into the area as Lake Agassiz receded, bringing with them a plains-adapted subsistence primarily based on bison hunting. Through time, woodland adapted groups from the south and southeast utilized the area and either displaced or merged their cultural traditions with earlier groups. Cultural traditions, history and spirituality were passed to subsequent generations through the spoken word or possibly by rock paintings (pictographs), alignments (petroforms) and figures cut into rock faces (petroglyphs).

Table 5-1 Archaeological Time Periods in Manitoba Based on Technology

| Archaeological Period | Technology | |
|--|--|--|
| | Container Type | Food Procurement |
| Late Historic Period (ca. 143 – 80 BP) (A.D. 1870 – 1945) | Porcelain Tableware Earthenware Dinnerware Stoneware Storage Jars Glass Sealers Tin Cans | Repeating Rifles Automatic Shotguns Steam/Gas/Diesel Farm Machinery |
| Middle Historic Period (ca. 192 – 143 BP) (A.D. 1821 – 1870) | Earthenware Dinnerware Stoneware Storage Jars Glass Bottles Copper Pots/Kettles | Breach Loading Rifles/Shotguns Percussion Cap Muskets Animal Drawn Agricultural Implements |
| Early Historic Period (ca. 300 – 192 BP) (A.D. 1700 – 1821) | Copper Pots/Kettles | Flintlock Muskets/Shotguns Metal Traps Metal Projectile Points Metal Knives/Axes |

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Table 5-1 Archaeological Time Periods in Manitoba Based on Technology

| Archaeological Period | Technology | |
|--|---|--|
| Late Precontact Period (ca. 2,500 - 300 BP) | Clay Vessels: Selkirk (Late Woodland) Blackduck (Middle Woodland) Rainy River Composite (Middle Woodland) Laurel (Early Woodland) | Bow & Arrow Bone Harpoons Nets Side-notched Points Eastern and Plains Triangular Points Copper |
| Middle Precontact Period (ca. 6,500 – 2,500 BP) | Fiber Baskets/Bags Animal Viscera/Hide | Atlatl Bone harpoons Nets Duncan points McKean points Old Copper |
| Early Precontact Period (ca. 12,000 – 6,500 BP) | Fiber Baskets/Bags Animal Viscera/Hide | Bone harpoons Lanceolate projectile points Stemmed Points Trihedral adzes Agate Basin Logan Creek Late Sisters Hill Plano |

The Historic Period dates after *ca.* A.D 1700, when European and Canadian fur traders and explorers entered the area to trade goods for furs that could be exported to Europe. It is during the Historic Period that farmsteads and farming communities were developed. Oral histories were augmented with written records such as diaries, letters, trade post journals and trade post annual reports.

5.2.2 Early Precontact Period

The earliest Manitoba inhabitants were small groups of hunter/gatherers who followed large game into the southern portion of the province as Lake Agassiz receded. Lithic technology consisted of spears with large lanceolate points, stemmed points, scrapers, and knives and adzes (Figure 5-2). Preferred kill sites consisted of settings where animals could be channeled into an area that restricted the speed at which they could escape (Pettipas 1984:36). Narrow river or creek channels or wet marshy areas where the animals could get mired would have been favoured hunting spots within the study area.

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Early Precontact Period projectile points diagnostic of the Early Precontact Period were located near La Broquerie, adjacent to the Seine River, and in the Bedford Hills south of Sandilands.

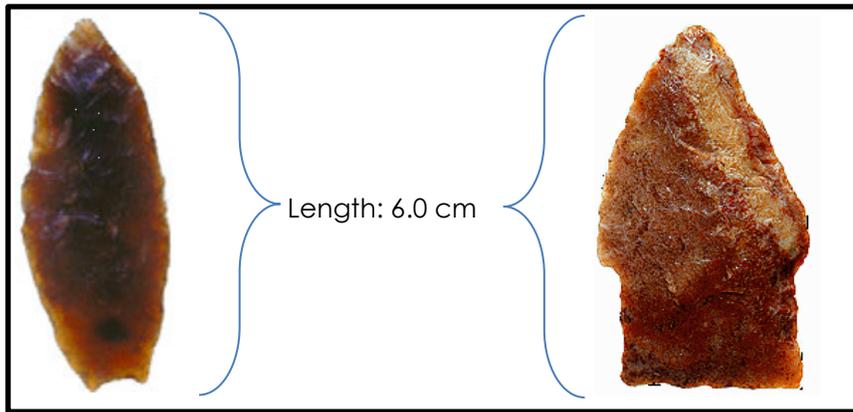


Figure 5-2 Example of Early Precontact Lanceolate and Stemmed Points (from Manitoba Archaeological Society 1998)

5.2.3 Middle Precontact Period

The Middle Precontact Period corresponds to a period of warmer and drier environmental conditions that created a northerly expansion of the grasslands and an easterly and northerly expansion of the bison range. Prior to this event, the wooded areas of the south central portion of the province were used primarily as wintering areas for small bison herds. The expansion of the bison range provided a more reliable resource for a longer portion of the year and resulted in an increased number of groups in the area for longer annual periods. Prior to the warmer and drier conditions, many of these cultural groups only inhabited the southern portion of Manitoba during certain times of the year during their seasonal round. The increased number of people utilizing the area could also be the result of population pressures on the southwest plains. This pressure could have resulted in over hunting that was overcome by people diversifying their resources and moving to new areas where such resources were more reliable.

The Middle Precontact Period is characterized by use of the spearthrower, or atlatl, which may have diffused into the plains from the southeastern United States (Wright 1995:127). The adoption of the atlatl was fairly rapid and can be identified in the archaeological record by a change from stemmed to notched projectile points (Figure 5-3). The lithic technology of this period consists of bifacially flaked and hafted stone knives, side-notched projectile points, large end scrapers, drills and woodworking tools. Flakes that fell to the ground during the manufacture process were often collected, used for cutting and then discarded. These are referred to as utilized flakes. Copper projectile points and wood working tools were also introduced during this time period. Bone, antler and shell were used to make awls, needles, hide scrapers and personal

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adornment articles (Syms 1970:132). Canoes, snowshoes and toboggans were used as forms of transportation (Wright 1995:265). Unfortunately, given the fragile nature of these wooden materials, they do not survive in the archaeological record.

Projectile points and copper artifacts diagnostic of the Middle Precontact period have been found in association with Early Precontact materials near La Broquerie adjacent to the Seine River and in the Bedford Hills south of Sandilands. Middle Precontact artifacts have also been recovered in the southeast corner of the Project area near Piney and in the north portion near Lorette and Ste. Anne. Although no archaeological sites from within the study area have been carbon dated, material from six archaeological sites along the Red River between the junction of the Red and Assiniboine rivers and the Canada-United States border have been dated (Morlan 2000). Collectively, these sites date from 2,235 to 5,570 years BP.

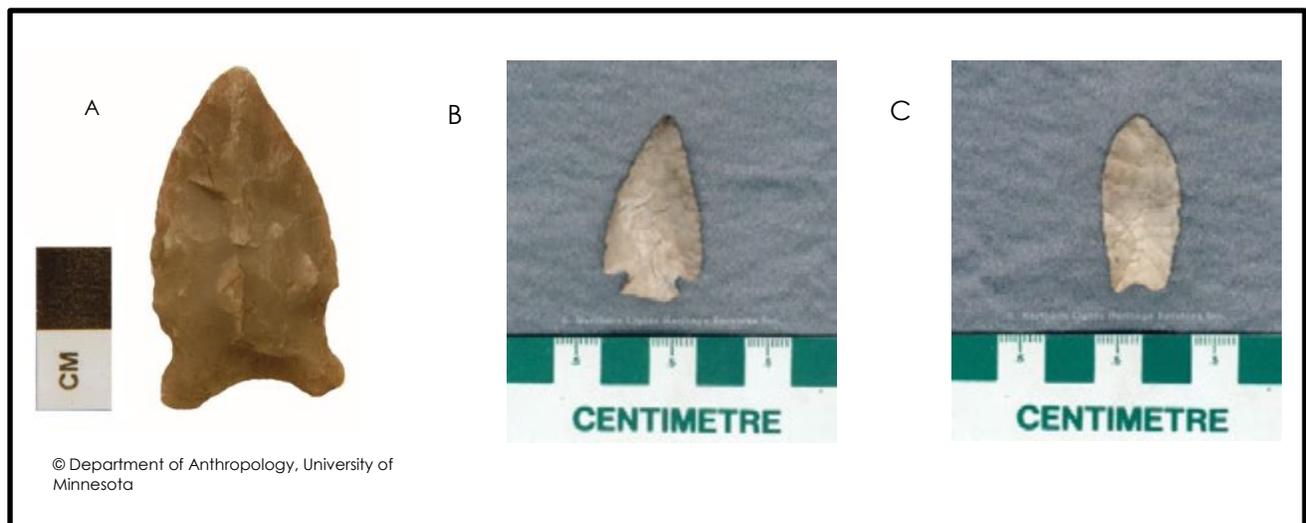


Figure 5-3 Middle Precontact Period Projectile Points (A- Oxbow; B- Pelican Lake; C-McKean)

5.2.4 Late Precontact Period

The most frequently found Precontact Period sites in Manitoba date from about 2,000 to 400 years BP when local resource users combined bison and medium to small game hunting with fishing and gathering available fruit and plants as their main subsistence. Habitation sites tended to be more permanent where seasonal resources were plentiful over a lengthy period of time, such as fish spawning areas.

Pottery making marks the boundary between the Middle and Late Precontact periods. Pottery was either brought into Manitoba by groups migrating from eastern Canada and/or the south central United States or the technique of pottery manufacturing was transplanted into Manitoba

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through contacts with these groups. This period is also characterized by adoption of the bow and arrow, and the associated smaller side-notched points, and increased interaction with outside groups through trade.

There are three basic pottery styles that were used by cultural groups in the immediate study area: Laurel, Blackduck, and the Selkirk (Figure 5-4). Laurel pottery was manufactured using the coil technique whereby successive rolled clay coils were placed on top of one other to build the vessel sides. The walls were then smoothed. Decorative designs were either scratched or pushed into the stiffening clay on the upper outside walls below the rim. The finished Laurel vessel had a pointed bottom, curving shoulder and tapered lip (Pettipas 1984:157).

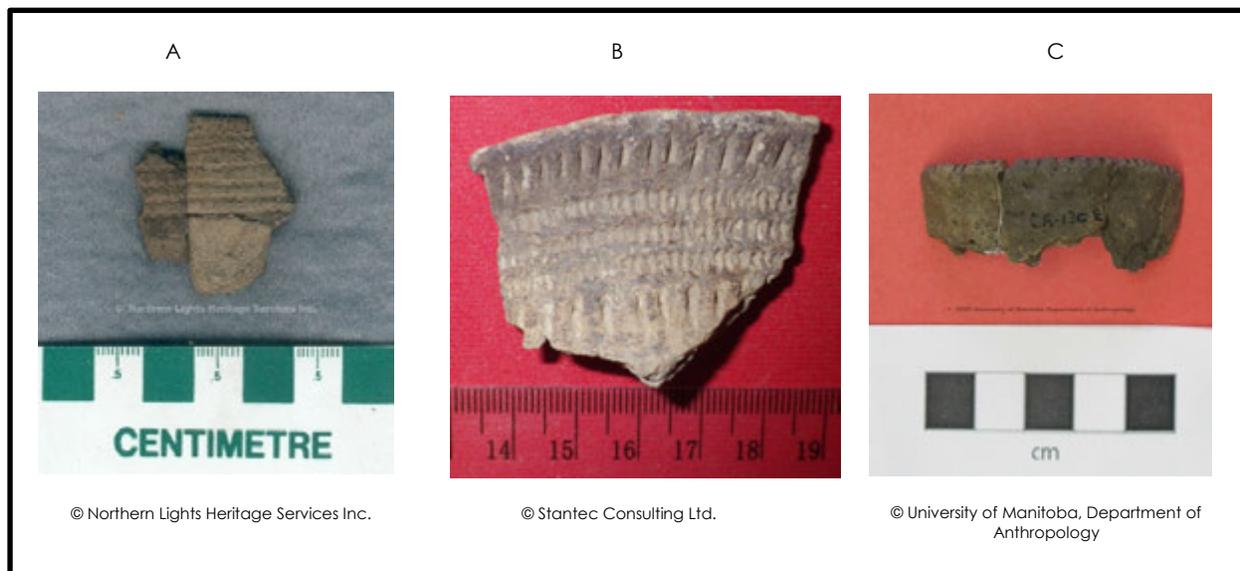


Figure 5-4 Late Precontact Pottery (A- Laurel; B- Blackduck; C- Selkirk)

Blackduck pottery was developed by groups associated with the eastern woodlands of Minnesota, northern Wisconsin, Michigan and northwestern and southern Ontario (Dawson 1974). Blackduck pottery styles consisted of large globular vessels used for cooking and storage. The vessels were manufactured either by the paddle-and-anvil technique or formed inside twined textile containers. In the former process, excess water in the clay was squeezed out of the vessel by the manufacturer holding an anvil, such as a round, smooth stone, on the interior surface and a cord wrapped paddle on the exterior. Decorations are highly variable consisting of several combinations of thick horizontal and/or oblique lines on the neck and rim, lip and inner rim. Large circular indentations or punctates were also used to decorate the vessels. The pots were then fired in open hearths.

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Recently, the Rainy River Complex was recovered from excavations at the Canadian Museum for Human Rights (Quaternary Consultants Ltd. 2010; Stantec Consulting Ltd. 2012). This complex was previously identified by Lenius and Olinyk (1990). The decorative motifs on these vessels are similar to those of the general Blackduck tradition and, since there is a cultural similarity with pottery found in the Rainy River area, could relate to the ancestral Anishinabe-Saulteaux.

Stone tools associated with this culture include small triangular and side-notched projectile points, a variety of stone and bone scraping tools, ovate knives, stone drills and smoking pipes. Bone awls, needles, harpoons and spatulas are also found (Figure 5-5). Personal ornaments were made from bone and copper. Native copper continued to be used for tools.



Figure 5-5 Late Precontact Period Bone Tools (A- Awl; B- Spatula)

The Selkirk culture was both contemporaneous with and post-dated the Blackduck culture. The relationship between people who manufactured Selkirk pottery, the preceding Laurel and contemporaneous Blackduck is not known. Often Blackduck and Selkirk pottery are found at the same site (Wright 1972:102). Furthermore, the stone and bone tools used by both cultures are very similar. Like Blackduck, Selkirk vessels were globular with slightly constricted necks and out flaring rims. Selkirk vessels were also manufactured by either the paddle and anvil or textile container method. Unlike the Blackduck vessels, Selkirk rims often have no decoration or are simply decorated with either a single row of punctates or single row of cord-wrapped stick impressions.

Other artifacts associated with Late Precontact Period sites include a variety of small, triangular side-notched projectile points, scrapers and bifaces, hammer stones and smoking pipes. Shell paint dishes, antler end-scraper handles, beaver tooth gouges, bone harpoons, scapula hoes, and bone awls and needles were also used.

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Twelve sites with Late Precontact artifacts have been recovered in the Project area. One site northwest of Lorette also contained artifacts from the Middle Precontact Period suggesting a lengthy time period of recurrent occupation, or a multi-component site. One Laurel site was identified along the Seine River in the southeast portion of the Study Area. The remaining sites were identified to time period based on Blackduck pottery and triangular and side notched projectile points. Ten of the 12 sites were found adjacent to a stream course, indicating the reliance on waterways by groups of the Late Precontact Period.

5.2.5 Early Historic Period (ca. A.D. 1700 to ca. A.D. 1821)

Members of the La Verendrye expedition were the first Europeans to enter southeast Manitoba and arrived in the early 1730s. Maps from this period identify the Cree and Assiniboine as occupying the study area (Figure 5-6). In 1734 the La Verendryes established a post on the Red River near present-day Selkirk, and in 1738 they constructed a post at the junction of the Red and Assiniboine rivers. For several years thereafter, the La Verendryes frequently used the Roseau River, also known as the Reed River, as a travel route between the Red River and Fort St. Charles on the Lake of the Woods (Burpee 1927). This route was shown to the French by the local First Nation groups.

Charles Chaboillez of the North West Company built the first fur trade post in the immediate area in 1796. The post sat north of the confluence of the Red and Rat rivers west of the study area (Allaire 1983). Chaboillez relocated the post near the mouth of the Pembina River south of the project area by 1797.

First Nation groups that frequented the study area during their seasonal round of activities may have conducted trade with Chaboillez during his short-lived post at the Rat-Red confluence. Thereafter, the two closest trade posts would be the Pembina Post or Fort Gibraltar at the Red and Assiniboine River junction. The early 1800s were marked by a decline in beaver populations, the main item of trade, either through disease or over trapping. Many First Nation and Métis groups began trading the pursuits of the hunt for European goods, thereby becoming provisioners rather than trade clientele.

The 1817 treaty signed by local First Nation groups and Lord Selkirk indicates territorial areas for First Nation groups at that time. Peguis and his follows are identified in the area between the junction of the Red and Assiniboine River north to Lake Winnipeg (Figure 5-7). Onekidoat, also known as The Premier and Grandes Oreilles, and his followers traditionally inhabited the area from the junction of the Red and Assiniboine River south to the Pembina River (Peers 1994).

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Figure 5-6 1737 La Verendrye map (from Burpee 1927)
(Note: Cristinaux indicates Cree; Assinipoualack indicates Assiniboine)

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No First Nation sites relating to the Early Historic Period have been recovered within or adjacent to the study area. The La Verendrye journals recount how the Cree and Assiniboine regularly received gifts of metal tools when they held council with the French fur traders. These items were probably used and reused before being discarded or were traded to more distant First Nation groups who were not in regular contact with French fur traders. The location of Chaboillez's post was tentatively identified on the east bank of the Red River north of the mouth of the Rat River (Callaghan 1984:12).

