Northwest Gas Transmission Project
Environmental Assessment Report

Prepared by Manitoba Hydro

Transmission Planning & Design Division
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EXECUTIVE SUMMARY

The report summarizes the environmental assessment for the Northwest Gas Transmission Project. The environmental assessment report provides a description of the environmental assessment process, provides a description of the proposed project, summary of the Public Engagement process; summary of First Nations and Metis Engagement; characterization of the existing environment including biophysical and socioeconomic environments; defines assessment approach and methods; description of the potential effects and mitigation, significance of residual effects and proposed environmental protection measures.

Environmental Assessment

The proposed Northwest Gas Transmission Project requires a license for a Class 2 development under *The Environment Act* (Manitoba). The environmental assessment was completed in accordance with Manitoba Hydro's corporate and environmental policies as well as Manitoba's environmental assessment legislation.

Project Area and Description

The scope of the proposed Northwest Gas Transmission Project includes pre-construction, construction, operation and maintenance of the associated project equipment and facilities. The project scope includes the following: acquisition of property for the proposed pipeline and valve sites; construction of 8.5 km of six inch steel pipeline and 49.5 km of twelve inch steel pipeline; construction of two valve sites; tie-in into three existing valve sites; and maintenance of the pipeline.

Public Engagement process

From January to June 2015, Manitoba Hydro presented the Project and created opportunities to collect feedback and share information with municipal officials, stakeholder groups, local landowners and the general public. Project information was communicated through direct mail, email, newsletters, letters, advertisements in the local newspapers; project postcard and project website. Engagement methods that were used to provide opportunities of input included meetings, comment sheets, telephone calls, emails and public open houses. A summary of the public engagement process and results are included in the environmental assessment for the project.

First Nations and Metis Engagement

From January to June 2015, Manitoba Hydro presented the Project and created opportunities to collect feedback and share and receive information with First Nations and Metis who are located in the vicinity of the project or those who have indicated an interest in the Project. Manitoba Hydro began communicating project information with communities at the early stages of engagement and used the following communication tools to inform communities on the project; direct letters, project newsletters, advertisements in local newspapers; project posters and project website. Leadership meetings, community information sessions, telephone calls and

emails were engagement methods used to provide a direct opportunity to receive input on the project. A summary of the engagement activities for First Nations and Metis are included in the environmental assessment for the project.

Existing Environment

The proposed Project is located in both the Prairies Ecozone, Lake Manitoba Plain Ecoregion, Winnipeg Ecodistrict and the Boreal Plains Ecozone, Interlake Plain Ecoregion and Gimli Ecodistrict. The area is dominantly agricultural with some residential and industrial areas. There are also small forested (woodlot), shelterbelt and moist grass areas in the project area. Two species of conservation concern protected provincially and federally identified in the general project area includes the Loggerhead Shrike and the red-headed woodpecker.

Assessment Approach and Methods

The scope of the proposed Project includes pre-construction, construction, operation and maintenance. Decommissioning is not considered as it is anticipated the proposed Project will be maintained on a regular basis and in-service indefinitely. Project components include the construction of six inch and twelve inch steel pipeline and two new valve sites. The scope of the environmental assessment includes the identification of the spatial and temporal boundaries for the proposed project. The spatial boundaries consist of the project assessment area (project footprint), local assessment area (500 metres on either side of the project footprint, and the regional assessment area (Rural Municipalities of Rosser, Rockwood, and St. Andrews). It is anticipated that the lifespan of the proposed project will be indefinite and as a result a temporal boundary of 50 years was considered for the environmental assessment. Valued environmental component (VEC) selection criteria is discussed to explain how the VECs were selected. Interactions between the VECs and project activity phases are identified and methods used to assess project effects, cumulative effects and determination of significance is outlined.

Assessment of Project Effects

The environmental effects of the proposed project on VECs selected were identified using existing literature and environmental assessments, checklists and professional judgements. The significance of any residual environmental effects was evaluated using factors adapted from the Canadian Environmental Assessment Agency. Valued Environmental Components (VECs) were used to focus the assessment and included: Air Quality, Groundwater Resources; Agricultural Land, Shelterbelts, Creeks and Drains, Wetlands, Key Species at Risk and Economy. The assessment found no significant effects to any of the valued environmental components.

Assessment of Cumulative Effects

Cumulative effects are the environmental effects that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities (Canadian Environmental Assessment Agency, 2014). The following five-step environmental assessment process for cumulative environmental effects was considered for the proposed

project: Scoping, Analysis of effects, Identification of mitigation, Evaluation of significance, and Follow-up. The cumulative effects assessment for the Project considers the residual effects of the project VECs and interactions with other past, existing and future project actions.

Accidents and Malfunctions

Potential accidents and malfunctions that could occur during any phase of the Northwest Gas Transmission Project and that may potentially result in significant adverse environmental effects where identified and include risks of vehicle accidents due to increased construction traffic, machinery and equipment; releases of hazardous substances (i.e. fuels); and the release of drilling mud while horizontally directionally drilling (HDD). Mitigation measures to minimize or eliminate the potential environmental effects from accidents and malfunctions for the proposed project are also discussed.

Effects of the Environment on the Project

Potential effects of the environment that can affect the proposed Project include The Project may be subject to damage from extreme weather events (e.g., flooding); grass fires, and high winds resulting in potential damage to the pipelines and valve sites. Climate change will increase the risk over time of extreme weather events and grass fires.

Environmental Protection

Mitigation measures identified in the effects assessment will be implemented through an Environmental Protection Program. Manitoba Hydro's Environmental Protection Program provides the framework for implementing, managing and evaluating environmental protection measures consistent with regulatory requirements, corporate commitments, best practices and public expectations. Environmental protection plans will be prepared and implemented under the environmental protection framework to address environmental protection requirements in a responsible manner.

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1.0 INTRODUCTION

Manitoba Hydro is proposing to construct a new transmission pressure natural gas pipeline located northwest of the City of Winnipeg called the Northwest Gas Pipeline Project (The Project). The new pipeline will extend an existing pipeline located on the west side of Winnipeg (Oak Bluff) and run northeast to interconnect to the east side pipeline (Iles Des Chenes pipeline) near the City of Selkirk (Map 1-1). The proposed Project is a Class II development and requires a license under the *Environment Act (*Manitoba*).*

To satisfy this requirement, this environmental assessment report identifies: the scope of the project and assessment; description of the existing environment (including biophysical, socioeconomic and land use); potential environmental effects associated with the Project; mitigation for potential effects; effects of accidents and malfunctions and cumulative effects; evaluation of the significance of residual environmental effects. In addition, the Public Engagement process (PEP), developed for the proposed project, and First Nation and Metis engagement provide a summary of issues, concerns and comments received from interested parties.

1.1 Background

Manitoba Hydro's corporate mission is to provide for the continual supply of energy to meet the needs of the province and to promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of energy (Manitoba Hydro 2013). Natural gas plays a significant role in meeting Manitoba's energy needs. Certain geographic areas within Manitoba are experiencing accelerated growth in natural gas demand and to meet this demand, pipeline capacity and infrastructure must be increased. System planning studies at Manitoba Hydro have identified the area north of the City of Winnipeg as requiring additional gas capacity to:

- meet increased natural gas usage and community growth;
- provide reliable service to existing natural gas customers; and
- meet the future needs of the surrounding area.