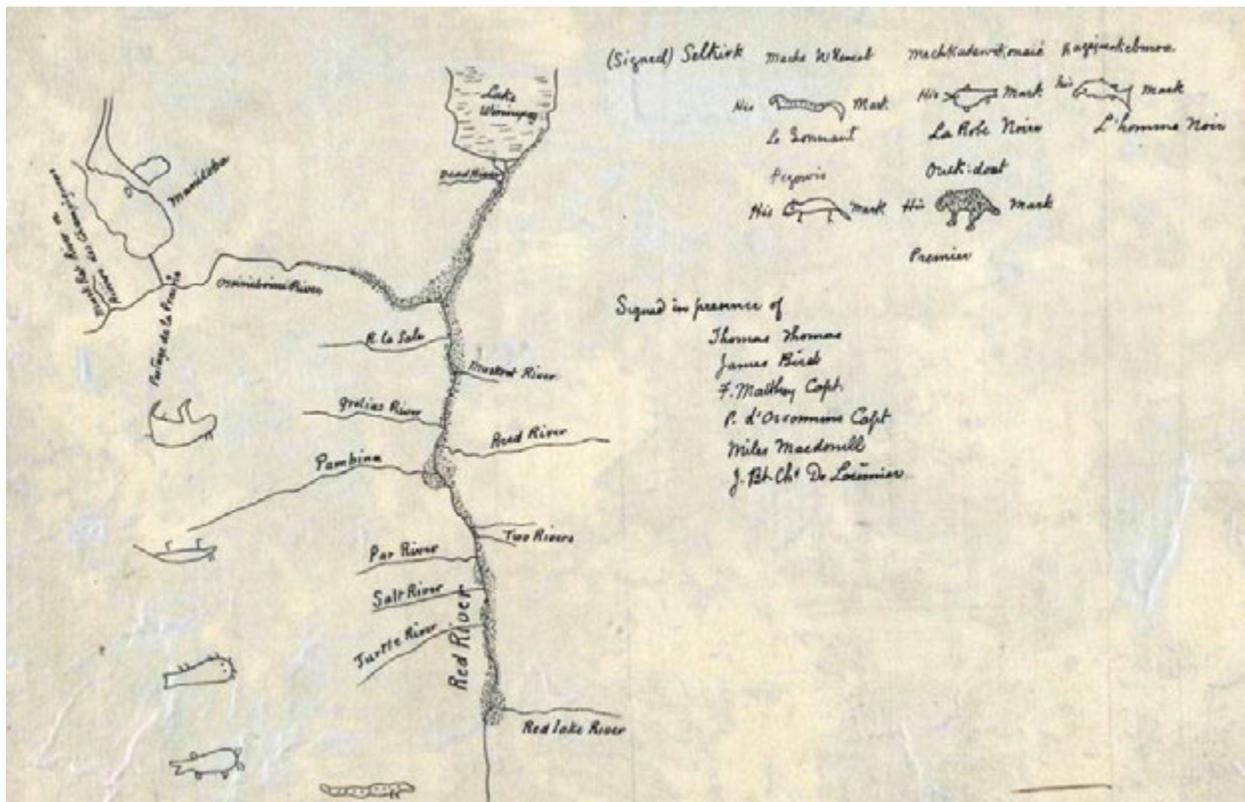


Figure 5-7 1817 Selkirk Treaty Showing Location of First Nation Traditional Lands (Library and Archives Canada: H3/701/ [1817](ca.1900) # 24016)

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5.2.6 Middle Historic Period (ca. A.D. 1821 to ca. A.D. 1870)

This period begins with the 1821 merger of the North West Company and the Hudson's Bay Company (HBC). The merger created a surplus of manpower that resulted in over 35% of the employees being discharged. Most were encouraged to accept land grants within the Red River Settlement with the size of the grant depending on years of service (Foster 1973). The result was an expansion of the settlement along the Red and Assiniboine Rivers into the present-day areas of Kildonan, West St. Paul, St. Vital, St. Norbert and St. James. The increased settlement had ramifications for the MMTP area because, through time, many Metis families moved outside of the Red River Settlement where they developed river lot farms along the Seine River in the present-day communities of Ste. Anne and Lorette (Ledohowski 2003:37).

While most of the Métis families in the study area were agriculturists, several entrepreneurs were cart freighters between the Red River Settlement and St. Paul, Minnesota using the Crow Wing Trail that paralleled the east side of the Red River west of the study area. Steamboat freighting during the 1860s and 1870s and development of the rail line between Winnipeg and St. Paul in the early 1870s ended cart freighting.

In the 1850s the HBC constructed a trading post along the Dawson Trail in present-day Ste. Anne. The post eventually became a stopping place along the trail and operated into the 1870s. The building stood until 1980 when it was destroyed by fire (Figure 5-8).

Several sites with Middle Historic Period artifacts were recorded in the Lorette area. Several sections of intact trails used during the Middle Historic Period have been recorded as archaeological sites within the study area. Intact remnants of the Dawson Trail have also been documented but not recorded archaeologically. The burned ruin of Ste. Anne's Post was examined in 1980 when two shovel test trenches were excavated through the former structure (McLeod 1981). Pipe fragments, cut and wrought nails and ceramic tableware items were recovered and all material was diagnostic of the mid-1850s to early 1900s. This site was subsequently developed residentially.

The Brown House Site, a Middle Historic period homestead, was recorded on the north bank of the Assiniboine River within 200 m of the SLTC. William Brown obtained the river lot from the HBC in 1859. He constructed a 1-½ story Red River frame log house 6.6 m X 9.5 m (Figure 5-9). By 1873, the Brown farm consisted of two houses, two outbuildings, a stable and 24 ha under cultivation (McLeod 2006). The refurbished dwelling now sits adjacent to the St. James Museum in Winnipeg and was municipally designated by the City of Winnipeg in February 2000.

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Figure 5-8 Ste. Anne's HBC Post (Source: Mrs. Molly Basken 1969)

The proposed SLTC crosses to the south bank of the Assiniboine River on River Lot 27 Parish of Headingley. This lot was settled in the Middle Historic Period by the John Sutherland family, who obtained the land from the HBC in 1859. As of 1873, Sutherland had one house, two barns and 9.2 ha cultivated (McLeod 2006).

The proposed SLTC east approach to the Red River is in the vicinity of River Lots 172 and 173, Parish of St. Norbert. River Lot 172 was acquired by Robert Logan from the HBC prior to 1857 and was used by Logan as a wood and hay lot until ca. 1857, whereupon the lot was transferred back to the HBC in exchange for other lots (McLeod 2006). River Lot 173, Parish of St. Norbert was obtained from the HBC by Louis Bousquet at an unknown date. There is limited historical

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information for this river lot. Most of the east side of the Red River at the ROW crossing point has been previously disturbed by construction of the Red River Floodway.



Figure 5-9 The Brown House on the Grounds of the St. James Museum

(Source: Historic Resources Branch, Manitoba Culture, Heritage, Tourism and Sport 2007)

The SLTC on the west side of the Red River crosses in the vicinity of River Lots 71 and 70, Parish of St. Norbert. River Lot 70 was obtained by David Venne prior to 1870 from the HBC. River Lot 71 was originally obtained by Joseph Renville from the HBC prior to 1855 and transferred by Renville to Jacques Tourond in the 1860s (McLeod 2006). The river frontage of these lots have been eroded and also disturbed by construction of the Red River Floodway and dike construction.

5.2.7 Late Historic Period (ca. A.D. 1870 to ca. A.D. 1945)

Section 31 of *The Manitoba Act* of 1870 set aside 566,560 ha of land for distribution among the children of Métis heads of families residing in the province, while Section 32 guaranteed all old settlers, Metis or white, continued possession of the lots they occupied in the Red River settlement prior to 15 July, 1870. Subsection 32(5) guaranteed allotments of land to commute the rights of hay and common in the outer two miles that accompanied many of the old river lots. Additional legislation in 1874 granted \$160.00 scrip, redeemable in Dominion lands, to all Métis heads of families (Milne 1995). Many of the land sections distributed to Métis families were

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located in the townships immediately surrounding the Two-Mile river lot limits within the northern portion of the study area. Although available land records list the Metis families who received these sections, it is probable that the families never actually settled on the land grant (Sprague and Frye 1983).

Additional Metis families moved into the farming communities of Ste. Anne and Lorette, expanding these settlements along both banks of the Seine River. During the late 1870s and 1880s, the population of these centres increased by incoming French Canadian homesteaders. Metis and French Canadian settlements such as La Broquerie and Marchand were established during the 1880s based on examination of homestead grants for the land sections surrounding these communities. Eastern European settlers settled large portions of the south and southeast portions of the study area in the vicinity of Zhoda, Vita and Piney.

The quarter section containing the Glenboro South Station was homesteaded by the Alfred Burch family in 1887. The township plan describes the area as good undulating prairie with small swamps and a considerable quantity of scrub. The exact location of his buildings on the quarter section is not known.

The quarter section proposed for the Dorsey Converter Station expansion was originally a lot reserved for the HBC. A northwest to southeast cart trail passed through the northwest and southeast quarters of the section. The area is described as rolling prairie.

The Riel Converter Station is situated on a quarter-section that was a Métis allotment granted to Sarah Riel in December 1881. The Dawson Trail passed through the extreme southwest corner of the quarter section. The area was described as marshy prairie.

Most of the churches, cemeteries and schools in the study area were constructed during the Late Historic Period with the earliest constructed in the older centres such as Lorette and Ste. Anne. As settlement spread southerly, so did the construction of public buildings which often became the social centre of the community. Consolidation of many school districts and the transportation of students to major communities during the mid-1960s resulted in the closure of a large number of these schools.

There were several cart trails used in the study area during the period between ca. 1870 and ca. 1880. Most of these were on elevated sections of land and were no doubt originally used by First Nation groups prior to the 1700s. The major trails in the study area were the Dawson Trail, Ste. Anne's Road, a trail identified as the "Cart Trail to Spruce Island" in the north portion of the study area, and two unnamed trails identified as Public Road 463 and Public Road 464. The unnamed trails possibly relate to trails that connected the East Mennonite Reserve with present-day Ile des Chênes, originally known as Oak Island.

Intact trail remnants usually consist of two to three rows of ruts created by the number of carts and wagons that passed along the route (McLeod 1990). These trails often contain a quantity of

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metal items such as nails, wagon parts, harness tack, etc. scattered within and adjacent to the track.

The British North American Boundary Commission surveyors delineated the Canada-United States border between the Red River and the Lake of the Woods during the winter of 1872 to 1873 (Forrester 1960). A 72 km section of the border is contained within the study area. During the survey, the boundary commission established survey mounds along the border, astronomical observation stations to assist with calculation of correct latitudinal positions, and small non-permanent camps. Iron pillars and survey mounds were generally placed at 1-mile intervals in the middle portion of the southwest corner of each township section along the border.

During the latter part of the nineteenth and early twentieth centuries, railways formed a vital link to and from the emerging settlements in Manitoba and the western provinces. The study region contained two railway lines (Figure 5-10). The Canadian Northern Railway's Sprague subdivision line that ran from Winnipeg southeast to Rainy River, then south of Lake-of-the-Woods into northwestern Minnesota, and then northeast to Thunder Bay, Ontario was begun in 1898 and completed in February 1902. Bedford station was established on this line in the late 1890s. The Sprague line is currently active. The second line was the Ridgeville sub-division that was constructed between 1903 and 1907 and connected communities in the Stuartburn region with South Junction on the Sprague branch line. Small stations such as Sundown, Menisino and Spur Woods were developed along the line. The Ridgeville branch line was abandoned and its tracks removed during the 1980s. Surveys for the ROW for the Manitoba and Southeastern Railway were completed in the late 1870s in the northwest portion of the study area, but the rail line was never actually constructed.

The Study Area is contained within lands covered by Treaty 1, which was signed at Lower Fort Garry in 1871 (Figure 5-11). First Nation signatories to Treaty 1 include Brokenhead Ojibway Nation, Sagkeeng First Nation, Long Plain First Nation, Peguis First Nation, Roseau River Anishinabe First Nation, Sandy Bay First Nation, and Swan Lake First Nation. Dakota Plains and Dakota Tipi First Nations also have traditional lands within the Treaty 1 area.

Several Late Historic Period structures were recorded in the Ste. Anne and Lorette areas. The location of the Spur Woods Siding on the Ridgeville spur line was recorded as an archaeological site and two building depressions were observed. A trail remnant was recorded on the north side of the Seine River northwest of Lorette.

Old St. Elias Ukrainian Orthodox Church and Bell Tower and the New St. Elias Ukrainian Orthodox Church and Bell Tower, both Provincial heritage sites in the Sirko area, were constructed in the Late Historic Period. Five Municipal Heritage Sites date to the Late Historic Period; the Ste. Anne Roman Catholic Church and the Piney Road Bridge, both within the Rural Municipality (RM) of Ste. Anne; St. Joachim Church, R.M. of La Broquerie; Monseigneur Taché Historic Site, R.M. of Taché; and Sts. Peter and Paul Ukrainian Orthodox Church in the R.M. of Stuartburn.

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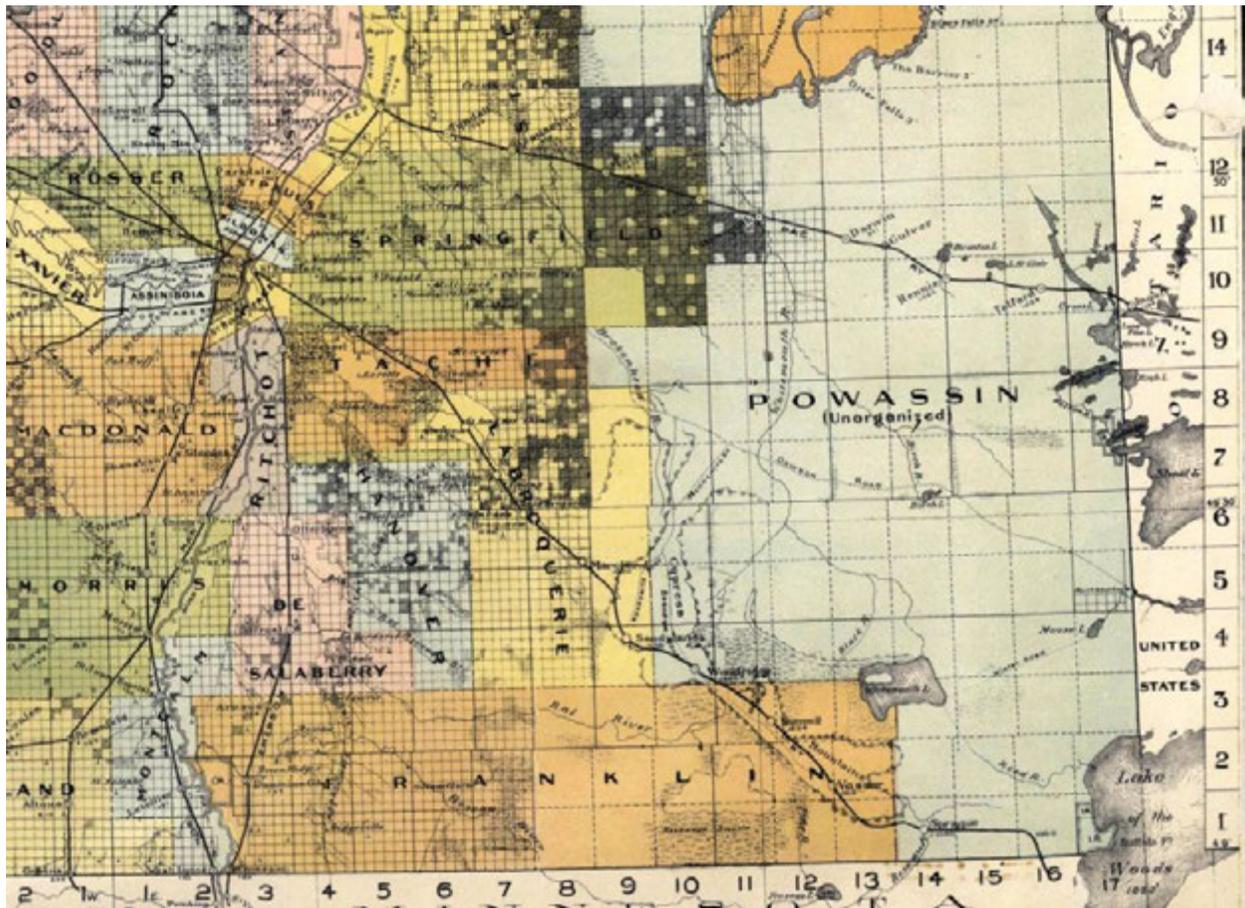


Figure 5-10 Southeast Manitoba ca. 1900 (Ridgeville rail line not constructed at this date) (Source: <http://www.flickr.com/photos/manitobamaps/2086270771/>)

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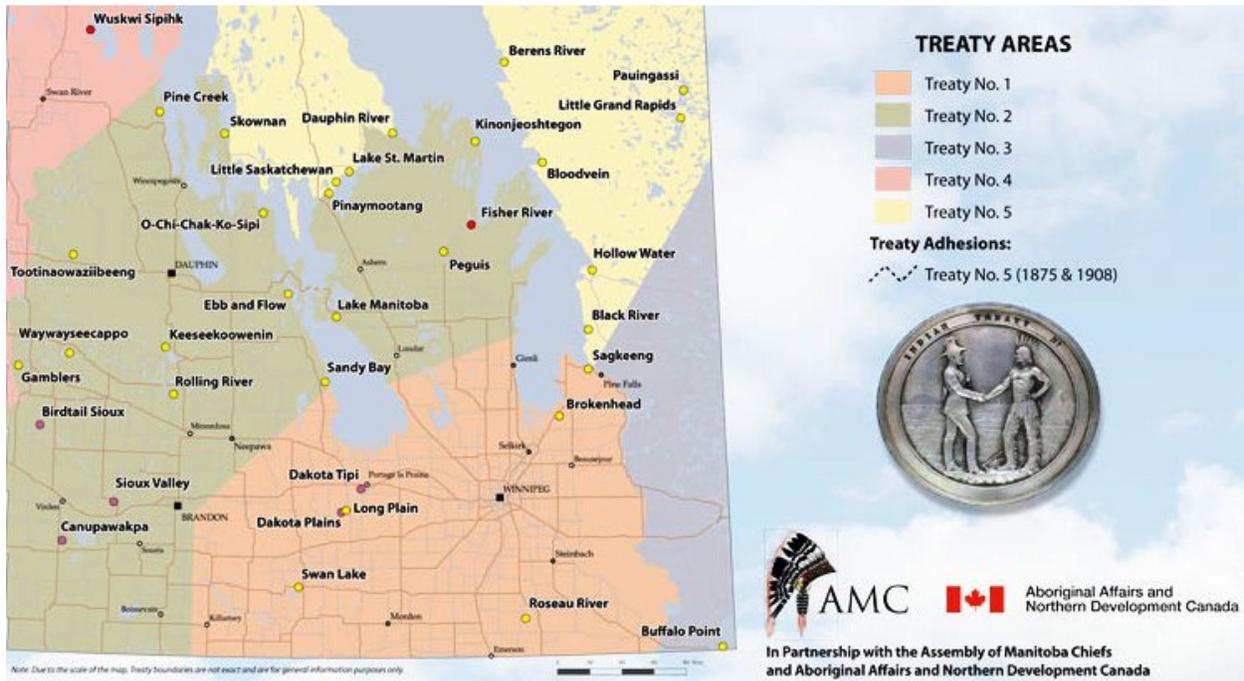


Figure 5-11 Section of Manitoba Treaties Boundary Map showing Treaty 1 Area (Source: Treaty Relations Commission of Manitoba, 2013)

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6.0 RESULTS

The heritage resources assessment of MMTP consisted of determining and identifying potential changes to known heritage resource sites and cemeteries and potential changes to previously unrecorded heritage resource sites. Baseline data were used to identify changes to known heritage resource sites. Predictive modeling was used to identify areas within the PDA and LAA of the Existing Transmission Corridor and the New ROW that had a potential to be changed by construction and operation of the project. Sites that were within 500 m of a PR segment and the locations within the Existing Transmission Corridor and the New ROW that were determined to have a moderate to high potential for heritage resources as a result of predictive modeling were assessed during the HRIA. The results of the HRIA are presented in Section 6.2 below as part of the analysis and interpretation of the heritage resource data.

6.1 BASELINE DATA

6.1.1 Previously Recorded Heritage Resources

A database of known heritage resources within the Project area, shown in Map Series 12-100 – Heritage Resource Locations, was created prior to the route selection process. The combined heritage resource inventory for all Project components lists 178 sites (Table 6-1). All but three of the 61 previously recorded archaeological sites and sites recorded during the 2014 HRIA were identified as disturbed or partially disturbed. These sites were disturbed by cultivation, gravel extraction and/or wind erosion.

Four previously recorded archaeological sites are within the LAA of the Existing Transmission Corridor. One cemetery, the Ridgeland Cemetery north of Sundown MB, is within the LAA of the New ROW. One site is within the New ROW, DiLc-3, a poorly described site based on a projectile point fragment collected from the surface of an agricultural field.

Two archaeological sites were recorded during the 2014 MMTP HRIA. One site was a Late Historic farmstead within the Existing Transmission Corridor on the north bank of the Assiniboine River. The second site was recorded adjacent to one of the preferred alternate routes near the Canada-United States border. These sites are discussed in further detail in Section 6.2.3.

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Table 6-1 Summary of Previously Recorded Heritage Resource Sites in the MMTP Area

| Site Type ¹ | Number |
|---|------------|
| Archaeological Isolated Find | 15 |
| Archaeological Campsite | 14 |
| Archaeological Farmstead | 8 |
| Archaeological Workshop | 8 |
| Archaeological Uninterpreted | 7 |
| Archaeological Structural | 3 |
| Archaeological Permanent Settlement | 2 |
| Archaeological Commercial | 1 |
| Archaeological Industrial | 1 |
| Archaeological Sites Recorded in 2014 HRIA | 2 |
| Archaeological Site Subtotal | 61 |
| Provincially Designated Site | 2 |
| Municipally Designated Site | 5 |
| Designated Site Subtotal | 7 |
| School Site | 27 |
| Cemetery | 68 |
| Centennial Farm | 15 |
| TOTAL | 178 |
| NOTE: ¹ Archaeological site types are defined in the glossary | |

The previously recorded Precontact Period archaeological sites were analyzed using the predictive modeling variables discussed in Section 4.2.3. Most of the previously recorded archaeological sites within the MMTP project area have been altered by agriculture. Proximity to water was highly variable with distances ranging between 20 m and over 1000 m. The distances from site to water were measured using present-day potable water sources. There is the possibility that other water sources were available at the time of site occupation but twentieth century land drainage to facilitate farm expansion may have eradicated these sources.

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Table 6-2 Previously Recorded Archaeological Sites in the MMTP Area and Predictive Modeling Variables¹

| Site I.D. | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past land Use | Proximity to Historical Trail (m) |
|-----------|------------------------|--|-----------------------|-----------------------------|---------------------|-----------------------------------|
| DhLb-1 | <1000.0 | Irregular, gently sloping | Sand and Gravel | 2000.0 | Disturbed | <2000.0 |
| DjLc-1 | 25.0 | Very gently sloping | Loamy Sand-Sandy Loam | <2000.0 | Disturbed | <2000.0 |
| DgKv-3 | 137.0 | Irregular, very gently to moderately sloping | Sand | 770.0 | Partially Disturbed | <2000.0 |
| DgKv-4 | 60.0 | Level to irregular, very gently sloping | Clay-Loam | 1840.0m | Disturbed | <2000.0 |
| DgKw-1 | 65.0 | Irregular, very gently sloping | Clay | <2000.0 | Disturbed | <2000.0 |
| DhLc-1 | <1000.0 | Irregular, very gently to gently sloping | Sand | 2000.0 | Disturbed | <2000.0 |
| DiLb-4 | 20.0 | Irregular, very gently to moderately sloping | Sand | <2000.0 | Destroyed | <2000.0 |
| DiLc-1 | 80.0 | Irregular, gently sloping | Sand and Fine Sand | <2000.0 | Disturbed | <2000.0 |
| DiLc-2 | 20.0 | Very gently sloping | Loamy Sand-Sandy Loam | 1 620.0 | Disturbed | <2000.0 |
| DkLf-7 | 460.0 | Depressional to level | Clay | 630.0 | Disturbed | 70.0 |
| DkLg-20 | 50.0 | Depressional to level | Clay | 1 640.0 | Undisturbed | <2000.0 |
| DILc-2 | 20.0 | Irregular, very gently to gently sloping | Fine Sandy Loam | <2000.0 | Disturbed | <2000.0 |
| DILf-8 | <1000.0 | Depressional to level | Clay | <2000.0 | Disturbed | <2000.0 |
| DgKw-4 | 330.0 | Irregular, very gently sloping | Till and Fine Sand | <2000.0 | Disturbed | 230.0 |
| DgKx-2 | 50.0 | Depressional to level | Peat | 955.0 | Disturbed | 600.0 |
| DgKx-3 | <1000.0 | Depressional to level | Sand | <2000.0 | Disturbed | <2000.0 |
| DgLb-1 | <1000.0 | Depressional to level | Clay-loam | <2000.0 | Modified hay land | 1600.0 |
| DjLd-2 | 125.0 | Level to very gently sloping | Clay | <2000.0 | Disturbed | 1470.0 |
| DkLe-1 | <1000.0 | Depressional to level | Clay | <2000.0 | Disturbed | <2000.0 |
| DkLf-15 | <1000.0 | Level to very gently sloping | Clay | <2000.0 | Disturbed | <2000.0 |
| DkLf-2 | 500.0 | Depressional to level | Clay | 665.0 | Disturbed | 240.0 |

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Table 6-2 Previously Recorded Archaeological Sites in the MMTP Area and Predictive Modeling Variables¹

| Site I.D. | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past land Use | Proximity to Historical Trail (m) |
|-----------|------------------------|--|-----------------------|-----------------------------|----------------------|-----------------------------------|
| DgKv-2 | 98.0 | Irregular, very gently to gently sloping | Sand | 390.0 | Disturbed | <2000.0 |
| DgKw-2 | 245.0 | Irregular, very gently to moderately sloping | Sand | 390.0 | Disturbed | <2000.0 |
| DgKw-3 | <1000.0 | Irregular, very gently sloping | Sand | <2000.0 | Disturbed | 585.0 |
| DgKx-1 | 10.0 | Depressional to level | Fine sand/loam | 955.0 | Disturbed | <2000.0 |
| DgKx-6 | 190.0 | Irregular, very gently to moderately sloping | Sand | <2000.0 | Disturbed | 200.0 |
| DiLb-1 | <1000.0 | Irregular, very gently to gently sloping | Sand | <2000.0 | Disturbed | 200.0 |
| DiLb-2 | <1000.0 | Irregular, gently sloping | Fine sand Ridge | 2000.0 | Disturbed | 45.0 |
| DiLb-3 | <1000.0 | Irregular, gently sloping | Fine sand Ridge | 2000.0 | Disturbed | 45.0 |
| DiLc-3 | <1000.0 | Very gently sloping | Loamy Sand-Sandy Loam | 1620.0 | Disturbed | <2000.0 |
| DjLc-2 | 10.0 | Level to very gently sloping | Bog | <2000.0 | Disturbed | 2850.0 |
| DkLc-1 | <1000.0 | Level to very gently sloping | Bog | <2000.0 | Disturbed | <2000.0 |
| DkLf-13 | 60.0 | Level to very gently sloping | Clay | 420.0 | Disturbed | 545.0 |
| DkLf-4 | 130.0 | Level to very gently sloping | Clay | 280.0 | Possibly Undisturbed | 30.0 |
| DkLf-8 | 460.0 | Depressional to level | Clay | 375.0 | Disturbed | 10.0 |
| DkLg-2 | 60.0 | Level to very gently sloping | Clay | 630.0 | Disturbed | <2000.0 |
| DkLg-26 | 500.0 | Level to very gently sloping | Clay | <2000.0 | Disturbed | <2000.0 |
| DkLg-31 | 415.0 | Level to very gently sloping | Clay | 630.0 | Disturbed | 195.0 |
| DkLh-1 | <1000.0 | Depressional to level | Clay | <2000.0 | Disturbed | 80.0 |
| DILc-5 | <1000.0 | Level to very gently sloping | Bog | <2000.0 | Disturbed | <2000.0 |

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Table 6-2 Previously Recorded Archaeological Sites in the MMTP Area and Predictive Modeling Variables¹

| Site I.D. | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past land Use | Proximity to Historical Trail (m) |
|--|------------------------|--|-----------------|-----------------------------|---------------|-----------------------------------|
| DILe-2 | 650.0 | Irregular, very gently to gently sloping | Loam-Silty Clay | <2000.0 | Disturbed | <2000.0 |
| DILf-10 | 20.0 | Depressional to level | Clay | 250.0 | Disturbed | 800.0 |
| DILf-11 | 20.0 | Depressional to level | Clay | 250.0 | Disturbed | 800.0 |
| NOTE: ¹ Precontact Period sites only | | | | | | |

6.1.2 Predictive Modeling Heritage Resources

Table 6-3 lists the locations along the preliminary alternative routes that were identified as requiring an assessment based on the predictive modeling variables identified in Section 4.2.2.1. The field assessment of these locations was completed in September and October 2014. The field study was completed before the Final Preferred Route was determined. However, the analysis and interpretation of the existing and newly found heritage resources in conjunction with windscreen survey of the various preliminary alternative routes provided input into the final routing analysis. Table 6-4 summarizes the results of the assessment at the locations assessed along the proposed route alternatives.

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Table 6-3 Summary of MMTP Heritage Resource Potential Locations

| Site I.D. | Zone | UTME | UTMN | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past Land Use | Proximity to Historical Trail (m) | Distance from ROW Centre (PAR/FPR) (m) | Comments |
|-----------|------|------------|-------------|------------------------|-------------------------|-----------|-----------------------------|---------------|-----------------------------------|--|----------------------------|
| 200-1 | 14U | 626755.549 | 5512853.195 | <800.0 | Level to gently sloping | Clay | 725.0 | Agricultural | 1000.0 | 660.0 | Known sites in area |
| 200-2 | 14U | 612908.074 | 5524810.055 | 40.0 | Level to gently sloping | Clay | 525.0 | Native treed | 70.0 | 25.0 | Assiniboine River crossing |
| 200-3 | 14U | 612909.061 | 5524982.614 | 60.0 | Level to gently sloping | Clay | 75.0 | Agricultural | 1300.0 | 25.0 | Assiniboine River crossing |
| 200-4 | 14U | 612913.889 | 5531392.009 | 20.0 | Level to gently sloping | Clay | <2000.0 | Agricultural | 1040.0 | 10.0 | Sturgeon Creek crossing |
| 200-5 | 14U | 612726.182 | 5534486.028 | <800.0 | Level to gently sloping | Clay | <2000.0 | Agricultural | 290.0 | 10.0 | Cart trail crossing |
| 200-6 | 14U | 640771.973 | 5516618.017 | 90.0 | Depressional to level | Clay | 190.0 | Agricultural | <2000.0 | 10.0 | Known sites in area |
| 200-7 | 14U | 634172.101 | 5512190.86 | 430.0 | Depressional to level | Clay | 50.0 | Agricultural | 195.0 | 10.0 | Known sites in area |
| 200-8 | 14U | 633147.096 | 5511523.343 | 65.0 | Level to gently sloping | Clay | 495.0 | Native treed | 790.0 | 10.0 | Known sites in area |
| 205-1 | 14U | 657325.997 | 5515071.002 | <800.0 | Depressional to level | Clay | 70.0 | Agricultural | <2000.0 | 10.0 | Known sites in area |
| 205-2 | 14U | 646986.997 | 5517964.002 | <800.0 | Depressional to level | Clay | 50.0 | Cemetery | 125.0 | 600.0 | Cemetery in Area |
| 207-1 | 14U | 694590.997 | 5453895.001 | <800.0 | Level to gently sloping | Sand | <2000.0 | Native treed | 60.0 | 10.0 | Beach ridge/Aeolian Soil |
| 207-2 | 14U | 694560.295 | 5454519.97 | <800.0 | Level to gently sloping | Sand | <2000.0 | Native treed | 430.0 | 10.0 | Beach ridge |
| 207-3 | 14U | 694531.294 | 5455066.384 | <800.0 | Level to gently sloping | Sand | <2000.0 | Native treed | 660.0 | 10.0 | Beach ridge |
| 207-4 | 14U | 694429.934 | 5458233.708 | <800.0 | Level to gently sloping | Sand | 150.0 | Native treed | 800.0 | 100.0 | Beach ridge |
| 207-5 | 14U | 693253.99 | 5460673.005 | <800.0 | Level to gently sloping | Sand | 1000.0 | Quarry | <2000.0 | 1000.0 | Known site in area |
| 207-6 | 14U | 695503.816 | 5460795.326 | <800.0 | Level to gently sloping | Sand | 925.0 | Quarry | <2000.0 | 1000.0 | Known site in area |

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Table 6-3 Summary of MMTP Heritage Resource Potential Locations

| Site I.D. | Zone | UTME | UTMN | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past Land Use | Proximity to Historical Trail (m) | Distance from ROW Centre (PAR/FPR) (m) | Comments |
|-----------|------|------------|-------------|------------------------|-------------------------|------------|-----------------------------|----------------------------------|-----------------------------------|--|---------------------------------|
| 207-7 | 14U | 694279.899 | 5461737.971 | <800.0 | Level to gently sloping | Sand | 1350.0 | Native treed | <2000.0 | 100.0 | Beach ridge/Aeolian Soil |
| 207-8 | 14U | 694229.759 | 5471406.35 | <800.0 | Level to gently sloping | Sand | 50.0 | Agricultural | 240.0 | 310.0 | Known site in area/Beach Ridge |
| 207-9 | 14U | 693927.544 | 5471260.272 | <800.0 | Level to gently sloping | Sand | 375.0 | Quarry | 10.0 | 10.0 | Cart trail crossing/Beach Ridge |
| 207-10 | 14U | 694260.329 | 5473408.946 | <800.0 | Level to gently sloping | Sand | 50.0 | Native treed | 150.0 | 400.0 | Cart trail crossing |
| 208-1 | 14U | 694004.879 | 5454703.965 | <800.0 | Level to gently sloping | Sand | <2000.0 | Native treed | 10.0 | 390.0 | Cart trail crossing |
| 208-2 | 14U | 682967.083 | 5479208.153 | 175.0 | Level to gently sloping | Loamy Sand | 10.0 | Modified pastureland | <2000.0 | 15.0 | Known Sites/Cart trail crossing |
| 208-3 | 14U | 681763.845 | 5488827.671 | 15.0 | Depressional to level | Silty Clay | <2000.0 | Mix native tree and agricultural | <2000.0 | 10.0 | Seine River crossing |
| 208-4 | 14U | 681910.037 | 5491404.739 | 10.0 | Depressional to level | Silty Clay | <2000.0 | Agricultural | <2000.0 | 30.0 | Hope Creek crossing |
| 209-1 | 14U | 706713.36 | 5441643.82 | 35.0 | Depressional to level | Peat | <2000.0 | Native treed | 15.0 | 10.0 | Abandoned rail line |
| 209-2 | 14U | 704719.304 | 5444144.143 | 230.0 | Depressional to level | Peat | <2000.0 | Native treed | 10.0 | 420.0 | Cart trail crossing |
| 209-3 | 14U | 702364.733 | 5446121.979 | <800.0 | Depressional to level | Peat | <2000.0 | Native treed | 5.0 | 80.0 | Cart trail crossing |
| 209-4 | 14U | 699047.273 | 5449205.353 | 470.0 | Irregular | Sand | <2000.0 | Cemetery | <2000.0 | 90.0 | Cemetery in Area |

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Table 6-3 Summary of MMTP Heritage Resource Potential Locations

| Site I.D. | Zone | UTME | UTMN | Proximity to Water (m) | Topography | Soil Type | Proximity to Known Site (m) | Past Land Use | Proximity to Historical Trail (m) | Distance from ROW Centre (PAR/FPR) (m) | Comments |
|-----------|------|------------|-------------|------------------------|-------------------------|------------|-----------------------------|----------------------|-----------------------------------|--|-------------------------------|
| 210-1 | 14U | 718536.55 | 5431763.742 | <800.0 | Depressional to level | Clay-Loam | <2000.0 | Modified pastureland | <2000.0 | 40.0 | Native vegetation |
| 210-2 | 14U | 714299.757 | 5439871.785 | <800.0 | Depressional to level | Peat | 20.0 | Native treed | 40.0 | 500.0 | Known sites/Native vegetation |
| 210-3 | 14U | 718321.309 | 5436407.383 | <800.0 | Depressional to level | Clay-Sand | <2000.0 | Native treed | <2000.0 | 20.0 | Native vegetation |
| 211-1 | 14U | 718072.932 | 5431703.03 | <800.0 | Depressional to level | Clay-Loam | <2000.0 | Native treed | <2000.0 | 40.0 | Native vegetation |
| 211-2 | 14U | 714750.795 | 5434582.898 | <800.0 | Level to gently sloping | Sand | <2000.0 | Native treed | <2000.0 | 90.0 | Native vegetation |
| 306-1 | 14U | 682041.976 | 5523954.976 | <800.0 | Level to gently sloping | Loamy Sand | 770.0 | Agricultural | <2000.0 | 25.0 | Known sites in area |
| 306-2 | 14U | 685972.997 | 5514818.002 | <800.0 | Level to gently sloping | Loamy Sand | 50.0 | Agricultural | <2000.0 | 1000.0 | Known sites in area |
| 323-1 | 15U | 286047.296 | 5431576.333 | 10.0 | Depressional to level | Clay-Loam | <2000.0 | Agricultural | <2000.0 | 60.0 | Pine Creek Crossing |
| 323-2 | 15U | 282200.01 | 5432680.021 | <800.0 | Depressional to level | Peat | 100.0 | Agricultural | <2000.0 | 800.0 | Known sites/Native vegetation |
| 323-3 | 15U | 284504.084 | 5431634.956 | <800.0 | Depressional to level | Clay-Loam | <2000.0 | Agricultural | <2000.0 | 60.0 | Cart trail/Border Crossing |
| 329-1 | 15U | 286023.755 | 5432256.208 | 10.0 | Depressional to level | Clay-Loam | <2000.0 | Agricultural | <2000.0 | 10.0 | Pine Creek Crossing |
| 329-2 | 15U | 284671.806 | 5434657.017 | 15.0 | Depressional to level | Clay-Loam | <2000.0 | Agricultural | <2000.0 | 10.0 | Pine Creek Crossing |

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Table 6-4 MMTP Heritage Resource Potential Location Assessment Results

| ID | UTM Zone | UTM Easting | UTM Northing | Rationale | Result |
|--------|----------|-------------|--------------|---------------------------------|---|
| 200-1 | 14U | 626755.549 | 5512853.195 | Known sites in area | No additional resources |
| 200-2 | 14U | 612908.074 | 5524810.055 | Assiniboine River crossing | Undated trail remnant recorded |
| 200-3 | 14U | 612909.061 | 5524982.614 | Assiniboine River crossing | Late to Recent Historic Period farmstead |
| 200-4 | 14U | 612913.889 | 5531392.009 | Sturgeon Creek crossing | Cultivated/disturbed |
| 200-5 | 14U | 612726.182 | 5534486.028 | Cart trail crossing | Cultivated/disturbed |
| 200-6 | 14U | 640771.973 | 5516618.017 | Known sites in area | Hay land/disturbed |
| 200-7 | 14U | 634172.101 | 5512190.860 | Known sites in area | Hay land/disturbed |
| 200-8 | 14U | 633147.096 | 5511523.343 | Known sites in area | River crossing inaccessible |
| 205-1 | 14U | 657325.997 | 5515071.002 | Known sites in area | Cultivated/disturbed |
| 205-2 | 14U | 646986.997 | 5517964.002 | Cemetery in Area | Cemetery 670.0 m north of alternative route |
| 207-1 | 14U | 694590.997 | 5453895.001 | Beach ridge/Aeolian Soil | No resources recorded |
| 207-2 | 14U | 694560.295 | 5454519.970 | Beach ridge | Area disturbed by forestry activities |
| 207-3 | 14U | 694531.294 | 5455066.384 | Beach ridge | No resources recorded |
| 207-4 | 14U | 694429.934 | 5458233.708 | Beach ridge | Recent Historic Period artifacts on surface |
| 207-5 | 14U | 693253.990 | 5460673.005 | Known site in area | Area disturbed by gravel extraction |
| 207-6 | 14U | 695503.816 | 5460795.326 | Known site in area | Area disturbed by gravel extraction |
| 207-7 | 14U | 694279.899 | 5461737.971 | Beach ridge/Aeolian Soil | Area disturbed by forestry activities |
| 207-8 | 14U | 694229.759 | 5471406.350 | Known site in area/Beach Ridge | No additional resources |
| 207-9 | 14U | 693927.544 | 5471260.272 | Cart trail crossing/Beach Ridge | No resources recorded |
| 207-10 | 14U | 694260.329 | 5473408.946 | Cart trail crossing | No resources recorded |
| 208-1 | 14U | 694004.879 | 5454703.965 | Cart trail crossing | No resources recorded |
| 208-2 | 14U | 682967.083 | 5479208.153 | Known Sites/Cart trail crossing | No additional resources |
| 208-3 | 14U | 681763.845 | 5488827.671 | Seine River crossing | River crossing inaccessible ¹ |
| 208-4 | 14U | 681910.037 | 5491404.739 | Hope Creek crossing | No resources recorded |

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Table 6-4 MMTP Heritage Resource Potential Location Assessment Results

| ID | UTM Zone | UTM Easting | UTM Northing | Rationale | Result |
|--|----------|-------------|--------------|-------------------------------|---|
| 209-1 | 14U | 706713.360 | 5441643.820 | Abandoned rail line | Maintained recreational trail |
| 209-2 | 14U | 704719.304 | 5444144.143 | Cart trail crossing | No resources recorded |
| 209-3 | 14U | 702364.733 | 5446121.979 | Cart trail crossing | Area disturbed by forestry |
| 209-4 | 14U | 699047.273 | 5449205.353 | Cemetery in Area | Cemetery 70 m west of alternative route |
| 210-1 | 14U | 718536.550 | 5431763.742 | Native vegetation | Late Historic Period site recorded |
| 210-2 | 14U | 714299.747 | 5439871.778 | Known sites/Native vegetation | No resources recorded |
| 210-3 | 14U | 718321.309 | 5436407.383 | Native vegetation | No resources recorded |
| 211-1 | 14U | 718072.932 | 5431703.030 | Native vegetation | No resources recorded |
| 211-2 | 14U | 714750.795 | 5434582.898 | Native vegetation | No resources recorded |
| 306-1 | 14U | 682041.976 | 5523954.976 | Known sites in area | No additional resources |
| 306-2 | 14U | 685972.997 | 5514818.002 | Known sites in area | No additional resources |
| 323-1 | 15U | 286047.296 | 5431576.333 | Pine Creek Crossing | No resources recorded |
| 323-2 | 15U | 282200.010 | 5432680.021 | Known sites/Native vegetation | No additional resources |
| 323-3 | 15U | 284504.084 | 5431634.956 | Cart trail/Border Crossing | Boundary marker recorded |
| 329-1 | 15U | 286023.755 | 5432256.208 | Pine Creek Crossing | No resources recorded |
| 329-2 | 15U | 284671.806 | 5434657.017 | Pine Creek Crossing | No resources recorded |
| NOTE: | | | | | |
| ¹ Landowner permission not obtained for access; assessment to be conducted 2015 | | | | | |

6.2 ANALYSIS AND INTERPRETATION

The analysis and interpretation of the existing heritage resources discussed below consists of a summary of previously recorded heritage sites that were within 500 m of a preliminary alternative route and reexamined during the 2014 HRIA as well as a discussion of the newly recorded sites found during the assessment at locations identified through predictive modeling. The known sites were revisited to update their current status and to provide assessment data for the final route selection analysis.