1.2 Project Overview

The Project includes the construction of a 12 inch diameter steel pipeline that will connect to the existing 16 inch Oak Bluff pipeline located at the Rosser Gate Station (GS-031) located in the Rural Municipality (R.M.) of Rosser. The pipeline will run approximately 39 km north and east to connect to the existing 12 inch Liss Road Pipeline located in the R.M. of St. Andrews. In addition, a 12 inch pipeline will also be constructed from an existing 12 inch pipeline at Lockport Road in the R.M. of St. Andrews to the existing Selkirk Gate Station (GS-004) located immediately north of Railway Road in the City of Selkirk, for approximately 10.5 km to connect the existing Iles de Chenes pipeline (Map 1-1). In addition, the Project also involves the construction of approximately 8.5 km of a new 6 inch diameter steel pipeline from NW-30-12-2EPM north to tie-in to an existing Stonewall Gate Station (GS-010) located in NW-19-13-2EPM

at the south end of the town of Stonewall.

Two new valve sites are required and will be constructed at the following locations:

- 40 m x 30 m (0.12 ha) valve site in NW30-12-2EPM
- 20 m x 10 m (0.02 ha) valve site in SE-5-13-3EPM

Temporary working areas will be required where horizontal direction drilling tie in to the existing valve sites occurs for the proposed project. Section 3.5.4 provides information on the locations and size of the required temporary working area. A total area of approximately 4.4 ha will be required for the temporary work areas.

The planned in-service date of the proposed Project is fall of 2016.

1.3 Regulatory Environment

As indicated above, The Project is a Class II development and requires a licence under *The Environment Act* (Manitoba). It is our understanding that the Project does not trigger an environmental assessment under the *Canadian Environmental Assessment Act (2012).* This report will be provided as a component of the Environment Act Proposal Form submitted to the Province for regulatory review of the project.

The construction of the proposed Project is subject to all applicable provincial and federal legislation. In addition, each R.M. in which the proposed Project is located, have their own by-laws that govern land use planning, zoning and approvals for lands under municipal control.

The following outlines the applicable provincial and federal legislation as well as the applicable municipal by-laws.

1.4 Provincial Legislation

The proposed Project is subject to all applicable provincial legislation including the following acts and regulations:

- *The Contaminated Remediation Sites Act*
- *The Dangerous Goods and Handling and Transportation Act*
  - Dangerous Goods Handling and Transportation Regulation
  - Environmental Accident Reporting Regulation
  - Storage and Handling of Petroleum Products and Allied Petroleum Products Regulation
- *The Drinking Water Safety Act*
  - Drinking Water Quality Standards Regulation
  - Drinking Water Safety Regulation
- *The Endangered Species and Ecosystems Act*
  - Threatened, Endangered and Extirpated Species Regulation
- *The Environmental Act* (Manitoba)
  - Classes of Development Regulation

    - Licensing Procedures Regulation
    - Litter Regulation
    - Waste Disposal Grounds Regulation
- *The Heritage Resources Act*
- *The Highways and Transportation Act*
- *The Gas Pipelines Act*
    - Gas Pipeline Excavation Regulation
- *The Oil and Gas Act*
- *The Noxious Weeds Act*
- *The Planning Act*
    - Provincial Planning Regulation
- *The Water Protection Act*
- *The Wildlife Act*
- *The Workplace Safety and Health Act*
    - Workplace Safety and Health Regulation

1.5 Federal Legislation

The proposed Project is subject to the applicable federal acts and regulations:

- *The Canada Environmental Protection Act*
- *The Fisheries Act*
- *The Migratory Birds Convention Act*
- *The Species at Risk Act*

1.6 Municipal Planning

The proposed Project is located in the R.M.'s of Rosser, Rockwood and St. Andrews. These municipalities have their own municipal by-laws (law, regulation or rule of a local government) that administer land use planning, zoning and approvals for lands.

These R.M.s have also participated in the development of an integrated watershed management plan, the Netley Grassmere Integrated Watershed Management Plan.

1.6.1 Planning Area and Development Plans

The proposed Project is located within two Planning Districts: The South Interlake Planning District and the Red River Planning District (formerly the Selkirk & District Planning Area). Planning districts are formed when two or more municipalities join and by doing this, the municipalities can gain significant benefits from working together by coordinating their policies and programs relating to land use, development and public facilities (Manitoba Conservation and Water Stewardship website, 2015). Development plans, which are by-laws that outline the vision and goals of a community, are used to help with the development of planning areas of a municipality or planning district.

1.6.1.1 Red River Planning District

The Red River Planning District was incorporated in 1977 and encompasses the R.M.'s of St.

Andrews, St. Clements, East St. Paul, West St. Paul, the City of Selkirk and the Village of Dunnottar, an area of approximately 1,580 km^2 (680 mi^2). The development plan for the Red River Planning District provides a framework for development policies and decisions and states objectives for development by promoting economic, environmental, social and physical conditions of the area (Red River Planning District Website, 2015; Selkirk and District Planning Area Board, 2008).

1.6.1.2 The South Interlake Planning District

The South Interlake Planning District is approximately 1,588 km^2 (613 mi^2) and includes the R.M.'s of Rosser and Rockwood and the Towns of Stonewall and Teulon (South Interlake Planning District, 2011). The purpose of the South Interlake Planning District development plan is to provide the legally adopted statement of the Planning District Board's policies towards land use management and development as well as establishing guidelines for land use planning and development activities. In addition, the development plan provides policy direction to all other land use controls.

1.6.2 Netley-Grassmere Integrated Watershed Management Plan

The Netley-Grassmere Integrated Watershed Management Plan, developed collaboratively by the East Interlake Conservation District, Province of Manitoba, community stakeholders and watershed residents, is a ten year plan that includes actions for the protection, conservation and restoration of land, water and aquatic ecosystems within the Netley-Grassmere watershed (East Interlake Conservation District, nd.). The focus of the plan is to address priority of land and water issues that were identified by residents of the watershed including the following goals:

- improve surface water quality,
- adopt a watershed-based approach to managing surface water,
- protect and improve the quality of drinking water, and
- protect and restore the quality and integrity of natural areas to maintain a healthy watershed.

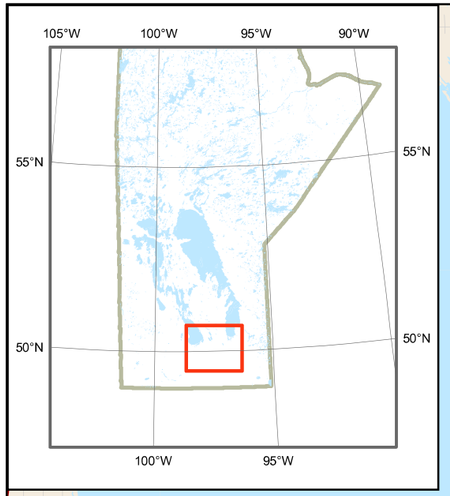
All work on upgrading or constructing of drains by agricultural producers and municipal governments is subject to the provisions of *The Water Rights Act*. This *Act* is intended to minimize or eliminate any negative impacts of drainage works on downstream landowners or jurisdictions and any negative environmental impacts.