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6.2.1 Previously Recorded Sites

DkLh-1 is within 500 m of the Existing Transmission Corridor and assessment of the proposed ROW at this site recorded no new heritage resources. The area has been cultivated and there is a low potential for cultural strata to be present beneath the plow zone because there have been no natural or human factors to create soil accumulation (Photo 6-1).

DkLg-40 is 430 m southeast of the Existing Transmission Corridor and was recorded 60 m north of the La Salle River. This site had been previously disturbed by cultivation and installation of a gas pipeline. The corridor crosses the La Salle River through a densely wood area. Late Precontact Period artifacts have been recovered along the upper terrace of the La Salle River north of the crossing point and were concluded to have been deposited by a small family group camped along the river (Ebell 1983:125). The crossing point could not be accessed during the 2014 field assessment.



Photo 6-1 Cultivated Field Containing DkLh-1 (Source: K. David McLeod 2014)

DILi-11 is a Middle to Late Historic Period farmstead site located on the south bank of the Assiniboine River 135 m west of the SLTC. The site was recorded to be undisturbed although contained within a developed Manitoba Hydro corridor. Two possible cart trails were located east of DILi-11 on the south side of the Assiniboine River, south of Roblin Boulevard, and within the SLTC ROW. One trail extended east-west and paralleled the current route of Roblin Boulevard

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(Photo 6-2). Parish river lot plans from the 1870s show a cart trail in this approximate location that could either be the trail identified during the 2014 assessment or present-day Roblin Boulevard. No heritage resources were recovered from shovel tests placed along the trail.



Photo 6-2 Possible Cart Trail Remnant East of DkLi-11 (Source: K. David McLeod 2014)

The second trail extended north-south and was located in a thick stand of oak trees on the south side of Roblin Boulevard. The trail could have either been a cart trail that followed a course south of the cart trail along the Assiniboine River or a more recent track that was used to access the agricultural fields south of the river. No heritage resources were recovered from shovel tests placed at intervals along the trail.

This site was included in the ATKS Community Report's Heritage Potential Report for the Manitoba-Minnesota Transmission Line. The report recommended a monitor on site and survey when in the area. Manitoba Hydro will conduct a site investigation with a qualified archaeologist post clearing and prior to construction. Manitoba Hydro will implement additional mitigation from the site investigation.

DILI-12 is a Middle to Late Historic Period farmstead relating to the William Brown family. The majority of the site is contained in a grassed field on the west edge of a cultivated field that contains an existing transmission line. The site is approximately 200 m west of the SLTC. A Late to Recent Historic Period farmstead component was recorded on the north bank of the Assiniboine

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River within 50 m of the SLTC at the Brown Site. The farmstead site consisted of a collapsed house, barn and outbuilding (Photos 6-3 and 6-4). A circular depression was recorded 230 m south of the farmstead, 35 m north of the riverbank, and 25 m east of the proposed ROW. The pit was 3.5 m north-south by 4.5 m east-west and recent debris including metal pails, tin cans and bottles was observed within the feature (Photo 6-5). No additional heritage resources were recovered from shovel tests placed adjacent to the pit.

This site was included in the ATKS Community Report's Heritage Potential Report for the Manitoba-Minnesota Transmission Line. The report recommended a monitor on site and survey when in the area. Manitoba Hydro will conduct a site investigation with a qualified archaeologist post clearing and prior to construction. Manitoba Hydro will implement additional mitigation from the site investigation.



Photo 6-3 Late Historic Period Dwelling Recorded on the North Bank of the Assiniboine River within the SLTC (Source: K. David McLeod 2014)

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Photo 6-4 Late Historic Period Outbuilding Recorded on the North Bank of the Assiniboine River within the SLTC (Source: K. David McLeod 2014)



Photo 6-5 Rectangular Pit Recorded on the North Bank of the Assiniboine River in the SLTC (Source: K. David McLeod 2014)

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DkLg-31 is located on the west bank of the Red River within 50 m of the SLTC. The site is a small, Precontact Period site with limited previously recorded information regarding site age or content. DkLg-31 was revisited during the MMTP assessment and the area was observed to have been disturbed by cultivation and borrow pit extraction.

This site was included in the ATKS Community Report's Heritage Potential Report for the Manitoba-Minnesota Transmission Line. The report recommended a monitor on site and survey when in the area. Manitoba Hydro will conduct a site investigation with a qualified archaeologist post clearing and prior to construction. Manitoba Hydro will implement additional mitigation from the site investigation.

DkLg-20 is a Late Precontact Period site recorded on the east bank of the Seine River south of the Red River Floodway and within 500 m of the SLTC. This site has been disturbed by cultivation.

DkLe-1 is a Middle Precontact site based on the recovery of a copper point in the north end of the study area. One of the PARs is within 50 m of this site. Site access was denied by the landowner but examination from the road allowance revealed that the entire area has been cultivated and there is low potential for deeply buried cultural strata to be present.

DiLc-1 is an undated Precontact Period site recorded in a sandy, wind eroded area on the edge of a cultivated field in the central portion of the study area. The site is 500 m north of a PAR ROW. The PAR south of this site follows the half-section line across a cultivated field that has low potential for deeply buried cultural material.

DiLc-2 is a multi-component Late Precontact site found in a cultivated field on the north side of the Seine River within 150 m of a PAR ROW. The ROW crosses the Seine River through a hayfield on the east side of the river and a densely wooded area on the west side. The section of river within the proposed ROW is low-lying with no defined riverbank that would have been conducive for a habitation site.

DiLc-3 is an undated Precontact Period site that was recorded in the central portion of the study area in a cultivated field that contained a broken projectile point. The ROW for the PR extends through the site. This location was assessed and no further heritage resources were recovered. There is low potential for cultural strata to be present below the plow zone at this location.

This site was included in the ATKS Community Report's Heritage Potential Report for the Manitoba-Minnesota Transmission Line. The report recommended a monitor on site and survey when in the area. Manitoba Hydro will conduct a site investigation with a qualified archaeologist post clearing and prior to construction. Manitoba Hydro will implement additional mitigation from the site investigation.

DhLb-1 is an undated Precontact Period site that was recorded in an active gravel pit in the central portion of the project area. The site consisted of a mammal bone fragment and a stone tool and is located within 200 m of two of the PARs. No additional heritage resources were

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recovered during assessment of this area and the site has been destroyed by continued gravel operations. The proposed ROW areas were assessed and no heritage resources were recorded.

DiLb-2 is an undated Precontact Period site identified on the basis of artifacts collected from gravel pit operations south of the Bedford station site (Photo 6-6). The site is within 390 m of two PARs. Additional pedestrian surveys and shovel test excavations did not record any additional heritage resources.

DiLb-3 is a Precontact Period isolated surface find north of the Bedford station site and within 450 m of a PAR. This site contained no intact heritage resources when first recorded in the 1970s and no additional artifacts were located when the site was revisited in 2014.

DhLc-1 and **DhLb-1** were recorded in gravel pits within 1 km on either side of PAR. DhLc-1 contained projectile points diagnostic of the Late Precontact Period projectile points, while DhLb-1 consisted of projectile points from the Early and Middle Precontact Period. Both sites had been partially impacted by gravel operations in the 1970s and continued operations thereafter totally destroyed the sites (Photo 6-7). These areas were assessed in 2014 and no additional heritage resources were recovered.

DgLa-1 is a Late Historic Period site recorded at the former location of Spur Woods Siding on the rail spur from Ridgeville in the southern portion of the study area (Photos 6-8 and 6-9). The site is 500 m north of an alternative route along a gravel ridge. No additional heritage resources were recovered from the shovel tests placed at this site.



Photo 6-6 Vicinity of DiLb-2 near the Former Bedford Rail Siding (Source: K. David McLeod 2014)



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Photo 6-7 Trail Through Former Quarry Containing DhLb-2 (Source: K. David McLeod 2014)



Photo 6-8 Area of Former Spruce Siding, DgLa-1 (Source K. David McLeod 2014)

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Photo 6-9 All-terrain Vehicle Track Along Former Rail Spur Line (Source: K. David McLeod 2014)

6.2.2 Cemeteries

Known cemeteries and burial locations were also assessed during the 2014 MMTP HRIA. The objective of the assessment was to record the location and parameters of the graveyards for analytical comparisons with the preliminary alternate routes and the final preferred route.

Ostman Burial, a grave site location listed in the Manitoba Historical Society online database, was recorded near Sundown Lake (Photo 6-10). The grave was that of Hulda Ostman, who died at the age of two years in 1912. The Ostman family homesteaded the land section containing the grave during the early 1900. By 1916, the Ostman family was living in Winnipeg where Mr. Ostman was a carpenter with the Canadian Pacific Railway (Henderson Directory 1916). The grave is located 1.5 km from one of the alternative routes.

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Photo 6-10 Hulda Ostman Grave Site (Source: K. David McLeod 2014)

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The Ridgeland Cemetery is a small community graveyard on the east side of PR 402 6.5 km north of Sundown MB. The cemetery measures approximately 60 m north-south by 60 m east-west and is delineated by PR 402 along the west perimeter, a row of spruce trees along the east perimeter, mixed deciduous-coniferous forest on the north side and hayland on the south. The majority of the marked graves are clustered along the east edge of the cemetery (Photo 6-11 and 6-12). The east edge of the Ridgeland Cemetery was within 75 to 350 m of two proposed alternate routes. The site was examined during the 2014 HRIA through a series of pedestrian transects along the east side of the cemetery. This area is cleared of standing vegetation and is characterized by a drop in elevation as one proceeds east away from the cemetery toward an area of dense aspen. No evidence of unmarked burials outside the cemetery parameters was observed during the assessment.



Photo 6-11 Ridgeland Cemetery (Source: K. David McLeod 2014)

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Photo 6-12 Vegetation Along East Boundary of the Ridgeland Cemetery (Source: K. David McLeod 2014)

The Lonesand Community Cemetery west boundary is located 3.5 km northwest of Lonesand and 290 m from a PAR. Assessment of the cemetery recorded the oldest burials in the northwest corner of the graveyard (Photo 6-13). Pedestrian transects along the fence line on the west side of the graveyard recorded no surficial evidence of unmarked burials. Furthermore, any transmission line construction would not compromise the aesthetics of this cemetery given the dense vegetation cover between the graveyard and the proposed route alternative.

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Photo 6-13 Portion of Lonesand Community Cemetery (Source: K. David McLeod 2014)

6.2.3 New Sites Recorded 2014 Assessment

One archaeological site was recorded in the southern portion of the study area within 50 m of a PAR and 40 m north of the Canada-United States border. The site consisted of a rectangular stone building foundation (Photo 6-14). No heritage resources were recovered from within the structure to determine a relative date of occupation. Several stone piles were observed across the modified hayland indicating that the land had once been ploughed and the stones collected (Photo 6-15). The site was concluded to be a Late Historic Period structure although no artifacts were recovered within or adjacent to the structure.

A boundary marker was recorded on the Canada-United States border in the same approximate area that archival township plans indicate that the Boundary Commission surveyors would have planted an iron bar and created a survey mound.

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Photo 6-14 Test Excavation Being Placed in Historic House Foundation Near Canada-United States border (Source: K. David McLeod 2014)



Photo 6-15 Stone Pile Near House Foundation North of Canada-United States Border (Source: K. David McLeod 2014)

7.0 DISCUSSION

7.1 ASSESSMENT OF THE FINAL PREFERRED ROUTE (FPR)

Analysis of the existing heritage resources database, implementation of predictive modeling, the windscreen survey of the PARs, and field surveys were used to provide input into the FPR analysis. The heritage resource assessments at Dorsey, Riel and Glenboro South concluded that there was a low potential for heritage resources to be present within the station's PDAs and LAAs.

7.1.1 Existing Transmission Corridor

There are three major streams that will be crossed; the Assiniboine River, the Red River and the La Salle River. The assessment within the corridor along the Assiniboine River recorded a Late Historic Period homestead, an undated depression that appeared to be a cultural feature rather than a natural occurrence, and two possible trail remnants. Because the Existing Transmission Corridor is a fixed route, mitigation of any cultural features would be through avoidance when tower siting is completed. The towers within the previously developed corridor of the SLTC are well-removed from the riverbank and are outside of areas that would have a high heritage resource potential. Access road clearing and construction could inadvertently expose shallowly buried heritage resources. Hand clearing in areas within 100 m of the riverbank would minimize disturbance.

The Red River crossing point has already been partially disturbed by construction of the floodway. Riverbank erosion has also destroyed sections of the riverbank, particularly on the west bank of the river.

Archaeological sites have been previously recorded on the La Salle River, although all are outside of the corridor PDA and LAA. The observed natural vegetation along both banks of the river indicates that this area has not been disturbed by previous development. Similar to the Assiniboine River crossing, tower placement could avoid areas of moderate to high heritage resource potential. This area was previously assessed as part of the St. Vital-Letellier Transmission Line study (McLeod 2013).

This existing corridor from Riel to Vivian is primarily through agricultural lands and any previously recorded heritage resources have been disturbed through cultivation. There are no areas that have the potential for deeply buried cultural strata, such as those that may be expected adjacent to streams that annually flood.

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7.1.2 New Right-of-Way

The New ROW south of the existing corridor juncture traverses primarily agricultural lands with stands of mature deciduous tree cover (Photo 7-1). The ROW crosses the former Dawson Trail, now developed into the present-day Dawson Road, east of Richer. Road construction and flanking drainage ditches have destroyed any Historic Period sites associated with use of the trail. The land use and topography south of Richer are similar to that north of the settlement. No archeological sites have been previously recorded along this portion of the ROW.



Photo 7-1 Topography and land use along the D604I ROW between Vivian, MB and Richer, MB (Source: K. David McLeod 2014)

The ROW crosses Hope Creek northeast of La Broquerie. Hope Creek is a narrow stream that meanders through agricultural fields with cultivation extending to virtually the edge of the creek on both the south and north bank (Photo 7-2 and 7-3). A small section of native treed vegetation remains directly along the stream at the south bank crossing. The north bank is slightly higher than the south. No archaeological sites have been previously recorded along any portion of Hope Creek. No heritage resources were observed on the surface of the cultivated fields and the potential for intact heritage resources is low.

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Photo 7-2 North bank of the Hope Creek crossing (Source: K. David McLeod 2014)



Photo 7-3 Thick vegetation on the south bank of Hope Creek (Source: K. David McLeod 2014)

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The ROW crosses the Seine River east of La Broquerie 3.0 km south of the Hope Creek crossing. The Seine River crossing was one of the areas where permission for land access could not be obtained as the landowner was not at home when contacted and would not return calls from Manitoba Hydro. The north crossing point is a cultivated field and is slightly higher than the opposite bank (Photo 7-4). The south bank is under dense tree and scrub vegetation that appear to be native. No sites have been previously recorded along this stretch of the river. In the current absence of a detailed heritage assessment, tower placement maintaining a buffer of 150 to 200 m on either side of the river would avoid heritage resources.



Photo 7-4 North Bank of the Seine River near La Broquerie, MB (Source: K. David McLeod 2014)

South of La Broquerie, the ROW traverses a mix of crop and hayland interspersed with stands of mature aspen. The second crossing of the Seine River is 6.0 km southwest of Marchand. Archaeological site DiLc-3 was recorded within 30 m of the ROW centerline approximately 187.5 m south of the Seine River. This site consisted of a broken projectile point collected on the surface of a cultivated field (Photo 7-5). The river at this location is a small stream that meanders through the ROW. No additional heritage resources were recorded at this location during the assessment and the potential for intact heritage resources is low.

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Photo 7-5 Modified Hayland at DiLc-3 near the Seine River Crossing Southwest of Marchand (Source: K. David McLeod 2014)

While the topography remains the same, the land use south of the second Seine River crossing consists of modified hayland mixed with large stands of mature aspen. The ROW parallels the west boundary of the Watson P. Davidson Provincial Wildlife Management area and then descends into a low-lying area marked by hayland and stands of mixed deciduous-coniferous forest.

South of PTH 12, the ROW extends through an area of sand ridges with native coniferous vegetation interspersed with areas that have been disturbed through forestry clearing and reforestation (Photo 7-6). Pedestrian transects and shovel tests in forested areas showed that these past activities have disturbed the upper 10.0 to 15.0 cm that corresponds with the soil strata that would contain the cultural levels. Portions of the ROW that have not been disturbed by forestry activities would have a moderate to high potential for heritage resources. A 64 ha portion of the Final Preferred Route PDA and LAA west of Lonesand, MB was identified as an environmentally sensitive area (ESA) that is recommended for further assessment and/or ground-truthing once tower location is known (Map 12-300). This area stands under native jack pine and spruce that would have been similar to the vegetation after the retreat of glacial Lake Agassiz and at the time when First Nation groups were first entering the area.

The Rat River crossing site is southwest of Lonesand along a low marshy section of the stream that would not have provided an expedient habitation site given the low-lying nature of the riverbank (Photo 7-7). No heritage resources have been previously recorded along this stretch of

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the river and the potential for heritage resources is low. Tower placement using a buffer of 150.0 to 200 m would avoid any potential heritage resources.