1.7 Report Organization

The Environmental Assessment Report for The Project is organized into the following Chapters:

- Chapter 1 Introduction
- Chapter 2 Assessment Approach and Methods
- Chapter 3 Project Area and Description
- Chapter 4 Public Engagement process
- Chapter 5 Existing Environment
- Chapter 6 Potential Environmental Effects

- Chapter 7 Accidents and Malfunctions
- Chapter 8 Cumulative Environmental Effects
- Chapter 9 Effects of the Environment on the Project
- Chapter 10 Environmental Protection
- Chapter 11 Summary and Conclusion
- Chapter 12 References



Lake Winnipeg

Lake Manitoba

Shoal Lakes

Winnipeg Beach

Teulon

Selkirk

Stonewall

Stony Mountain

Beausejour

Portage La Prairie

Winnipeg

Ste. Anne

Niverville

Steinbach

Carman

Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Lakes
- Preferred Route
- Existing Natural Gas Transmission Pipeline
- Provincial Road
- Provincial Trunk Highway
- Existing Valve Site
- Proposed Valve Site
- Roads
- Rail Line
- Rivers

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

0 5 10 15 20 km
0 3 6 9 12 mi

1:500,000

Northwest Gas Transmission Project

Project Location

Draft: For Discussion Purposes Only

Map 1-1

File Location:

2.0 ASSESSMENT APPROACH AND METHODS

This chapter provides a description of the methods that were used to complete the environmental assessment for the proposed Project. The environmental assessment was completed with the objective of building a project considerate of local issues and concerns and providing sufficient information in order to satisfy the requirements of *The Environment Act* (Manitoba) and the Environment Act Proposal Report Guidelines Information bulletin (Manitoba Conservation and Water Stewardship, 2014).

2.1 Overall Assessment Approach

The assessment approach conducted for the Project included the following key steps:

- Definition of the assessment areas for the proposed Project including the Project, Local and Regional Assessment Areas. Identification of these assessment areas helped to determine the geographical extent over which potential environmental effects were anticipated to occur.

- The Project Description (Chapter 3.0) describes the project phases and activities that will occur for the proposed Project. Project phases included pre-construction, construction, site restoration and clean-up, operation and maintenance and decommissioning. Also included in the project description chapter is a discussion of project alternatives as well as project need and purpose.

- An Engagement Process (Chapter 4.0) including the Public, Stakeholders, First Nations and Metis was implemented for the proposed project. Issues and concerns understood during the PEP and First Nation and Metis Engagement were considered and included in the environmental assessment of the project (i.e. identification and rationale for selection of Valued Environmental Components (VECs).

- A review of existing information was conducted through existing literature searches; field observations noted during field visits; personal communications with the Manitoba Conservation Data Centre; and from the Public, and First Nations and Metis Engagement Process. This helped to provide an understanding of the existing environment and the conditions against which potential environmental effects of the proposed project were assessed. Information on the existing environment can be found in Chapter 5.0.

- VECs were selected based on criteria outlined in Section 2.5 below. The VECs were selected to represent effects on the different environmental components to represent issues and concerns understood during engagement, and help to guide the cumulative effects assessment.

- Potential project effects on VECs were identified for the biophysical and socio-economic environment and assessed. The approach used to assess effects is discussed in more detail below and the assessment of project effects can be found in Chapter 6.0. Mitigation

measures to avoid or minimize potential project effects were also identified as part of the project effects assessment.

- Significance of residual effects, effects that remain after mitigation is considered, were evaluated using factors adapted from the Canadian Environmental Assessment Agency (1994, 2000) and the Canadian Standards Association draft environmental assessment standard (1999).

- Description of Manitoba Hydro's Environmental Protection Plan which provides information on mitigation measures for the proposed project. General mitigation measures (Chapter 10.0) are also provided, and will be included with specific mitigation measures in a Construction Environmental Protection Plan (CEnvPP) to be developed for the project.

2.2 Scope

The following discusses the scope of the project including a brief summary of the construction activities and construction equipment associated with the project. Also included in the chapter is the scope of the environmental assessment and factors to be assessed. Spatial and temporal boundaries defined for the environmental assessment are also described.

2.3 Scope of the Project

The scope of the proposed Project includes pre-construction, construction, operation and maintenance of the proposed natural gas pipelines. More detailed information on these stages of project development can be found in Chapter 3.0 Project Description. The Project`s scope includes the following:

- Construction of approximately 8.5 km of 6 inch steel pipeline;
- Construction of approximately 49.1 km of 12 inch steel pipeline;
- Installation of two new above grade valve assemblies (termed 'valve sites' hereon in);
- Acquisition of ~28.4 hectares of property for temporary easements;
- Acquisition of ~0.14 hectares of property from permanent valve sites;
- Pipeline monitoring (leak and depth of cover surveys); and
- Pipeline and right-of-way maintenance

Construction activities for the proposed Project include surveying and flagging, clearing of vegetation, topsoil removal, pipe welding, trenching, directional drilling, lowering and tie-ins, pressure testing, restoration/clean-up, leak surveys, cathodic protection monitoring and depth of cover surveys. Construction equipment that will be used for the proposed project include: pick-up truck, backhoes, bulldozers, front-end loaders, sideboom, tandem/trailer, trackhoe, directional driller, trencher, vacuum truck, and welding rig. Equipment to be used during the operations and maintenance of the pipelines include a pick-up truck and/or an all-terrain vehicle (ATV) to access areas inaccessible by truck (i.e. along existing hydro line right-of-way).

2.4 Scope of the Environmental Assessment

The scope of the environmental assessment for the proposed Project includes the following: need for the project; project alternatives; identification of VECs; identification, description, analysis and mitigation of potential environmental effects; evaluation of residual environmental effects; and identification of follow-up actions. Cumulative effects of the proposed Project, effects of accidents and malfunctions and effects of the environment on the Project are also assessed. An engagement process for public, stakeholders, First Nations and the MMF was implemented, and concerns raised influenced the project.

2.4.1 Scope of Factors Assessed

The biophysical and socioeconomic environment is described with specific reference to the Project location and the Rural Municipalities of Rosser, Rockwood, and St. Andrews. Table 2-1 includes the biophysical and socioeconomic environmental factors that were assessed: Factors for adversity included biophysical features and values and socioeconomic conditions. Factors for significance included ecological and societal values, magnitude, geographical extent, frequency duration and reversibility (Chapter 6.0).

Table 2-1: Biophysical and Socio-economic Environmental Factors

Biophysical Environment Factors	Socio-economic Environment Factors
• Climate / Air quality • Geology/ Physiography • Soils • Surface water • Groundwater • Vegetation and Wetlands • Fish • Amphibian and Reptiles • Mammals • Birds • Species at Risk	• First Nations • Population • Employment / Economy • Infrastructure and Services • Land use • Heritage Resources

2.4.2 Spatial and Temporal Boundaries

The spatial and temporal boundaries identified for the environmental assessment of the proposed Project are described below.

2.4.2.1 Spatial Boundaries

The spatial boundaries for the environmental assessment of the proposed Project consist of project, local and regional assessment areas as described below.

Project Assessment Area: Footprint of the proposed Project including the pipeline right-of-way, valve sites, and temporary work areas. The approximate area of these components is 1.02 km^2 (102 ha) (Map 2-1). Table 2-2 provides the approximate area for each of the project components.

Table 2-2: Approximate Area of Project Components

Pipeline RoW in Road Allowance	0.73 km^2 (73 ha)
RoW Easement	0.24 km^2 (24 ha)
Temporary Work Areas	0.044 km^2 (4.4 ha)
Valve Sites	0.0014 km^2 (0.14 ha)
Total	1.02 km^2 (102 ha)

Local Assessment Area: The local assessment area is a 1.6 km area surrounding the proposed pipeline right-of-way and proposed and existing valve sites (0.8 km on either side) (Map 2-1). The size of the LAA was based on the notification area for landowners as part of the PEP. The approximate area of the local assessment area is 94.8 km^2 (9,480 ha). Significance of project effects will be determined within the local assessment area.