**Photo 7-6 Jack Pine Stands Marked by Sand Beach Ridges South of Lonesand
(Source: K. David McLeod 2014)**



Photo 7-7 Rat River Upstream of ROW Crossing (Source: K. David McLeod 2014)

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South of the Rat River crossing, the ROW passes through a low-lying wetland and then after a slight rise in elevation traverses through an area of thick stands of coniferous forest. The ROW crosses Public Road (PR) 402 north of the Ridgeland Cemetery and then proceeds south approximately 100 m east of the east edge of the cemetery (Photo 7-8). The vegetation cover east of the cemetery consists of dense aspen tree cover and then, as elevation drops, a low-lying bog area.

Avoidance of the cemetery was a major consideration when the PR was determined, as area residents had raised concerns at Public Open Houses about the close proximity of the proposed ROW and the potential for construction activities to interrupt religious ceremonies at the site. The alignment was also constrained by a large wetland east of the cemetery that provided habitat for migratory birds. The PR ROW is 100 m east of the cemetery, 175 m west of the wetland and liaison between Manitoba Hydro and the community will determine when ceremonies are planned so that construction and maintenance work does not interfere with these activities.



Photo 7-8 Southeast Corner of Ridgeland Cemetery with Thick Aspen in the Background (Source: K. David McLeod 2014)

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The PR egresses southeast of the bog into an area densely covered with mature jack pine that was planted following forestry operations (Photo 7-9). Linear ploughed rows for seedling planting extend throughout the area and, while this area would naturally have a low potential for heritage resources, reforestation methods have caused subsurface disturbance, further decreasing the likelihood for intact heritage resources to be present.



Photo 7-9 Reforested area east of Sundown, MB (Source: K. David McLeod 2014)

The PR crosses PR 201 6.5 km east of Sundown and parallels the abandoned Sprague spur line that was constructed on a former cart trail. The PR is approximately 45 m west of the rail bed. The spur line is currently an all-terrain vehicle trail that bisects an area of spruce and tamarack interspersed with wetlands (Photo 7-10). Remnants of the cart trail may be intact beneath the spur line but there is low potential for any archaeological features to be present within the PR because of the low-lying topography. The PR parallels the abandoned spur line and, approximately 3.5 km southwest of Piney, crosses hay and agricultural land. The PR traverses cultivated lands and then crosses Pine Creek approximately 0.45 km north of the Canada-United States border. With the exception of a thin strip of aspen and willow along the creek bank, both the west and east crossing point are cultivated fields. No archaeological sites have been previously recorded along this section of the creek and the potential for heritage resources is low.

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Photo 7-10 Abandoned Sprague spur line rail bed (Source: K. David McLeod 2014)



Photo 7-11 Pine Creek at the Canada-United States border (Source: K. David McLeod 2014)

7.2 SUMMARY OF KEY CONSIDERATIONS AND FINDINGS

The initial step of the heritage resources assessment was to collect and amass all previously recorded heritage resources site locations within the original route planning area. These data, in conjunction with the existing data from other disciplines, were plotted during the initial routing analysis so that the sites could be avoided. The preliminary alternative routes were then compared with the accumulated heritage database to determine points of intersection with the LAA and PDA for each segment within the route. Predictive modeling was completed to identify areas of heritage resource potential within the LAA and PDA for each route segment. The HRIA consisted of assessing the areas of known or potential heritage resources along the preliminary routes. The data and conclusions from the HRIA were used to assess the final preferred route.

Based on the analysis of the existing database and information from the field assessment, key considerations are as follows:

- Previously recorded sites within the MMTP area indicate a long period of human occupation, conceivably beginning as early as approximately 9,000 to 12,000 years BP.
- The southeastern portion of the study area has the highest potential for intact heritage resources.
- An 64 ha Environmentally Sensitive Area has been delineated west of Lonesand MB in an area of native vegetation.
- Parts of the southeast portion of the study area have been disturbed by forestry operations and gravel extraction.
- The small sample of Early Precontact Period sites indicate that human settlement of the study area was by plains-adapted groups coming into the area in a southeast to northwest route.
- The majority of Late Precontact Period sites are located in close proximity to a stream course.
- First Nations within the study area during the Early Historic Period included Cree, Assiniboine and Anishinabe (Salteaux), but no sites of this time period have been recorded in the study area.
- Permanent settlement in the study area began during the Middle Historic Period by Métis agriculturists along the Red River and by HBC employees and their Métis families along the Assiniboine River.
- Métis families established farmsteads along the Seine River in the Lorette and Ste. Anne areas during the Middle and Late Historic periods.
- The majority of the southern portion was homesteaded by eastern European families during the Late Historic Period.
- Lands previously affected by agriculture have low potential for Precontact Period cultural strata below the plow zone because there is a low potential for post-depositional soil accumulation to have occurred.
- Lands previously affected by agricultural have a lower potential for intact Precontact Period but a greater potential for both surficial and intact Historic Period heritage resources.
- Cemeteries with poorly defined parameters have the highest potential for unmarked burials to be present.

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- One cemetery, Ridgeland Cemetery is within 100 m of the PPR.
- One archaeological site, DiLc-3, is within the PDA of the New ROW but was recorded on the basis of an isolated find in a cultivated field.
- Four previously recorded archaeological sites are within the SLTC but all have been disturbed by cultivation or previous development.
- A Late Historic farmstead was recorded within the PDA of the SLTC.
- An undated Historic Period feature was recorded within the SLTC PDA on the north bank of the Assiniboine River.
- Possible cart trail remnants were recorded within the SLTC PDA on the north and south sides of the Assiniboine River.
- No heritage resources have been previously recorded at Dorsey, Riel or Glenboro South.
- The potential for heritage resources at these locations is low.

7.3 TECHNICAL LIMITATIONS

The archaeological database was somewhat limited in the accuracy of site location, site size, overall description and the number of recently recorded sites. The majority of the archaeological sites were identified on the basis of surface collections in areas that had either been cultivated or disturbed by subsurface excavations such as gravel extraction. The absence of test excavations at these sites to determine the presence of intact heritage resources and the horizontal limits of the site reduces the reliability of the analytical conclusions. These gaps make analysis of structure location difficult because while the footprint of the tower and tower infrastructure are known, the size of an archaeological site that might interact with tower placement is not known.

The online historical information such as schools and cemeteries was observed to be comprehensive however; locational data for several family or private cemeteries was not included with the cemetery name. There is usually low potential for church or community cemeteries to interact with development projects but occasionally family cemeteries from the Late Historic Period have been destroyed by construction related excavations (McLeod 1996).

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7B Conclusions and Recommendations
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8.0 CONCLUSIONS AND RECOMMENDATIONS

The baseline data indicate that heritage resources from the Precontact and Historic periods can be anticipated in the study area. The assessment of the various alternative routes indicated that a major portion of the study area has been previously disturbed by agriculture, gravel extraction, forestry regeneration, road and rail construction, and residential and commercial development. Analysis of the database and past land use suggests that the southeast portion of the study area has the highest potential for intact heritage resources because of the limited amount of development. It was concluded that portions of the southeast are in the same natural state as that encountered by First Nation groups when they first inhabited the area 9,000 to 12,000 years ago.

The assessment of the Project on heritage resources considered whether the various construction components had a potential to interact with heritage resources. The available database of archaeological sites, designated heritage sites, cemeteries and school sites indicate that there is low potential for interaction. Any archaeological sites that interact directly with the alternative routes or preferred route have been disturbed by past land use. The east boundary of the Ridgeland Cemetery is within 100 m of the preferred alternative route but the potential to interact with any unmarked burials outside of the cemetery parameters is low.

The limitations identified in the database in general and the archaeological database in particular can be addressed by pre-construction review of the locations of project components and drafting a detailed heritage resource protection plan. At present, the accumulated database indicates that there are no previously recorded heritage sites that would require mitigation prior to construction. Therefore, the potential heritage resource sites that could adversely be exposed during construction would be the primary focus of the protection plan. Pre-construction review of Project components that would cause subsurface disturbance, the database accumulated during the desktop analysis, with the limitations noted, and the field assessment data collected in 2014 would assist in determining which locations would need a pre-construction assessment.

Ground disturbance activities associated with site preparation, site access, mobilizing equipment, and transmission line construction can affect surface and buried heritage resources. Heritage resource sites can be affected by construction-related activities ranging from vehicle traffic over the site by rubber tired and tracked vehicles and equipment to ground disturbance activities including brush clearing, fencing, grading, and trenching. Heritage resources in areas such as the Sandilands are shallowly buried and this fragile context is easily disturbed by subsurface intrusion of the sandy soils. In this area, brush removal by clear cutting to the ground surface and site access by tire-mounted or track vehicles could interact with shallowly buried heritage resources.

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Ground disturbance activities can affect unmarked burials that may be present in abandoned/active cemeteries or along the perimeter of a graveyard. While the actual human remains are generally more than 1 m below the surface, there is the potential for the original marker to be shallowly buried in close proximity. This upper context is easily disturbed by subsurface disturbance, particularly in sandy soils. Therefore, brush removal could interact with unmarked burial locations if cutting requires subsurface disturbance. Site access by tire-mounted or track vehicles could also interact with the upper context of an unmarked burial. Tower construction could interact with an unmarked burial depending on the excavation depth required for the particular tower.

Activities such as mobilizing staff and marshalling yards that do not have any surface or subsurface disturbance would not interact with heritage resources or cemeteries. There are no previously recorded heritage resource sites within the PDAs for Glenboro South Station or Dorsey Converter Station and the potential for heritage resources to be present is considered low. Therefore, there are no probable pathways for interactions with heritage resources.

Operation and maintenance activities have a potential to interact with heritage resource sites within the existing corridor and New ROW PDA and LAA. Vegetation clearing, improved or new access points, and maintenance of tower sites in areas previously not disturbed by construction have a potential to expose heritage resources.

Mitigation for change to heritage resource sites pertains primarily to the existing corridor and New ROW 500 kV Transmission Line. Analysis of the station expansions has indicated that there will be no pathways for change to known or unrecorded heritage resource sites.

As for previous Manitoba Hydro projects, a Cultural and Heritage Resources Protection Plan (CHRPP) will be completed as part of the overall project Environmental Protection Program. The CHRPP describes the processes and protocols to be followed during the construction and operation phases of MMTP to allow Manitoba Hydro to safeguard cultural and heritage resources discovered or disturbed during the construction of the Project. The CHRPP is based on past learnings during previous projects, knowledge of the existing heritage resource conditions within the MMTP and recommendations from HRB after review of the HRIA.

In the event that a cultural or heritage resource is inadvertently discovered the protection measures for the resource(s) will be determined through processes outlined in the CHRPP. Recorded cultural and heritage resources and their protection measures have been incorporated into the applicable CEnvPPs. The Operations and Maintenance Environmental Protection Plans will also include the site and protection measures to be used for the ongoing protection of cultural and heritage resources during operations.

The objective of mitigation is to limit the loss of heritage resource materials and sites or site integrity caused by the Project. Best mitigation practice for heritage resources is avoidance. The routing criteria used for selecting PARs and the FPR are an example of how heritage resources

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were avoided during the early planning stages of MMTP. Standard mitigation measures used by previous transmission projects and recommended for MMTP include:

- Avoidance of known heritage resource sites.
- Protective barriers placed around heritage resource sites that are inadvertently found during construction so that the area can be protected while work proceeds.
- Controlled surface collection or salvage excavation of known heritage resource sites, or a portion thereof, that cannot be avoided.
- Construction monitoring by a professional archaeologist in areas in close proximity to known heritage resource sites.
- Construction monitoring by a professional archaeologist in areas that are considered to be heritage sensitive such as sites identified as being culturally sensitive by First Nation and Métis, extant buildings or building foundations, stone features, burial sites and any other heritage resources sites as defined by *The Heritage Resources Act (1986)*.
- Evaluation of any route change or added development.
- Education of construction contractors for the appropriate protocol in the event that heritage resources, or objects thought to be heritage resources, are uncovered.

The objective of mitigation for cemeteries is to address concerns raised during public engagement and to follow proper protocols in the event that unmarked burial sites adjacent to recognized cemeteries are inadvertently exposed by the Project. The locations of church and community cemeteries were examined when the alternative routes were selected. Subsequently, cemetery locations were factored when the PAR and FPR were determined.

Effects are reduced through mitigation measures and the Heritage Resources Environmental Protection Plan that would include statements pertaining to cemeteries. Furthermore, through review of recommendations and mitigation measures outlined in heritage permit reports, provincial regulators can either concur or request additional mitigation measures to be conducted. These additional measures are usually summarized as regulatory conditions of the *Environment Act* license.

Mitigation measures may include:

- Siting of the preferred ROW a minimum of 80 m from a cemetery location evaluation of any route change or added development for the presence of cemeteries.
- Timing construction and maintenance activities to avoid any religious ceremonies/practices or interments at a cemetery.
- Education of construction contractors as to the provincial burials policy and the appropriate protocols in the event that human remains, or objects thought to be human remains, are uncovered.

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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

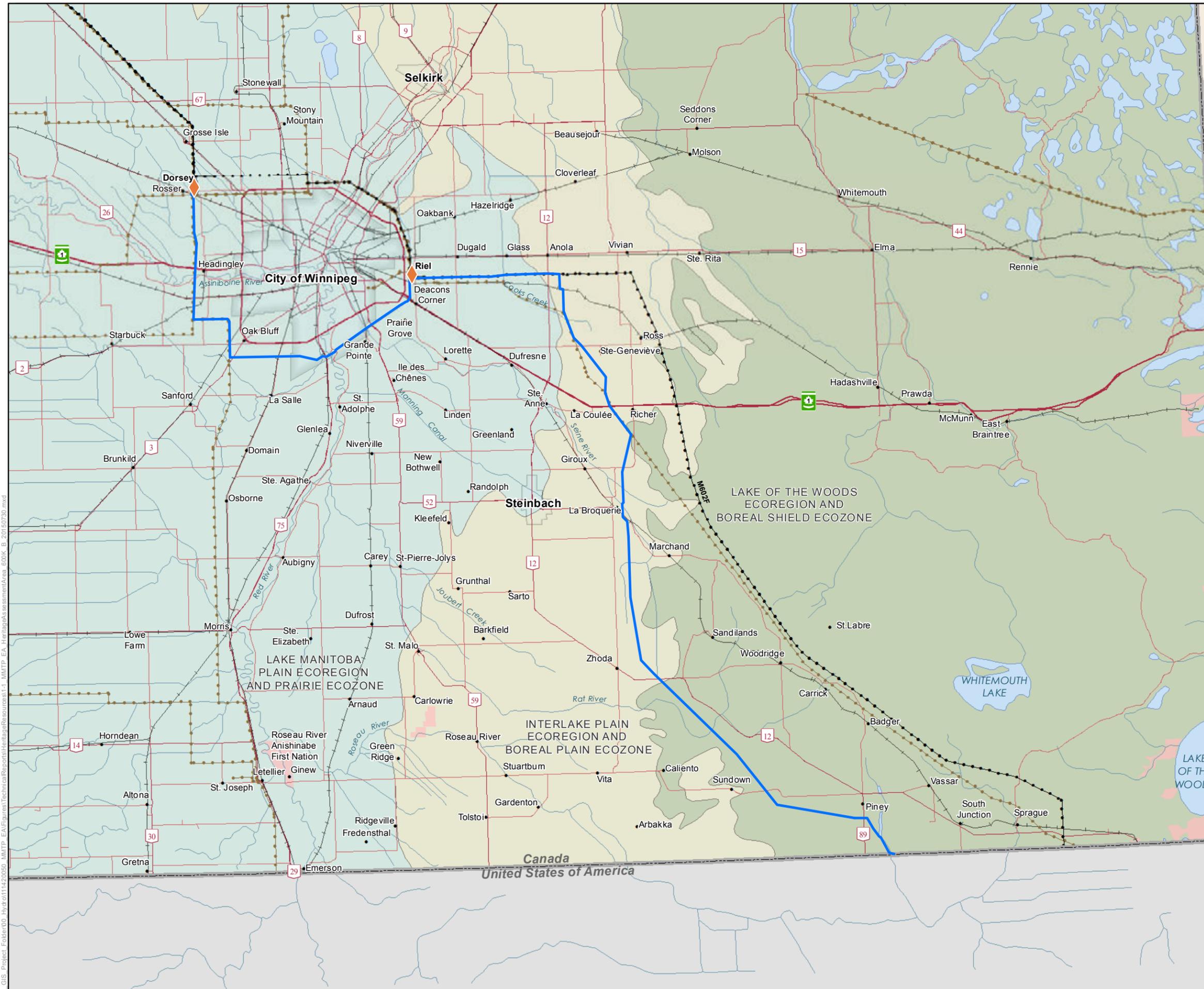
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Ecological Boundaries

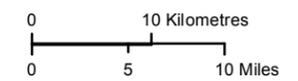
- Interlake Plain Ecozone / Boreal Plain Ecozone
- Lake Manitoba Plain Ecozone / Prairie Ecozone
- Lake of the Woods Ecozone / Boreal Shield Ecozone

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands



Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



1:600,000

Heritage Resources Assessment Area

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Converter Station (Existing)
- Final Preferred Route (FPR)

Infrastructure

- Existing 500kV Transmission Line
- Existing 230kV Transmission Line

Map Series Index - 1:150,000

- Map Series Tile

Heritage Resource Features

- Archaeological Site
- Cemetery
- Centennial Farm
- Provincial and Municipal Designated Site
- School

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City
- First Nation Lands
- Ecological Reserve
- Wildlife Management Area
- Provincial Park
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: August 06, 2015

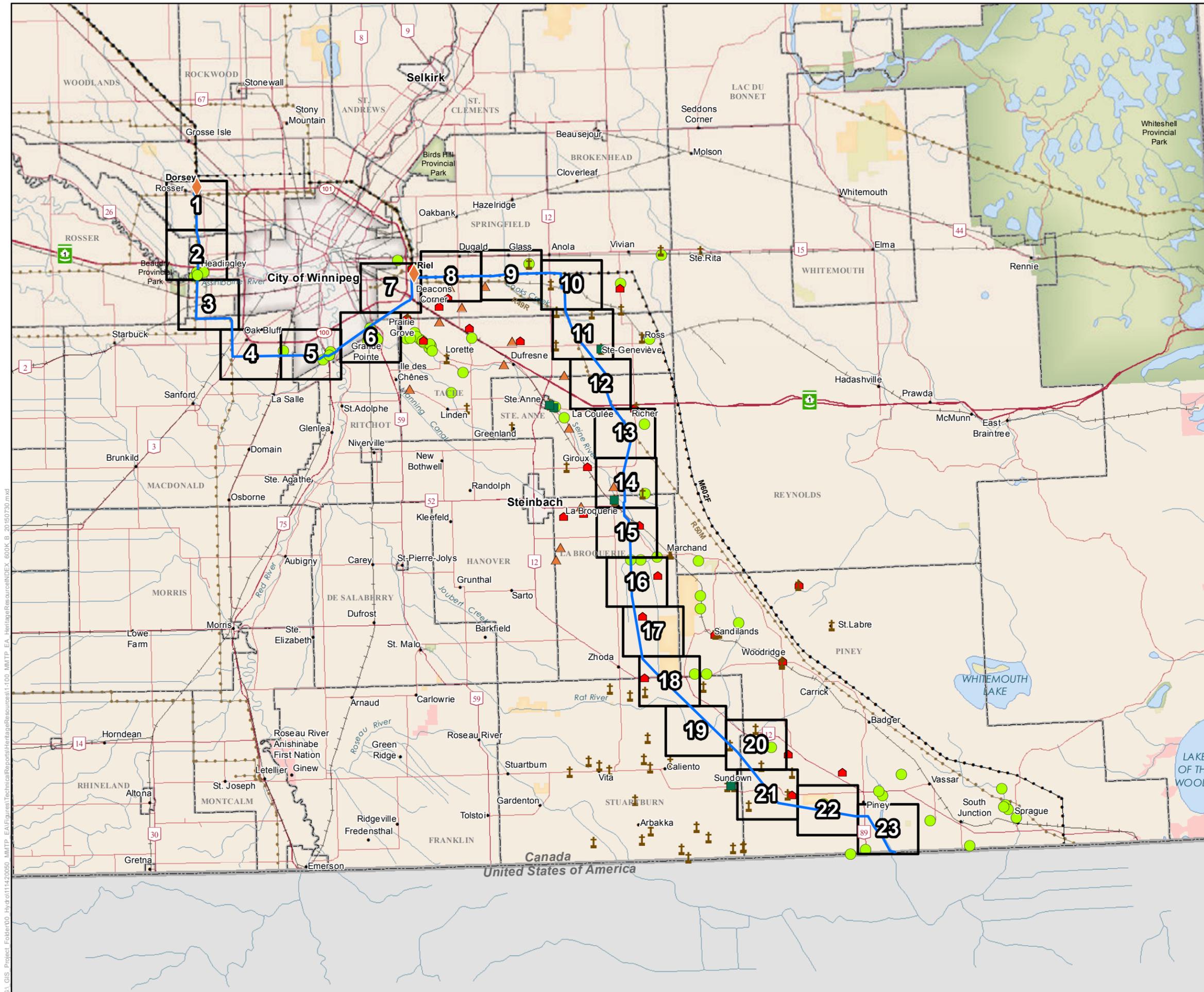


0 10 Kilometres
 0 5 10 Miles

1:600,000

Index of Map Series Heritage Resource Locations

Map Series 1-100



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)
- Station Expansion
- Converter Station Footprint

Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line

Assessment Area

- Project Development Area (PDA)
- Heritage Resources
Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



0 0.5 1 Kilometres
0 0.25 0.5 Miles

1:30,000

Heritage Resource Locations

Map 1-100-01



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

Existing 230kV Transmission Line

Heritage Resource Features

Archaeological Site

Assessment Area

Project Development Area (PDA)

Heritage Resources
Local Assessment Area

Landbase

Community

Railway

Trans Canada

Provincial Highway

Provincial Road

First Nation Lands

National/Provincial Park

Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: August 06, 2015



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0 0.25 0.5 Miles

1:30,000

Heritage Resource Locations

Map 1-100-02



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)

Infrastructure

- Electrical Station
- Existing 230kV Transmission Line
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

Assessment Area

- Project Development Area (PDA)
- Heritage Resources
Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- National/Provincial Park
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015

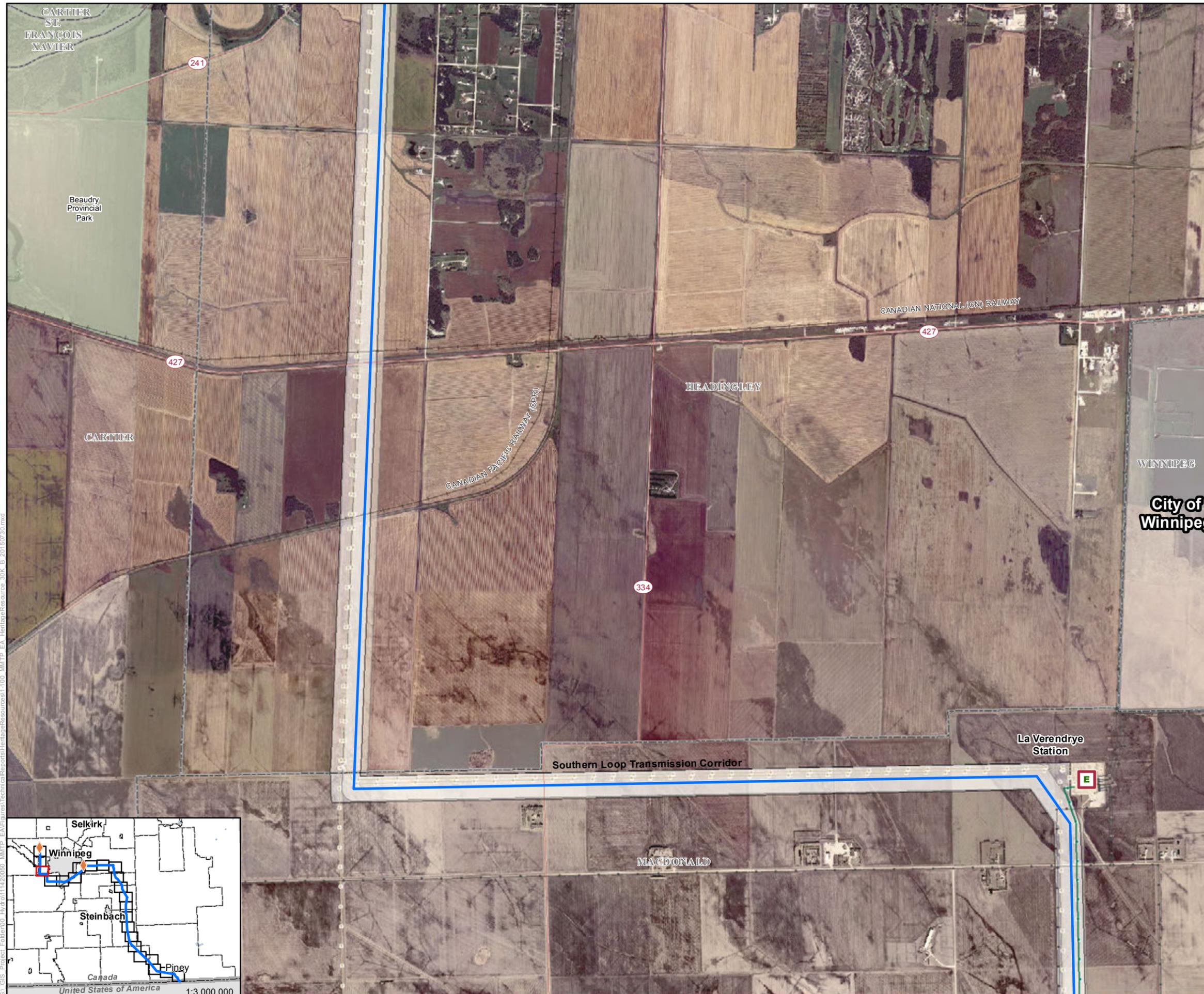


0 0.5 1 Kilometres
0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-03



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

- Existing 230kV Transmission Line
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

Assessment Area

- Project Development Area (PDA)
- Heritage Resources
Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015

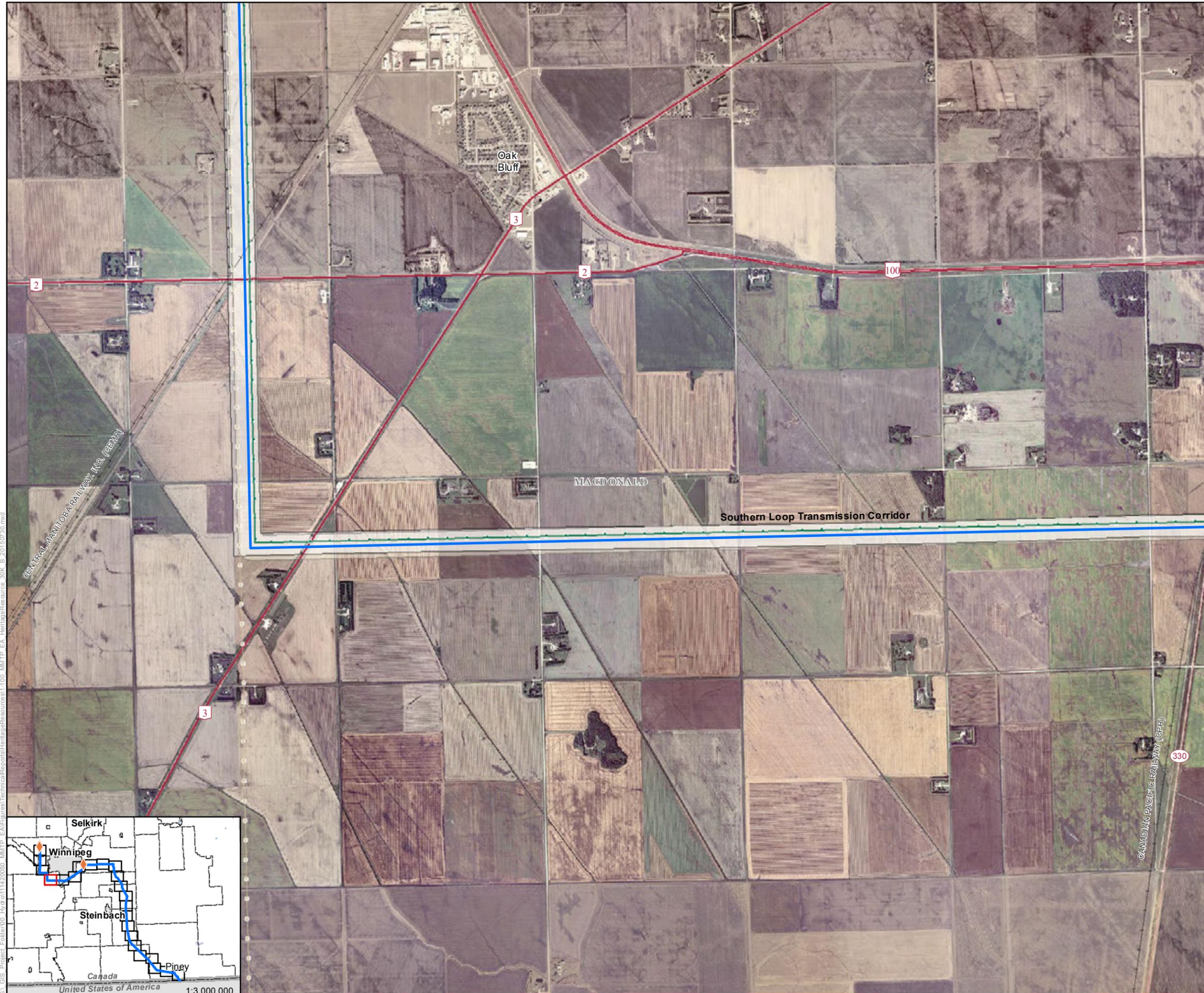


0 0.5 1 Kilometres
0 0.25 0.5 Miles

1:30,000

Heritage Resource Locations

Map 1-100-04



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

St. Vital Transmission Complex (Proposed)

Heritage Resource Features

Archaeological Site

Assessment Area

Project Development Area (PDA)
 Heritage Resources
 Local Assessment Area

Landbase

Community
 Railway
 Trans Canada
 Provincial Highway
 Provincial Road
 City / Town
 National/Provincial Park
 Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



0 0.5 1 Kilometres
 0 0.25 0.5 Miles

1:30,000

Heritage Resource Locations

Map 1-100-05



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)

Infrastructure

- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

Heritage Resource Features

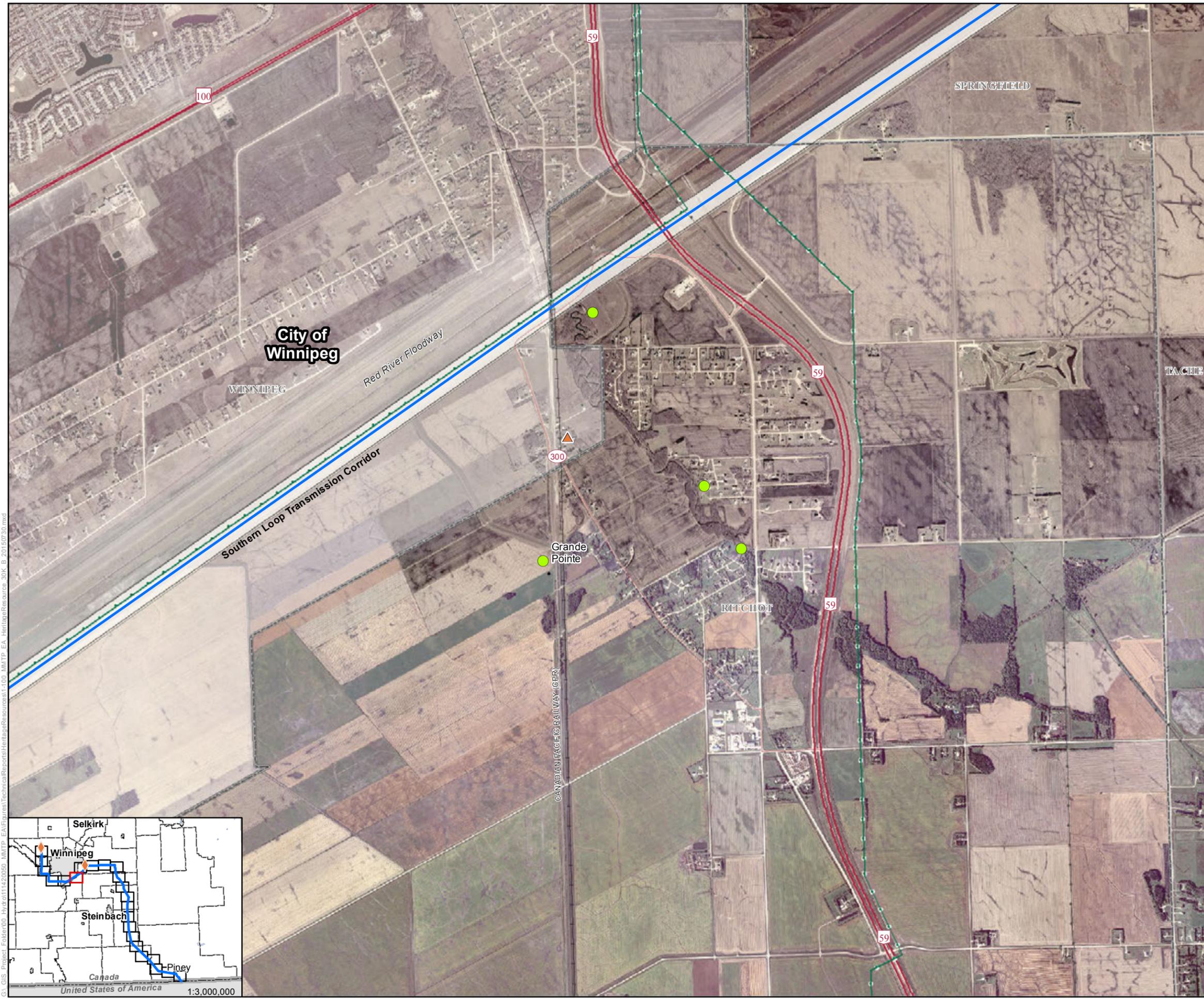
- Archaeological Site
- Centennial Farm

Assessment Area

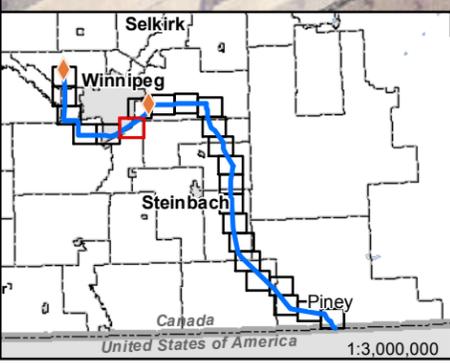
- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- Rural Municipality



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Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



Heritage Resource Locations

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)
- Converter Station Footprint

Infrastructure

- Electrical Station
- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- St. Vital Transmission Complex (Proposed)
- Existing 115-230kV Transmission Line

Heritage Resource Features

- Archaeological Site
- School

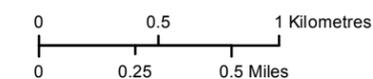
Assessment Area

- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- City / Town
- Rural Municipality

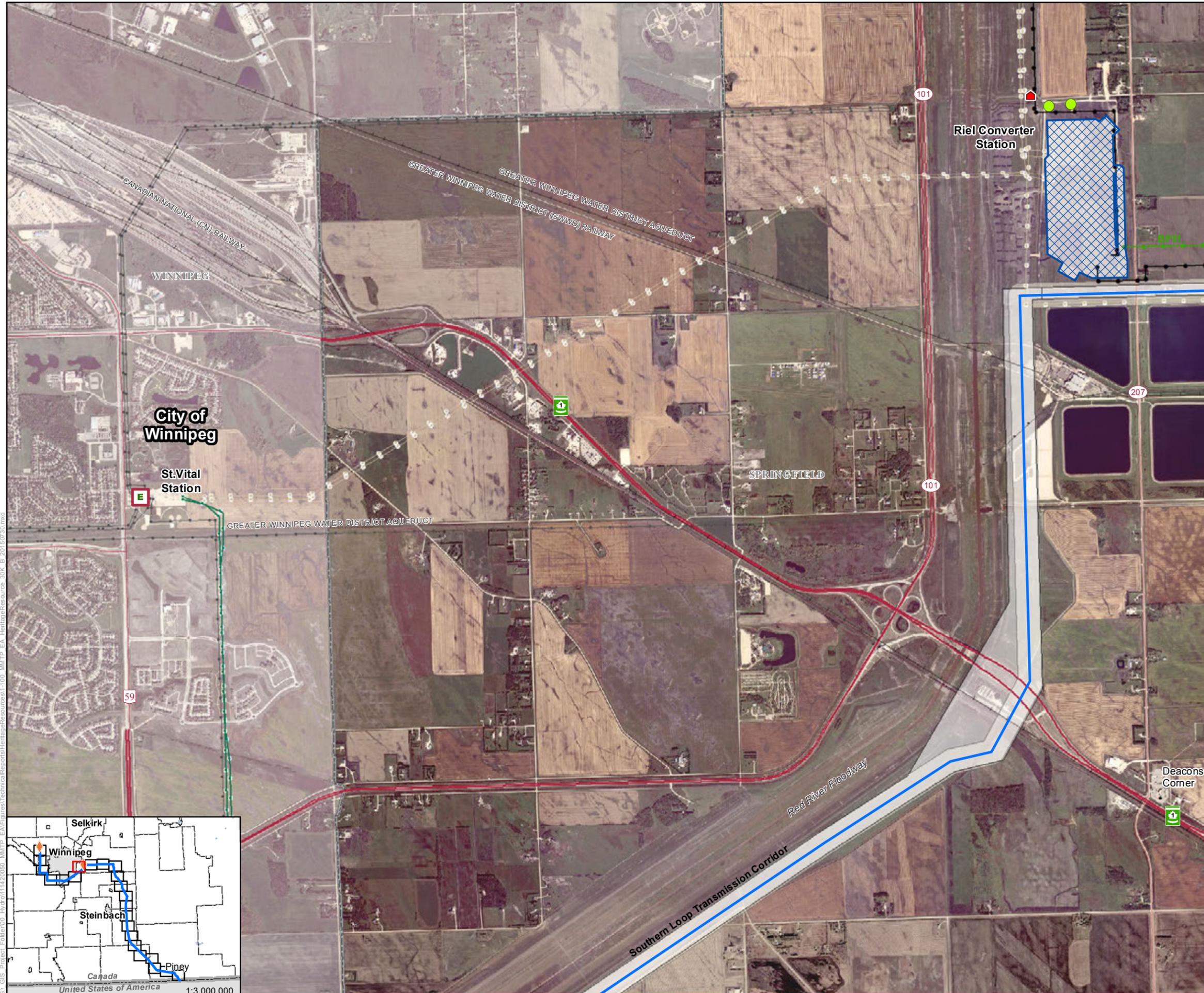
Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



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Heritage Resource Locations

Map 1-100-07



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (Salvage)
- M602F Modification (New)

Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Bipole III Transmission Line (Approved)
- Existing 115-230kV Transmission Line

Heritage Resource Features

- ▲ Centennial Farm
- ▲ School

Assessment Area

- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



0 0.5 1 Kilometres
0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-08



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)
- M602F Modification (Salvage)
- M602F Modification (New)
- M602F Extension and Salvage

Infrastructure

- Existing 500 kV Transmission Line
- Existing 230kV Transmission Line
- Existing 115-230kV Transmission Line