Regional Assessment Area: The regional assessment area includes the RMs of Rosser, Rockwood and St. Andrews. The assessment of cumulative environmental effects is considered in the regional assessment area. The approximate area of the regional assessment area is 2,455 km^2 (244,500 ha) (Map 2-2). Significance of cumulative effects will be determined within the regional assessment area.

2.4.2.2 Temporal Boundaries

The temporal boundaries that were identified for the identification and evaluation of potential project effects include the following:

Preconstruction Phase: The preconstruction phase includes activities that are completed prior to constructing the pipeline such as utility locates; obtaining permits, surveying and flagging and clearing of vegetation. The pre-construction phase is approximately one month.

Construction Phase: The construction phase will include all activities that are associated with the installation of the pipeline including transport and storage of equipment and materials to the site; topsoil removal; stringing of the pipe; welding of pipe; trenching of pipe; horizontal directional drilling; lowering and tie-in of the pipe; hydrostatic testing of the pipe and site restoration. The construction phase is anticipated to last approximately six months.

Operations and Maintenance Phase: The operations and maintenance phase includes activities such as leak surveys; RoW patrols; equipment maintenance; snow clearing; cathodic protection monitoring; and depth of cover surveys. As a result of the lifespan of a pipeline being

indefinite, a 50 year period has been identified as the temporal boundary for operations and maintenance activities.

2.5 Valued Environmental Components

Valued Environmental Components (VECs) are elements of the environment that are identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance (CEAA, 2014). VECs that have the potential to be adversely affected by project activities and result in residual effects will be carried forward to an assessment of cumulative environmental effects.

2.5.1 Selection of Valued Environmental Components

Valued Environmental Components (VECs) for the proposed Project were selected based on consideration of the following criteria:

- Interacts with the proposed project;
- Represents a broad environmental, ecological or human environment component
- VECs included in other Environmental Assessments completed for similar projects;
- Scientific, social, cultural, economic, historical or archaeological importance;
- Part of the heritage of First Nations and Metis or a part of their current use of lands for traditional purposes; or
- Identified as an important issues or concern by stakeholders as part of the Public Engagement process.

The final VECs identified for the environmental assessment and rationale for their selection is presented in Table 2-3.

Table 2-3: Valued Environmental Components and Rationale for Selection

Valued Environmental Component	Rationale for Selection
Air Quality	• Potential interaction with air quality during construction and operations and maintenance • Important to people and for wildlife and vegetation • Important both provincially and federally
Groundwater Resources	• Potential interaction with groundwater during construction • Concern identified during the Engagement process. Through public engagement groundwater was identified as an important resource to protect.
Agricultural Land	• Potential interaction during construction and operation • Concerns and opportunities identified during Engagement process. Through public

	engagement farm taps to future distribution lines and opportunities to fix drainage condtions were encouraged. Participants also expressed concern over crop losses • Dominant land use in the project area • Valued resource with substantial importance to the regional economy • Loss of agricultural land at the valve sites
Shelterbelts	• Potential interaction with shelterbelts during pipeline construction • Concern identified during Engagement process. Through public engagement shelterbelts were identified as important aesthetically, as a noise and wind barrier, and as a visual barrier. • Reduce soil erosion from water and wind • Provide important habitat to wildlife species (i.e. Breeding Birds; Species at Risk)
Creek and Drains	• Potential interaction with creeks and drains during construction (horizontal direction drilling) • Provincial regulated • Important resource in watershed management planning • Provide habitat for land and water wildlife.
Wetlands	• Potential interaction during construction activities • Concern identified during Engagement process. Roseau River Anishinabe First Nation indicated wetlands as a sensitive site during engagement activities • Serve important ecological functions • Provide habitat for flora and fauna • Marsh wetland found in project area may provide habitat for some species of amphibians and reptiles that might occur in the project area
Key Species at Risk	• Potential for provincially and federally protected bird and amphibian species to occur in the project area. • Potential interaction during construction activities
Economy	• Potential for benefits to local businesses during construction of the project.

2.5.2 Project and Environmental Component Interaction

In order to assess the effects of the proposed project on the environment, it is necessary to

determine which project activities and phases may interact with the VECs. The interaction matrix in Table 2-4 outlines project activities and phases and the potential interaction with the VECs identified for the project (Table 2-3). The interactions were defined based on experience with environmental assessments conducted for similar projects, professional judgement and information observed during and field visits.

Table 2-4: Project – Valued Environmental Components Interactions Matrix

Project Activities/Phases	Air Quality	Groundwater	Agricultural Land	Shelterbelts	Creeks and Drains	Wetlands	Key Species at Risk	Economy
Pre-Construction Phase								
Surveying and Flagging	X						X	X
Clearing of Vegetation	X			X		X	X	X
Construction Phase								
Topsoil Removal	X		X	X		X		X
Stringing of pipe	X							X
Welding of pipe	X							X
Trenching of pipe	X		X			X		X
Horizontal Directional Drilling	X	X	X	X	X			X
Lowering and Tie-in of pipe	X		X					X
Hydrostatic Pressure Testing of Pipe	X	X			X			X
Site Restoration	X		X			X	X	X
Fencing and Signing								X
Operations and Maintenance Phase								
Leak Surveys	X							X
Cathodic Protection Monitoring	X							X
Depth of Cover Surveys	X		X					X

VECS listed in the table above, that are shown to interact with any of the project activities/phases are assessed in more detail in Chapter 6.0 Potential Environmental Effects.

2.6 Assessment of Environmental Effects

The following describes the approach that was used to assess the potential effects of the proposed Project on the VECs identified for the project.

2.6.1 Assessment of Project Environmental Effects

The potential environmental effects of the proposed Project on the VECs were identified through

consideration of the following:

- Information and technical support drawn from published literature and government reports;
- Other environmental assessment reports conducted on pipeline projects and other linear developments;
- Input received through engagement activities (Public, First Nation and Metis);
- Information recorded during field visits; and
- Information provided from the interaction matrix between project activities and phases with the VECs (Table 2-4)

2.6.2 Mitigation of Project Environmental Effects

A description of mitigation measures that will avoid, reduce or eliminate the potential environmental effects is discussed in Chapter 6.0 Potential Environmental Effects and Chapter 10.0 Environmental Protection and Follow-up.

Description of the mitigation proposed to reduce or eliminate the potential environmental effects. Identification and evaluation of residual effects of the project (environmental effects that remain after the application of mitigation measures)

All mitigation will be documented in a project specific Construction Environmental Protection Plan (CEnvPP) for the project. The CEnvPP will document the environmental protection measures to provide for compliance with regulatory and other requirements, and to achieve environmental protection goals consistent with corporate environmental policies.

2.6.3 Identification and Assessment of Residual Effects

Residual effects are a resultant change in the environment after the application of mitigation measures. The significance of the residual environmental effects for the proposed Project on the project VECs was evaluated using factors and criteria adapted from the Canadian Environmental Assessment Agency (1994, 2000) and the Canadian Standards Association draft environmental assessment standard (1999). Significance of residual effects was evaluated based on the criteria and ratings in Tables 2-5 and 2-6.

Table 2-5: Direction of Effect Determination on VECs

Direction	Biophysical Environment	Socio-Economic Environment
Beneficial or Neutral	Neutral or net improvement to the environment expected.	A neutral or net improvement of social and economic well-being expected.
Adverse	Net impairment to the environment expected.	Net impairment of social and economic well-being expected.

Table 2-6: Evaluation Criteria and Ratings of Residual Effects on Project VECs

Criteria			
Societal context of the affected environmental components – includes nature and degree of protection provided	Low – no formal designation	Moderate – protected locally, regionally or provincially but not by legislation	High – designated or protected provincially, nationally or internationally by legislation
Ecological context – includes rarity and uniqueness, fragility, importance within ecosystem, importance to scientific studies	Low – no protected species or habitats, important features, scientific value	Moderate – species of concern, important features, resilient ecosystems, scientific value	High – threatened or endangered species, significant features, fragile ecosystems, scientific value
Magnitude – predicted disturbance compared to existing conditions	Low – no measurable disturbance in project assessment area (<1% of feature)	Moderate – measurable disturbance in local assessment area (1 – 25% of feature)	High – Measurable disturbance into regional assessment area (>25% of feature)
Geographic extent – area over which the effect will occur	Small – project or footprint assessment area	Moderate – local assessment area	Large – regional assessment area or larger
Frequency – rate of reoccurrence of the project activity causing the effect	Occurs once – during project construction or operation	Sporadic – during project construction or operation	Continuous – during project construction or operation
Duration – length of time the project activity will last	Short-term – several days during project construction	Moderate- term – during project construction	Long-term – after project construction
Probability of effect occurrence (after full effect of mitigation)	Low – Unlikely	Medium – Possible or Probable	High - Likely
Reversibility – time the environmental component will take to recover after the source of the effect ceases	Reversible	N/A	Not reversible
Significance (of residual effects)	Not Significant	N/A	Significant

2.7 Assessment of Cumulative Environmental Effects

Cumulative effects are the residual environmental effects that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities (Canadian Environmental Assessment Agency, 2014). The Canadian Environmental Assessment Agency Operational Statement (2012) provides guidance on how cumulative environmental effects should be considered under the Canadian Environmental Assessment Act 2012. Additionally, the Agency's Practitioner's Guide (1999) outlines a five-step environmental assessment process for cumulative environmental effects that was included for the proposed project: Scoping, Analysis of Effects, Identification of Mitigation, Evaluation of Significance, and Analysis of Cumulative Effects, Identification of Cumulative Mitigation Measures and Evaluation

of the Significance of Cumulative Effects (Chapter 8.0).

2.7.1 Scoping

The first step that was undertaken in the cumulative effects assessment for the proposed project was to define the scope of the assessment which helped to determine the VECs that should be included as well rationale for VECs that were not carried forward. Section 2.5.1 defines the VECs that were included and provides rationale for why they were considered VEC's. Chapter 8.0 provides additional information on the VECs that were considered for the cumulative effects assessment for the proposed project. The spatial boundary identified for the cumulative effects assessment area includes the Regional Assessment Area. The lifespan of a steel pipeline is considered indefinite with proper and regular maintenance. For the purpose of this environmental assessment a temporal boundary of 50 years will be used for the duration of residual effects and any required follow-up. Section 8.1.1.2 provides additional information on the spatial and temporal boundaries identified for cumulative effects assessment.

Existing and future projects/activities that occur in the regional assessment area that have the potential to interact cumulatively with the Project VECs were identified. Potential effects that may result from the interaction of other projects and actions with the proposed Project are also discussed.

2.7.2 Analysis

The analysis of the cumulative effects that may result from the interaction with the physical activities of the proposed project in conjunction with actions for other existing and future projects on the VECs selected for the proposed Project is discussed. Section 8.1.2. provides information on the analysis conducted for the proposed Project.

2.7.3 Mitigation

Mitigation of cumulative effects by technically and economically feasible measures that can mitigate any adverse cumulative effects (CEAA 2014) were identified. Mitigation considered include measures that can avoid, reduce or compensate for the effect.

2.7.4 Determination of Significance

Residual cumulative environmental effects were evaluated using the same criteria for potential project effects to the VECS: ecological value, societal value, magnitude, geographic extent, frequency, duration, and reversibility. The significance of any adverse environmental effects that was likely to result from the proposed Project in combination with other past, present and future projects and their activities/actions after implementation of mitigation was also determined.

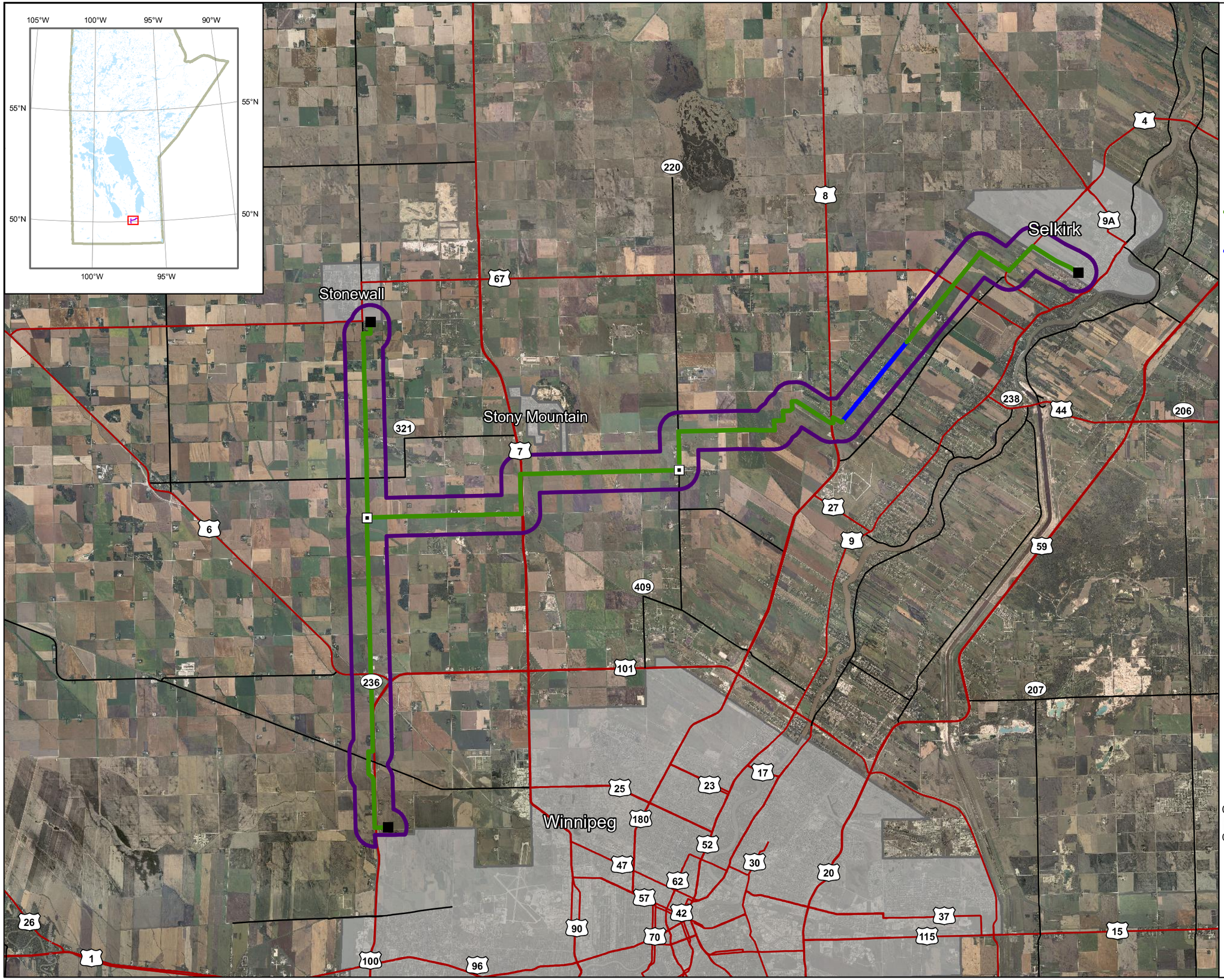
2.7.5 Follow-up

Follow-up was recommended to address both cumulative effects (Chapter 8.0) and project-specific environmental effects (Chapter 6.0). Chapter 10.0 provides more detail for the