Heritage Resource Features

- Cemetery

Assessment Area

- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



0 0.5 1 Kilometres
0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-10



Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

Existing 230kV Transmission Line

Assessment Area

Project Development Area (PDA)
 Heritage Resources
 Local Assessment Area

Landbase

Community
 Railway
 Trans Canada
 Provincial Highway
 Provincial Road
 Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015

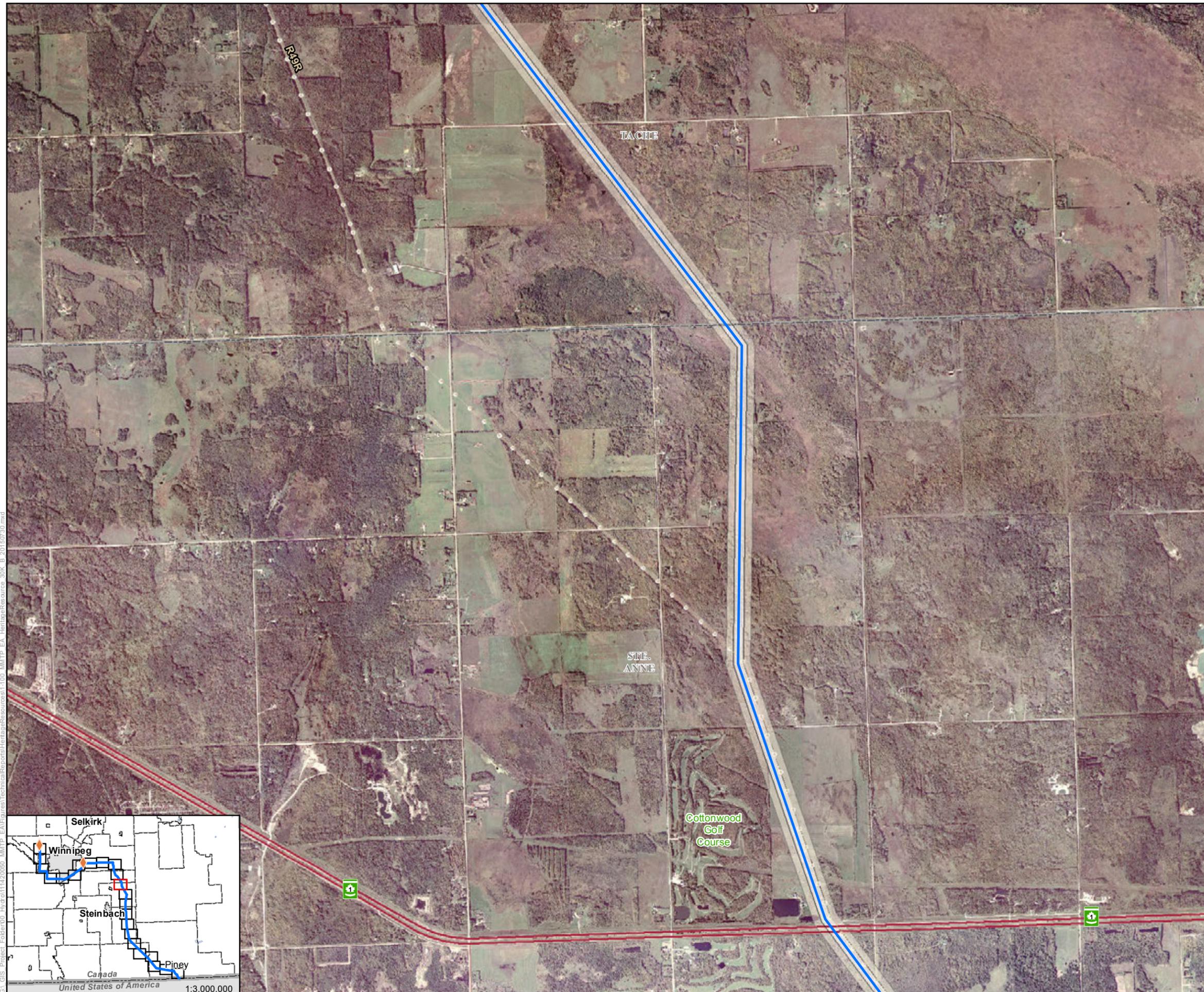


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Heritage Resource Locations

Map 1-100-12



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Infrastructure

Electrical Station

Existing 230kV Transmission Line

Heritage Resource Features

Archaeological Site

School

Assessment Area

Project Development Area (PDA)

Heritage Resources
Local Assessment Area

Landbase

Community

Railway

Trans Canada

Provincial Highway

Provincial Road

Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015

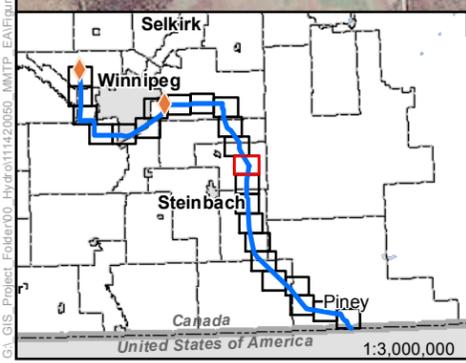
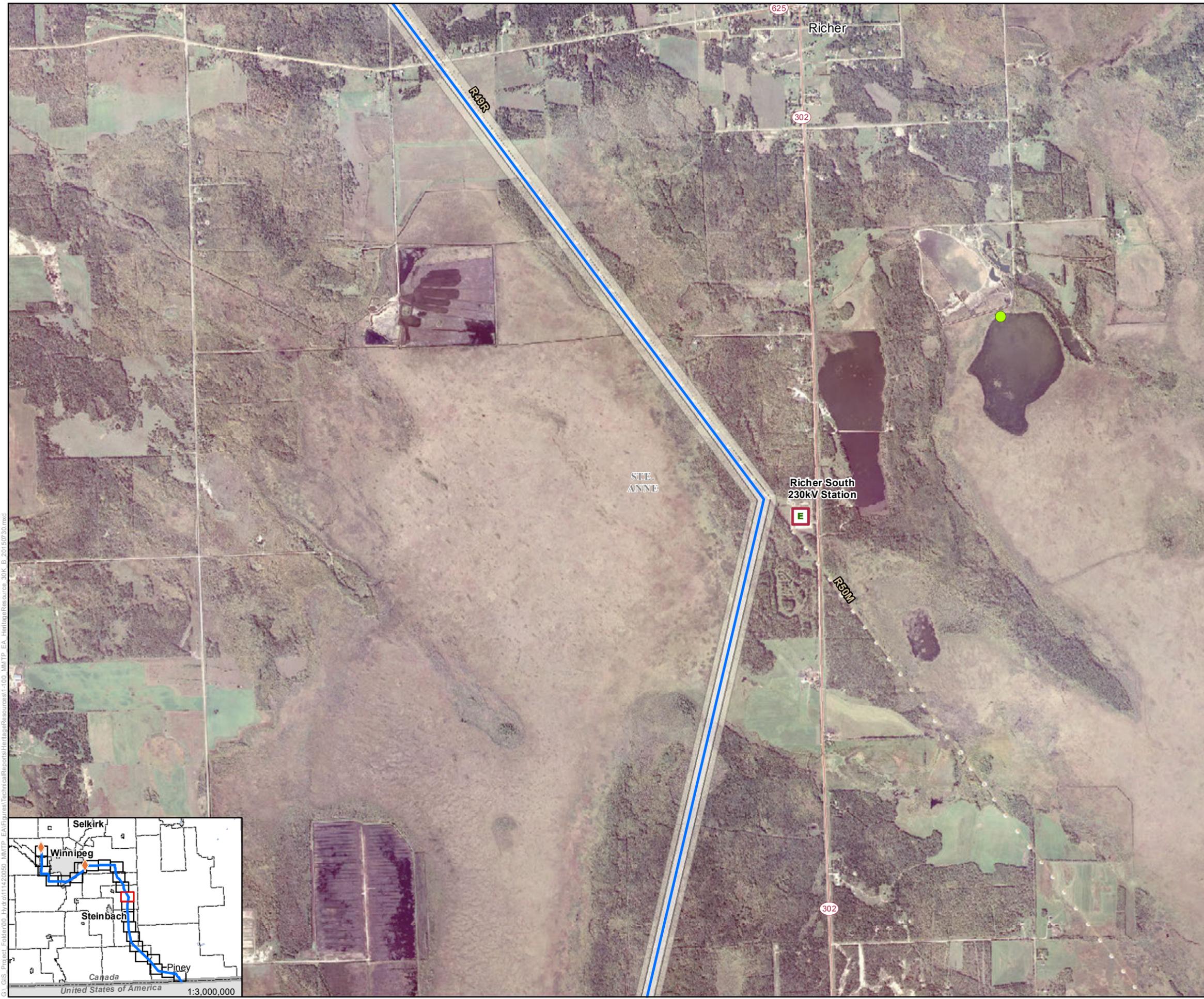


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0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-13



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Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)

Heritage Resource Features

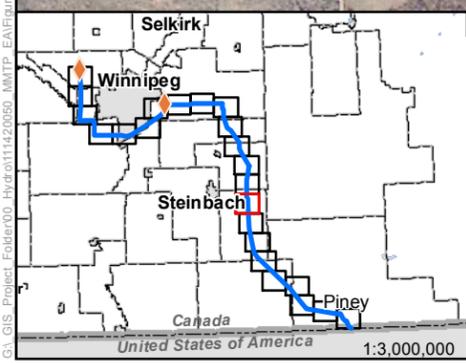
- Archaeological Site
- School

Assessment Area

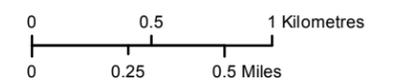
- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality



Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



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Heritage Resource Locations

Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Heritage Resource Features

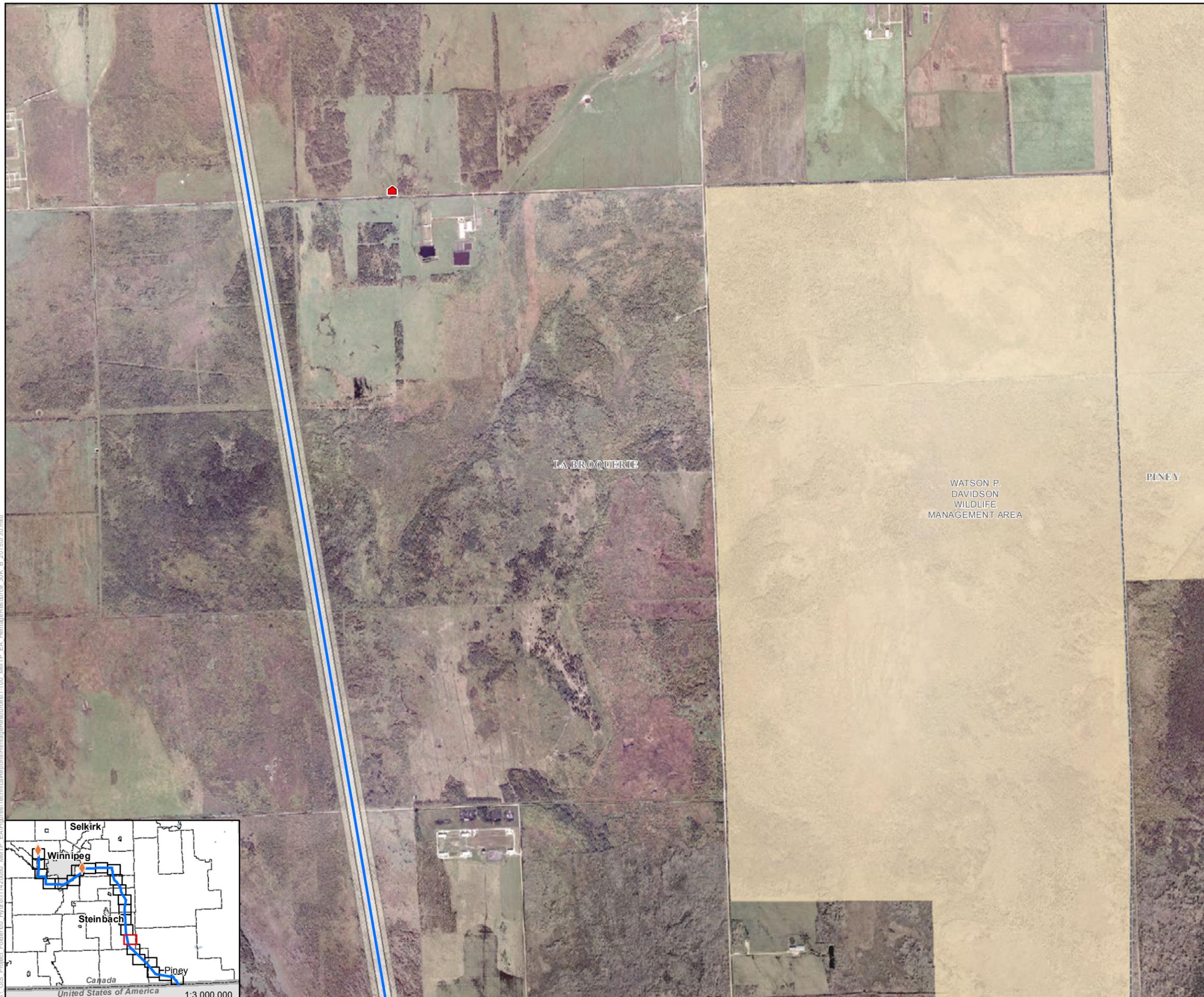
School

Assessment Area

Project Development Area (PDA)
 Heritage Resources
 Local Assessment Area

Landbase

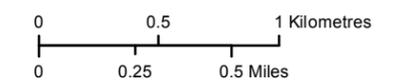
Community
 Railway
 Trans Canada
 Provincial Highway
 Provincial Road
 Wildlife Management Area
 Rural Municipality



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Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



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Heritage Resource Locations

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)

Heritage Resource Features

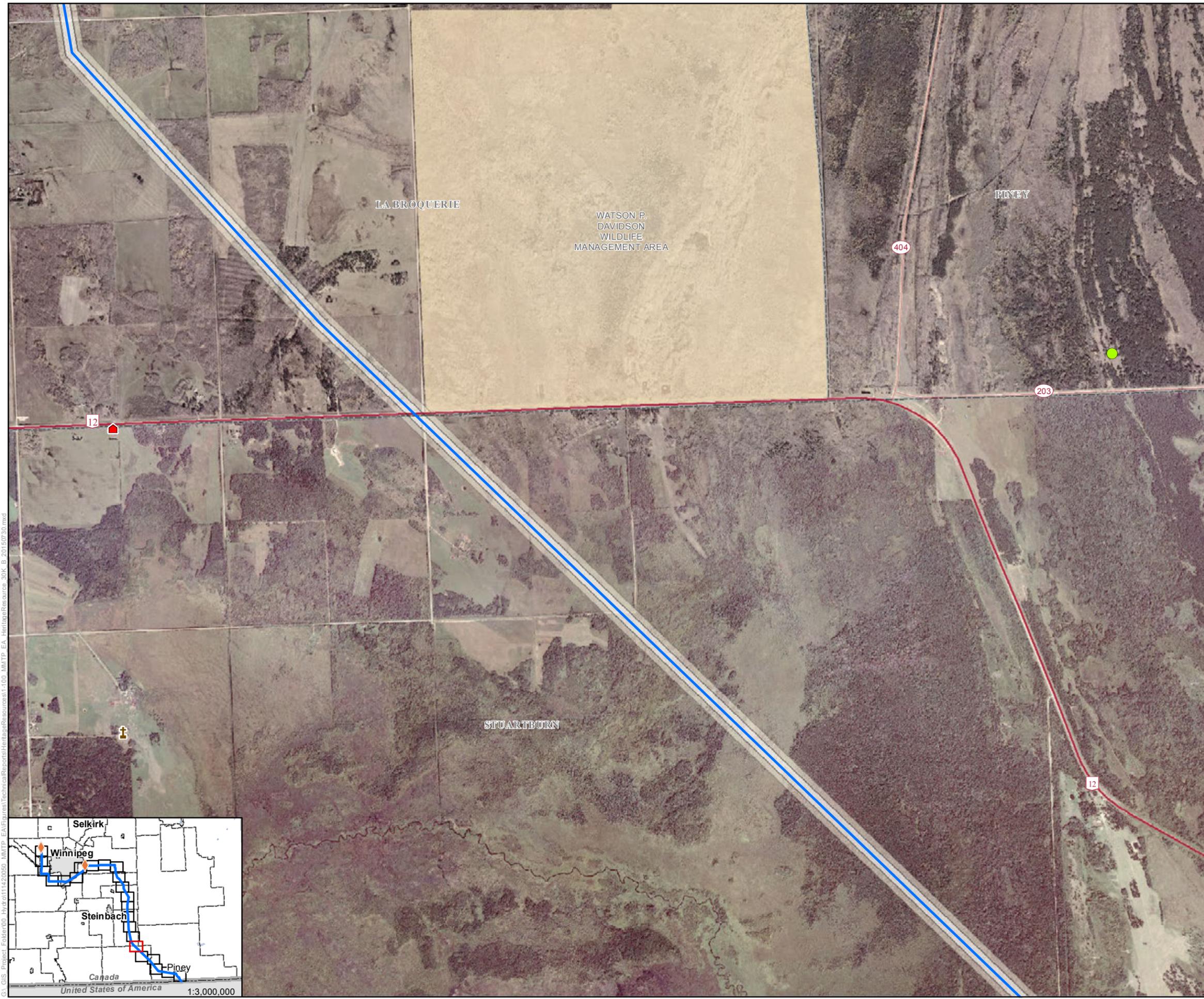
- Archaeological Site
- Cemetery
- School

Assessment Area

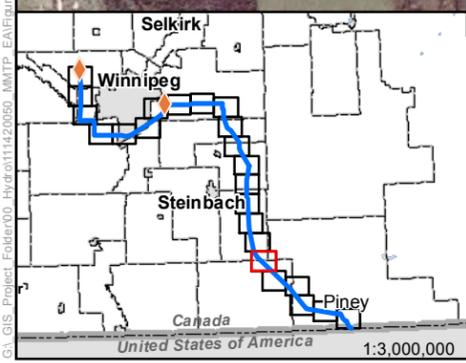
- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

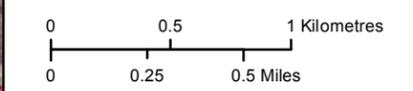
- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Wildlife Management Area
- Rural Municipality



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Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



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Heritage Resource Locations

Manitoba-Minnesota Transmission Project

Project Infrastructure

- Final Preferred Route (FPR)

Heritage Resource Features

- Archaeological Site
- Cemetery

Assessment Area

- Project Development Area (PDA)
- Heritage Resources Local Assessment Area

Landbase

- Community
- Railway
- Trans Canada
- Provincial Highway
- Provincial Road
- Rural Municipality

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: July 30, 2015



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0 0.25 0.5 Miles

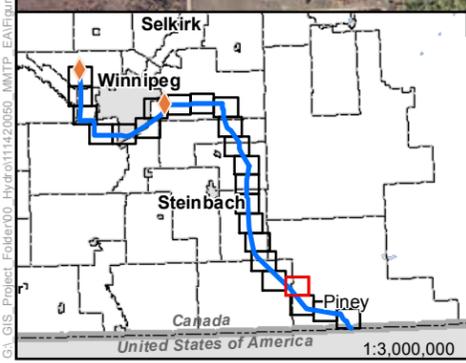
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Heritage Resource Locations

Map 1-100-20



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Heritage Resource Features

Cemetery
 School

Assessment Area

Project Development Area (PDA)
 Heritage Resources
 Local Assessment Area

Landbase

Community
 Railway
 Trans Canada
 Provincial Highway
 Provincial Road
 Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



0 0.5 1 Kilometres
 0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-21



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Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Heritage Resource Features