Environmental Protection and Follow-up to be implemented for the proposed project.

2.8 Accidents and Malfunctions

The potential effects that may occur from accidents and malfunctions as a result of the construction and operation activities for the proposed project are discussed in Chapter 7.0. Potential events were identified based on a review of similar accidents and malfunctions identified in environmental assessments completed for similar project. Mitigation measures to reduce or eliminate the potential for accidents and malfunctions are also provided in Chapter 7.0.



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Project Assessment Area (Preferred Route)
- Local Assessment Area
- Existing Natural Gas Transmission Pipeline
- Provincial Road
- Provincial Trunk Highway
- Existing Valve Site
- Proposed Valve Site

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

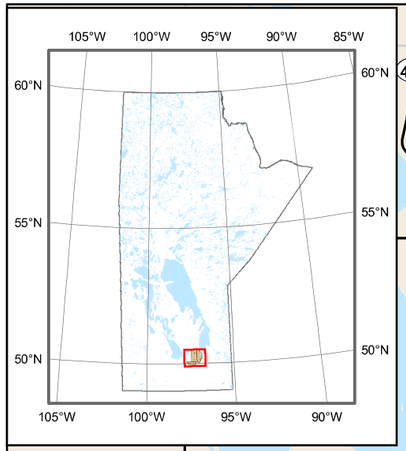
0 5 10 km
0 3 6 mi
1:150,000

Northwest Gas Transmission Project

Project and Local Assessment Area

Draft: For Discussion Purposes Only

Map 2-1



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Regional Assessment Area
- Lakes
- Parks
- Preferred Route
- Existing Natural Gas Transmission Pipeline
- Rail Line
- Provincial Road
- Provincial Trunk Highway
- Roads
- Rivers
- Existing Valve Site
- Proposed Valve Site

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

0 5 10 Kilometres
0 3 6 Miles

1:400,000

Northwest Gas Transmission Project

Regional Assessment Area

Draft: For Discussion Purposes Only

Map 2-2

3.0 PROJECT AREA AND DESCRIPTION

This chapter of the environmental assessment report provides a description of the proposed Project, including information on project location, land ownership, alternatives, phases, components and activities, construction materials, waste products, workforce, and schedule.

3.1 Project Location

The proposed Project is located in the Rural Municipalities of Rosser, Rockwood and St. Andrews and will be just outside the City of Winnipeg between the Town of Stonewall, the community of Stony Mountain and the City of Selkirk, Manitoba. The Project will require the construction of both 6 inch and 12 inch steel pipeline. The 12 inch diameter steel pipeline will connect to the existing 16 inch Oak Bluff pipeline at an existing Gate Station located in the R.M. of Rosser in SW-19-11-2EPM. The pipeline will travel approximately 600 m crossing under Provincial Truck Highway (PTH) 101. Immediately on the west side of PTH 101, the pipeline turns directly north within the existing PTH right-of-way and travels approximately 13.2 km until 1.6 km south of PR321. Here the proposed 12 inch pipeline turns east and travels approximately east/northeast 25.1 km where it will tie-in to the existing Liss Road Pipeline located in the R.M. of St. Andrews. A 12 inch pipeline, 10.1 km in length will also be constructed to an existing Gate Station located immediately north of Railway Road in the City of Selkirk. The property description for the proposed 12 inch steel pipeline and looping line is as follows: Township 11, Range 2, Section 19; Township 11 Range 1, Sections 24, 25 and 36; Township 12, Range 1, Section 1, 12, 13, 24, 25; Township 12, Range 2, Sections 27, 28, 29, 30, 34; Township 13, Range 2, Sections 1, 2 and 3; Township 13, Range 3, Section 2, 3, 4, 5, 6 East of the Prime Meridian (EPM). River lots/lots crossed by the proposed 12 inch pipeline include: ADOT 22 to 51; ADOT Bbb; ADOT CCC; ADOT102 to 106; ADOT109A to 113A; ADOT 114; ADOT Hhh; ADOT 121A to 124; PL2410; CLOT A, C, 9, 9A, E; G; and L; CLRL 1, 5, 8, 11, 15, 19, 21, 25, 28 and 29; 1-26644; 2 and 3-34782; 1-4-9258; 2-4-9258; and 8 to 12-7-2331.

The proposed 6 inch steel pipeline will be constructed from 1.6 km south of PR 321 in NW of Section 30, Township 12, Range 2EPM and will continue north approximately 8.5 km towards the Town of Stonewall, tying-in to an existing Gate Station located in the RM of Rockwood in the NW quarter of Section 19, Township 13, Range 2EPM adjacent to Winfield Road. The property description of the 6 inch steel pipeline is as follows: Township 12, Range 2, Section 31; Township 13, Range 2, Sections 6, 7; 18, 19 EPM.

Appendix A includes a set of drawings that provides additional information on the location of the proposed 6 inch and 12 inch pipelines, pipeline RoW and existing and proposed above grade valve assemblies; size and area of the temporary working areas; and construction and installation methods for the proposed pipeline. Appendix B includes site photographs taken during site visits.

3.2 Land Ownership

Land ownership information for the proposed Project, including the proposed 6 inch and 12 inch

pipelines; valve sites; and temporary working areas are found in Appendix C Table C-1. Information in the Table includes the project component, Property Description, Land Use, Tenure required (existing, easement, purchase, or no requirement), Land Use, and Property Owner.

The proposed project will be located predominantly in existing road-right-of-way, but where needed Manitoba Hydro will enter into an easement agreement with affected landowners (Appendix C, Table C-1). Easements that are required for the proposed pipeline right-of-way will be up to 30 metres wide and are identified on the project maps in Appendix A. The temporary work areas and proposed valve sites will also require temporary working easements. The total areas of easement required for the proposed project is approximately 285,400 m^2 or 28.5 hectares.

3.3 Project Alternatives

3.3.1 Project Need and Purpose

System planning studies at Manitoba Hydro have identified the area north of the City of Winnipeg as requiring additional gas capacity to:

- meet increased natural gas usage and community growth;
- provide reliable service to existing natural gas customers; and
- meet the future needs of the surrounding area.

The proposed Project will provide needed transmission pipeline capacity north of the City of Winnipeg. The proposed project will also provide a redundant supply to the natural gas customers north of Winnipeg, provide redundant capacity to support the City of Winnipeg and provide operational flexibility in the Winnipeg transmission network. This redundancy builds reliance into the transmission system in case of emergencies to maintain system continuity.