Archaeological Site

Assessment Area

Project Development Area (PDA)
 Heritage Resources
 Local Assessment Area

Landbase

Community
 Railway
 Trans Canada
 Provincial Highway
 Provincial Road
 Wildlife Management Area
 Rural Municipality

Coordinate System: UTM Zone 14N NAD83
 Data Source: MBHydro, ProvMB, NRCAN
 Date Created: July 30, 2015



0 0.5 1 Kilometres
 0 0.25 0.5 Miles

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Heritage Resource Locations

Map 1-100-22



SPUR WOODS
WILDLIFE
MANAGEMENT
AREA

PINEY

201

201

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Canada United States of America 1:3,000,000

Manitoba-Minnesota Transmission Project

Project Infrastructure

Final Preferred Route (FPR)

Heritage Resource Features

Archaeological Site

Assessment Area

Project Development Area (PDA)

Heritage Resources
Local Assessment Area

Landbase

Community

Railway

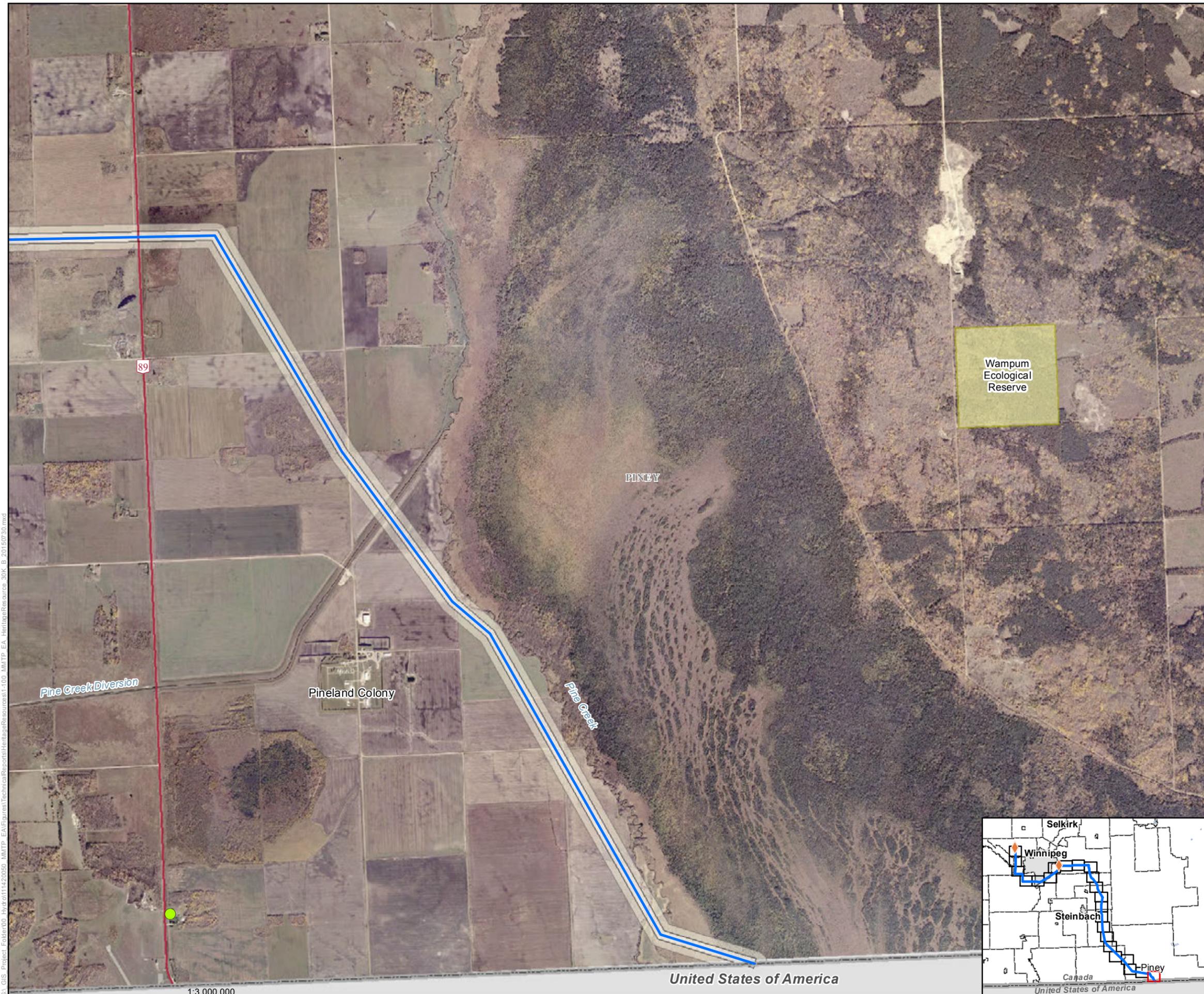
Trans Canada

Provincial Highway

Provincial Road

Ecological Reserve

Rural Municipality



Wapum
Ecological
Reserve

PINEY

Wapum
Ecological
Reserve

Pine Creek Diversion

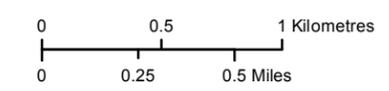
Pineland Colony

Pine Creek

United States of America



Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB, NRCAN
Date Created: August 06, 2015



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Heritage Resource Locations

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**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

Appendix B HERITAGE RESOURCES DATA

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|------------------------|------|-----------|-------------|-----------|
| Arondale 1522 | 14U | 665089 | 5514585 | School |
| Birchlawn 2111 | 14U | 708400 | 5447861.999 | School |
| Burns 2003 | 14U | 295840 | 5449144.999 | School |
| Cedar Grove 2152 | 14U | 687338 | 5476808 | School |
| Devon 1885 | 14U | 685212 | 5460213 | School |
| Ekron 2093 | 14U | 672056 | 5486180 | School |
| Elm Grove 1035 | 14U | 656865 | 5516674 | School |
| Evergreen (I) 1599 | 14U | 284299 | 5452919.999 | School |
| Evergreen (II) 1599 | 14U | 286165 | 5451065.999 | School |
| Giroux 174 | 14U | 675937 | 5494254 | School |
| Gobeil Special | 14U | 300836 | 5440959.999 | School |
| Harlech 2105 | 14U | 285757 | 5466221.999 | School |
| Kerry 2014 | 14U | 710174 | 5475205.999 | School |
| Lafortune 1304 | 14U | 707505 | 5462950.999 | School |
| Lorette West 990 | 14U | 649412 | 5514628 | School |
| Menisino 1582 | 14U | 709048 | 5441322.999 | School |
| Moose Meadow 2241 | 14U | 684865.04 | 5470136.05 | School |
| Prairie Grove 271 | 14U | 646763 | 5518183 | School |
| Richer 1026 | 14U | 683567 | 5503666 | School |
| Sandilands 2238 | 14U | 696560 | 5467193.999 | School |
| South Plympton (I) 81 | 14U | 651917 | 5520174 | School |
| South Plympton (II) 81 | 14U | 653407 | 5521486 | School |
| St. Joachim 981 | 14U | 675332 | 5486736 | School |
| St. Roch 1269 | 14U | 684406 | 5484819 | School |
| Suthwyn 530 | 14U | 647549 | 5526358 | School |
| Uppingham 1428 | 14U | 681172 | 5523104 | School |
| Wintergreen 2118 | 14U | 717155 | 5444925 | School |
| St. Jean Viammey | 14U | 689274.90 | 5480407.05 | Cemetery |
| St. Joachim | 14U | 680274.28 | 5488823.09 | Cemetery |
| Oostman Burial | 14U | 704080.00 | 5445903.00 | Cemetery |
| Badger | 14U | 283779.10 | 5453979.70 | Cemetery |
| Menisino | 14U | 708305.60 | 5441310.63 | Cemetery |

**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|---------------------------------------|------|------------|-------------|-----------|
| Our Lady of Assumption | 14U | 297698.42 | 5435400.87 | Cemetery |
| Piney Community | 14U | 282248.00 | 5436837.00 | Cemetery |
| Piney Old | 14U | 282178.30 | 5435107.91 | Cemetery |
| Sandilands | 14U | 696676.90 | 5467193.58 | Cemetery |
| St. Labre | 14U | 715484.00 | 5468604.00 | Cemetery |
| Vassar United | 14U | 293181.78 | 5442248.65 | Cemetery |
| Vassar Roman Catholic | 14U | 292613.50 | 5442257.27 | Cemetery |
| Vassar North Lutheran/Moodie | 14U | 292705.20 | 5437161.62 | Cemetery |
| Woodridge Lutheran | 14U | 707421.95 | 5462456.76 | Cemetery |
| Kerry | 14U | 710123.00 | 5475164.999 | Cemetery |
| South Junction Baptist | 14U | 298649.62 | 5434375.87 | Cemetery |
| Riverside | 14U | 703121.00 | 5451852.00 | Cemetery |
| St. Alexander | 14U | 707397.65 | 5462622.35 | Cemetery |
| Ste. Rita | 14U | 694187.43 | 5528903.93 | Cemetery |
| Monominto | 14U | 676623.33 | 5518881.92 | Cemetery |
| Orr | 14U | 669998.14 | 5523635.92 | Cemetery |
| Ostenfeld | 14U | 681424.73 | 5519508.90 | Cemetery |
| Queen's Valley | 14U | 687862.46 | 5529092.77 | Cemetery |
| Ridgeland Hutterite | 14U | 670943.44 | 5519175.39 | Cemetery |
| Our Lady Perpetual Health | 14U | 684901.15 | 5489830.53 | Cemetery |
| Church of God (Holdeman) | 14U | 663733.96 | 5500523.72 | Cemetery |
| Thibaultville Roman Catholic | 14U | 683854.56 | 5503797.09 | Cemetery |
| Ste. Anne Roman Catholic | 14U | 669848.92 | 5504221.56 | Cemetery |
| St. Elias | 14U | 701209.56 | 5432912.06 | Cemetery |
| Ascension of Our Lord | 14U | 699747.501 | 5442647.96 | Cemetery |
| Caliento Community | 14U | 689329.96 | 5446438.03 | Cemetery |
| Caliento Ukrainian Orthodox | 14U | 685077.98 | 5446994.097 | Cemetery |
| Holy Trinity Orthodox | 14U | 679533.77 | 5445118.108 | Cemetery |
| Lonesand | 14U | 694747.00 | 5458703.00 | Cemetery |
| John the Baptist | 14U | 686106.09 | 5445644.98 | Cemetery |
| St. Elias Orthodox | 14U | 701146.16 | 5432793.67 | Cemetery |
| St Nicholas (1905) Ukrainian Catholic | 14U | 692262.00 | 5431148.00 | Cemetery |
| St Nicholas (1917) Ukrainian Catholic | 14U | 693591.00 | 5435987.00 | Cemetery |

**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|--|------|-----------|------------|-----------------|
| St Nicholas (1955) Ukrainian Catholic | 14U | 695511.00 | 5434421.00 | Cemetery |
| St Nicholas Orthodox | 14U | 686235.04 | 5435531.78 | Cemetery |
| St. Peter & St. Paul Ukrainian Catholic | 14U | 683703.07 | 5440367.28 | Cemetery |
| Ridgeland | 14U | 699047.30 | 5449205.34 | Cemetery |
| Nativity of Blessed Virgin Mary Ukrainian | 14U | 685647.64 | 5450442.24 | Cemetery |
| St. Demetrius Catholic | 14U | 677882.92 | 5446000.08 | Cemetery |
| St. Isadore | 14U | 673074.34 | 5444968.10 | Cemetery |
| St. Peter & St. Paul | 14U | 698631.38 | 5442588.01 | Cemetery |
| St Peter & Paul Ukrainian Orthodox | 14U | 684754.70 | 5433957.01 | Cemetery |
| Vita North/Vita Community | 14U | 676095.70 | 5446648.54 | Cemetery |
| Stuartburn Ruthenian Greek Catholic | 14U | 682875.54 | 5457274.47 | Cemetery |
| Sts Peter & Paul Ukrainian Orthodox Chapel | 14U | 691192.98 | 5432477.72 | Cemetery |
| Zhoda Community | 14U | 679593.18 | 5458375.48 | Cemetery |
| Zhoda Community | 14U | 685294.57 | 5457767.07 | Cemetery |
| Notre Dame de Lorette | 14U | 653218.59 | 5511701.30 | Cemetery |
| Prairie Grove | 14U | 646846.10 | 5518023.57 | Cemetery |
| Prairie Rose | 14U | 656402.72 | 5503630.77 | Cemetery |
| Rosewood/Caledonia | 14U | 670885.34 | 5513706.77 | Cemetery |
| Ross Roman Catholic | 14U | 684768.00 | 5515071.15 | Cemetery |
| Ste. Genevieve Roman Catholic | 14U | 678140.48 | 5513276.77 | Cemetery |
| Unnamed | 14U | 689465.00 | 5480202.00 | Cemetery |
| South Junction Baptist | 14U | 298649.00 | 5434375.00 | Cemetery |
| Unnamed | 14U | 699459.00 | 5432692.00 | Cemetery |
| Unnamed | 14U | 709010.00 | 5444725.00 | Cemetery |
| Unnamed | 14U | 702015.00 | 5439440.00 | Cemetery |
| Unnamed | 14U | 666439.37 | 5526961.84 | Cemetery |
| Unnamed | 14U | 672610.43 | 5494143.44 | Cemetery |
| Unnamed | 14U | 697227.71 | 5467397.48 | Cemetery |
| Unnamed | 14U | 298098.00 | 5434740.00 | Cemetery |
| Unnamed | 14U | 676919.61 | 5433535.35 | Cemetery |
| Biedler | 14U | 671591.0 | 5481195.0 | Centennial Farm |

**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|--|------|-------------|---------------------|---------------------|
| Cote | 14U | 673018.0 | 5500517.0 | Centennial Farm |
| Kihn | 14U | 670872.0 | 5479317.0 | Centennial Farm |
| Hudson | 14U | 653672.0 | 5523318.0 | Centennial Farm |
| Therrien | 14U | 674972.0 | 5487817.0 | Centennial Farm |
| Perrin | 14U | 672172.0 | 5509117.0 | Centennial Farm |
| Hallama | 14U | 640572.0 | 5515618.0 | Centennial Farm |
| Johnson | 14U | 662472.0 | 5510817.0 | Centennial Farm |
| Heather | 14U | 651972.0 | 5517718.0 | Centennial Farm |
| Granger | 14U | 680172.0 | 5491117.0 | Centennial Farm |
| Arseny | 14U | 672271.0 | 5441716.0 | Centennial Farm |
| Thomsen | 14U | 659372.0 | 5523417.0 | Centennial Farm |
| Davidsson | 14U | 281316.6 | 5436472.9 | Centennial Farm |
| Winther | 14U | 663772.0 | 5514517.0 | Centennial Farm |
| McQuade | 14U | 655572.0 | 5520017.0 | Centennial Farm |
| Lamoureux | 14U | 647172.0 | 5506817.0 | Centennial Farm |
| St. Joachim | 14U | 680274.28 | 5488823.09 | Centennial Farm |
| Piney Road Bridge | 14U | 670574.2 | 5503769.41 | Designated Site |
| Ste. Anne Roman Catholic | 14U | 669848.92 | 5504221.56 | Designated Site |
| Monseigneur Tache Historic Site | 14U | 678140.48 | 5513276.77 | Designated Site |
| Sts. Peter and Paul Ukrainian Orthodox Church | 14U | 699212.88 | 5442768.85 | Designated Site |
| St. Elias Ukrainian Orthodox Church and Bell Tower | 14U | 699212.88 | 5442768.85 | Designated Site |
| New St. Elias Ukrainian Orthodox Church and Bell Tower | 14U | 699212.88 | 5442768.85 | Designated Site |
| DgKv-2 | | Data | Confidential | Archaeological Site |
| DgKv-3 | | Data | Confidential | Archaeological Site |
| DgKv-4 | | Data | Confidential | Archaeological Site |
| DgKw-1 | | Data | Confidential | Archaeological Site |
| DgKw-2 | | Data | Confidential | Archaeological Site |
| DgKw-3 | | Data | Confidential | Archaeological Site |
| DgKw-4 | | Data | Confidential | Archaeological Site |
| DgKx-1 | | Data | Confidential | Archaeological Site |
| DgKx-2 | | Data | Confidential | Archaeological Site |
| DgKx-3 | | Data | Confidential | Archaeological Site |

**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|---------|------|--------|--------------|---------------------|
| DgKx-6 | | Data | Confidential | Archaeological Site |
| DgLa-1 | | Data | Confidential | Archaeological Site |
| DgLb-1 | | Data | Confidential | Archaeological Site |
| DhLb-1 | | Data | Confidential | Archaeological Site |
| DhLc-1 | | Data | Confidential | Archaeological Site |
| DiLb-1 | | Data | Confidential | Archaeological Site |
| DiLb-2 | | Data | Confidential | Archaeological Site |
| DiLb-3 | | Data | Confidential | Archaeological Site |
| DiLb-4 | | Data | Confidential | Archaeological Site |
| DiLc-1 | | Data | Confidential | Archaeological Site |
| DiLc-2 | | Data | Confidential | Archaeological Site |
| DiLc-3 | | Data | Confidential | Archaeological Site |
| DjLc-1 | | Data | Confidential | Archaeological Site |
| DjLc-2 | | Data | Confidential | Archaeological Site |
| DjLd-1 | | Data | Confidential | Archaeological Site |
| DjLd-2 | | Data | Confidential | Archaeological Site |
| DkLc-1 | | Data | Confidential | Archaeological Site |
| DkLe-1 | | Data | Confidential | Archaeological Site |
| DkLf-10 | | Data | Confidential | Archaeological Site |
| DkLf-11 | | Data | Confidential | Archaeological Site |
| DkLf-12 | | Data | Confidential | Archaeological Site |
| DkLf-13 | | Data | Confidential | Archaeological Site |
| DkLf-15 | | Data | Confidential | Archaeological Site |
| DkLf-16 | | Data | Confidential | Archaeological Site |
| DkLf-2 | | Data | Confidential | Archaeological Site |
| DkLf-4 | | Data | Confidential | Archaeological Site |
| DkLf-5 | | Data | Confidential | Archaeological Site |
| DkLf-6 | | Data | Confidential | Archaeological Site |
| DkLf-7 | | Data | Confidential | Archaeological Site |
| DkLf-8 | | Data | Confidential | Archaeological Site |
| DkLf-9 | | Data | Confidential | Archaeological Site |
| DkLg-20 | | Data | Confidential | Archaeological Site |
| DkLg-27 | | Data | Confidential | Archaeological Site |
| DkLg-28 | | Data | Confidential | Archaeological Site |
| DILc-2 | | Data | Confidential | Archaeological Site |

**MANITOBA-MINNESOTA TRANSMISSION PROJECT
TECHNICAL DATA REPORT – HERITAGE RESOURCES**

Appendix B Heritage Resources Data
September 1, 2015

| Site | Zone | UTMX83 | UTMY83 | Site Type |
|---------|------|--------|--------------|---------------------|
| DILc-5 | | Data | Confidential | Archaeological Site |
| DILe-2 | | Data | Confidential | Archaeological Site |
| DILf-10 | | Data | Confidential | Archaeological Site |
| DILf-11 | | Data | Confidential | Archaeological Site |
| DILf-8 | | Data | Confidential | Archaeological Site |
| DILi-11 | | Data | Confidential | Archaeological Site |
| DILi-12 | | Data | Confidential | Archaeological Site |
| DILi-22 | | Data | Confidential | Archaeological Site |
| DkLg-2 | | Data | Confidential | Archaeological Site |
| DkLg-40 | | Data | Confidential | Archaeological Site |
| DkLg-31 | | Data | Confidential | Archaeological Site |
| DkLg-26 | | Data | Confidential | Archaeological Site |
| DkLh-1 | | Data | Confidential | Archaeological Site |
| DILi-21 | | Data | Confidential | Archaeological Site |