3.3.2 Alternatives

Map 3-1 outlines the alternatives routes that were identified for the proposed Project to address the need for additional gas capacity to meet increased usage and community growth and to address issues of reliable service to existing customers.

During the preliminary stages of designing the Project, the alternative routes were provided to the following stakeholders:

- RM of Rockwood
- RM of Rosser
- RM of St. Andrews
- RM of West St. Paul
- City of Selkirk
- City of Winnipeg
- Centreport Canada Way

- Manitoba Infrastructure and Transportation

Feedback received was considered in the final design of the preferred route.

A summary of the input and concerns for the Project that were received and considered in the selection of a preferred route included the following:

- Concern regarding potential impacts to residences
- Concern regarding groundwater in the vicinity of PR 321 near Stony Mountain
- Location of existing and proposed buried utility lines that have the potential to interact with the Project
- Development of an 8 to 12 line rail yard development on Centreport Canada lands near the intersection of Highways 221 and 101 in the vicinity of the proposed pipeline
- Concern regarding impacts to MIT's intent to add lanes to Provincial Trunk Highway 9

3.3.3 Preferred Route

As outlined in Section 3.3.2, Manitoba Hydro presented alternative routes to local municipal officials and other stakeholders to receive feedback on the project to consider in the design of a preferred route.

Manitoba Hydro identified a preferred route that was presented during the Public Engagement process, which began August 2014, to inform stakeholders and the public of the activities being proposed by Manitoba Hydro for the proposed project. Utilizing a variety of notification methods and engagement mechanisms to discuss the Project, Manitoba Hydro received feedback regarding the project and achieved the goals which were set forth at the onset of the program (Section 4.1). Specific details and results of the PEP are discussed in Chapter 4.0 and in Appendix D. In addition to the PEP, a review of satellite imagery and site reconnaissance activities were conducted on the preferred route to identify sensitive areas such as wetlands and shelterbelts/treed areas.

Manitoba Hydro considered both the information received from the PEP as well as the sensitive site information and minor adjustments to the proposed pipeline route were identified to minimize or avoid potential environmental effects. The final preferred route selected can be found in Map 3-2.

In addition to the information received during the PEP for the proposed project,

3.4 Project Phases and Activities

The proposed project will be carried out in the following phases:

- Planning and Design
- Tender of Contracts
- Pre-construction
- Construction

- Operation and Maintenance
- Decommissioning

3.4.1 Planning and Design

This phase of the proposed project includes:

- Engagement with stakeholders including municipal officials, property owners, and the public;
- Engagement with First Nations and Metis;
- Site planning and design;
- Acquisition of property through easement or purchase where required;
- Completion and submission of the environmental assessment; and
- Acquisition of necessary approvals and/or permits.

3.4.2 Tender of Contracts

Certain work activities for the proposed project may be tendered out for bid. Tender of contracts would include preparation of the contracts for bid, bids review and selection, and award.

3.4.3 Pre-Construction

Pre-construction activities for the proposed project include:

- Ensuring that all utility locations and necessary permits required to start work activities are obtained;
- Surveying and flagging the Right-of-Way (RoW); pipeline alignment; areas for the new above grade valve assemblies and areas for the temporary work areas prior to construction to ensure the pipelines are installed as designed; and
- Clearing for any shrub or tree cover that may be required will also be determined prior to construction activities.

3.4.4 Construction

The proposed 6 inch and 12 inch pipelines will be installed to meet industry standards and Manitoba Hydro representatives will be onsite to monitor construction and installation activities. Construction activities for the new 6 inch and 12 inch pipelines include the following activities:

1) **Topsoil removal** – on agricultural land the topsoil will be pushed to the side of the right-of-way to prevent mixing of topsoil with the subsoil and to minimize compaction.
2) **Stringing** – the pipeline is “strung” or placed along the proposed route (Photograph 3-1).
3) **Pipe Welding** – the pipe will be welded in accordance with CSA Z662-11 and all welds will be non-destructively examined to confirm quality of the weld (Photograph 3-2).
4) **Trenching** – the pipelines will be installed in a trench approximately 46 cm to 61 cm (18 to 24 inches) wide and 1.1 metres (3.6 feet) deep using track-hoes or a large trenching machine (Photograph 3-3).
5) **Horizontal Directional Drilling (HDD)** – all road crossings; rail lines, waterways (i.e.

Omand's Creek, East Branch Colony Creek, Grassmere Creek Drain, and Parks Creek) and environmentally sensitive areas will have piping installed by directional drilling to minimize potential impacts to these areas. Manitoba Hydro's HDD Execution Plan will be completed for all watercourses crossings to meet the intent of the former DFO Operational Statement for directional drilling.

Photo 3-1: Welding of steel pipeline

Photo 3-2: Trackhoe stringing the pipeline into the trench

Photo 3-3: Pipeline lowered into the trench

6) **Lowering and Tie-ins** – the majority of the pipeline will be welded above grade and lowered into place.
7) **Pressure testing** – prior to putting the pipeline into services it will be pressure tested to confirm the pipeline's strength and to ensure there are no leaks. Water that will be used for hydrostatic testing will be obtained from municipal sources. Hydrostatic testing of the pipelines will be in accordance with the Project EPP and Manitoba Conservation and Water Stewardship Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines (MWS 2007).

Construction activities for the two new valve sites include the installation of the above grade valve assembly and construction areas for the following: areas that require materials for site foundation; areas that require materials for the below grade piping compaction with granular ad native backfill.

3.4.5 Site Restoration and Clean-up

After the 6 inch and 12 inch pipelines are operational, and the new valve sites are installed, topsoil will be re-spread and leveled on all disturbed areas to allow regular land use to resume to pre-disturbance conditions. Any areas of cultivated land that are located within or adjacent to the pipeline right-of-way will be seeded by landowners as part of their farming operations. Other areas of exposed soils resulting from project construction activities, such as the five temporary work areas, will be re-seeded using an approved seed mix.

3.4.6 Operation and Maintenance

Once the proposed 6 inch and 12 inch pipelines are operational, the pipeline will be maintained to ensure that it is operating safely. Manitoba Hydro has a formal Integrity Management Program (Manitoba Hydro 2015) that will assess potential risk to the pipeline and specify programs that will be used to monitor the conditions of the pipeline including:

- Leak Detection Surveys – a gas detection device is used to inspect the entire length of the pipeline to detect any natural gas leaks.
- Right-of-way patrols – maintenance personnel will inspect the right-of-way for signs of damage or potential risks to the pipeline.
- Cathodic protection monitoring – qualified technicians will assess the condition of the cathodic protection that is applied to the pipeline.
- Depth of cover surveys – measurements of the depth of soil cover above the pipeline will be taken to ensure the pipeline is adequately protected from potential damage.

Operation and maintenance activities that will occur for the new above grade valve assemblies include:

- Yearly maintenance including leak check and equipment maintenance
- Snow clearing of the site if necessary
- Supervisory Control And Data Acquisition (SCADA) monitoring - is the remote control of equipment at the site and monitoring that will identify emergency situations that are occurring on the pipeline (i.e. damage to the pipeline). In the event damage has occurred, the SCADA monitoring will trigger alarms at specific low pressure settings and the appropriate personnel will be notified to respond to the situation immediately.

3.4.7 Decommissioning

It is anticipated that the new 6 inch and 12 inch pipelines as well as the above grade valve assemblies will be in-service indefinitely and will be maintained on a regular basis and therefore there are no plans for decommissioning of these project components.

3.5 Project Components and Activities

3.5.1 Project Components

The Project has two main components including: 6 inch and 12 inch steel pipeline; and above grade valve assemblies.

3.5.2 Steel Pipelines

The proposed project will require the installation of both 6 inch and 12 inch steel pipeline. The 12 inch steel pipeline will be constructed from the existing valve site located on Selkirk Avenue in the RM of Rosser and will continue north and then east, approximately 49.1 km to tie-in to an existing Selkirk Gate Station located immediately north of Railway Road in the City of Selkirk. The 6 inch pipeline will be constructed from a new proposed valve site located in NE30-12-2EPM and will continue north approximately 8.5 km to tie-in to an existing valve site located in

NW19-13-2EPM. The location of the pipeline for the proposed project can be found on Map 3-1. Photograph 3-3 shows an example of steel pipeline that will be similar to the steel pipeline used for this project.

3.5.3 Above Grade Valve Assemblies

The proposed locations of the new above grade valve assemblies are shown in Map 3-2. Photograph 3-4 below shows the existing valve site for the proposed project that will be similar to the new ones required for the project. Figures 3-1 and 3-2 show more detailed drawings of the proposed above grade valve assemblies (conceptual layout) and installations procedures. The new above grade valve sites will be located in NW-30-12-2EPM and SE-5-13-3EPM and the dimensions of the proposed valve sites are 40m x 30m and 20 m x 10m respectively.

Photo 3-4: Existing Gate Station Valve Site Tie-in location, City of Selkirk

3.5.4 Temporary Work Areas

Temporary work areas will be required for the installation of the valve sites and areas to be directional drilled. Table 3-1 provides the location of the temporary work areas and size of the easement required. A total of 4.4 ha will be required for temporary work easements.

Figure 3-1: Drawing of the proposed valve site in NW30-12-2-EPM

Figure 3-2: Drawing of the proposed valve site in SE5-13-3EPM

Table 3-1: Location and Size of Temporary Work Easements	
SE-24-11-1EPM	100 m x 30 m
NE-25-11-1EPM	39 m x 15 m
SE-25-11-1EPM	317 m x 15 m
NE-1-12-1EPM	100 m x 30 m
SE12-12-1EPM	100 m x 30 m
NE-25-12-1EPM	100 m x 30 m
NW-31-12-2EPM	60 m x 20 m
SW-2-13-2-EPM	136 m x 30 m
SW-6-13-2EPM	60 m x 20 m
SE-5-13-3EPM	100 m x 30 m
SW-5-13-3-EPM	100 m x 30 m
River Lot ADOT46/47	150 m x 30 m
River Lot ADOT49/50	150 m x 30 m
River Lot ADOT50/51	100 m x 30 m
River Lot ADOT102/103	50 m x 30 m
River Lot CLRL30	30 m x 30 m

3.5.5 Project Activities

Table 3-2 outlines the activities that will be carried out for each component of the project during pre-construction, construction and operations and maintenance phases for the proposed Project.

Table 3-2: Northwest Gas Transmission Project Components and Activities

Project Component	Project Activity	Project Phase		
		Pre-Construction	Construction	Operations and Maintenance
6 inch and 12 inch steel pipeline	Surveying and Flagging	X	X	
	Clearing of Vegetation	X		
	Topsoil removal		X	
	Stringing		X	
	Welding		X	
	Trenching		X	
	Horizontal Directional Drilling		X	
	Lowering and Tie-in		X	
	Hydrostatic Pressure Testing		X	
	Site Restoration		X	
	Leak Surveys			X
	Cathodic Protection Monitoring		X	X
	Depth of Cover Surveys		X	X
Valve Sites	Surveying and Flagging	X		
	Clearing Vegetation	X		

Table 3-2: Northwest Gas Transmission Project Components and Activities

Project Component	Project Activity	Project Phase		
		Pre-Construction	Construction	Operations and Maintenance
	Topsoil removal		X	
	Pipe welding		X	
	Site Restoration		X	
	Leak Surveys			X
	Cathodic Protection Monitoring		X	X
Temporary Work Areas	Surveying and Flagging	X		
	Clearing vegetation	X		
	Topsoil removal		X	
	Directional Drilling		X	
	Site Restoration		X	

3.6 Project Design Details

The design details for the Project will meet or exceed the requirements of the Manitoba Public Utilities Board, the CSA Z662-11 Oil and Gas Pipeline Systems Code and all applicable Manitoba Hydro Gas Standards. These design details include the following:

- The proposed pipelines will be installed one metre (m) below grade which will allow for adequate protection of the pipeline if farm equipment or other large machinery travels over the pipelines.
- Valves will be installed at both ends of the new pipeline to control the natural gas flow
- The valves sites will be installed within Manitoba Hydro owned property and protected by bollards and fencing
- The pipeline location will be marked at each mile road in any location where the pipeline crosses waterways or other service roads
- Corrosion on the pipeline will be controlled through a factory pipe coating and cathodic protection
- The majority of the proposed pipeline will be installed predominantly in road right-of-way
- Road crossings, rail lines, waterways and environmentally sensitive areas will be directionally drilled.
- Existing access (i.e. provincial and municipal road, ditches, and trails) will be used for construction activities

3.7 Construction Equipment and Vehicles

Construction equipment that will be used for the construction of the proposed Project includes: ½ ton to one ton trucks; backhoe; bulldozer; Directional Drill; front end loader; sideboom; tandem/trailer; trackhoe; trencher; vacuum truck and welding rig. During operations and maintenance activities equipment that may be used includes: ½ to one ton truck; and/or All-Terrain Vehicles (ATV) to access the pipeline and above grade valve assemblies.

3.8 Construction materials

Construction materials that will be required for the proposed Project include:

Transmission Pipeline

- 6 and 12 inch steel pipeline
- Bentonite for direction drilling
- Pipeline Fittings
- Water for directional drilling
- Sand

Valve Sites

- ¾" down crushed limestone for
- Vertical pipe risers
- Sand (to cover exposed pipe)
- Fencing

3.9 Fuels and Hazardous Materials

Fuels and hazardous materials likely to be used during construction of the proposed Project are diesel and gasoline. The quantities of fuels and hazardous materials to be used in the construction project have not been determined. No fuels or other hazardous substances will be stored in the project area after construction.

Storage sites for fuel shall be secured with signage, and a permit will be obtained from Manitoba Conservation and Water Stewardship. They will be located greater than 100 m from creeks and drains. Any hazardous wastes will be stored separately and transported in accordance with applicable legislation (Manitoba Provincial Dangerous Goods Handling and Transportation Act), to a licensed disposal and/or treatment facility.

3.10 Water for Hydrostatic Pressure Testing

Water that may be required for the hydrostatic pressure testing of the pipeline will be trucked from existing municipal sources in the project area to the construction sites. Hydrostatic testing and the water released from testing will be in accordance with the Project EPP and the Manitoba Water Stewardship Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines (MWS 2007).

3.11 Waste Disposal and Treatment

Non-hazardous solid waste (e.g. construction materials) will be collected at the construction sites and transported to a licensed waste disposal facility (i.e. Brady Road Landfill and City of Selkirk Waste Transfer Station). Porta-potties will be provided under contract for field construction crews.

3.12 Workforce

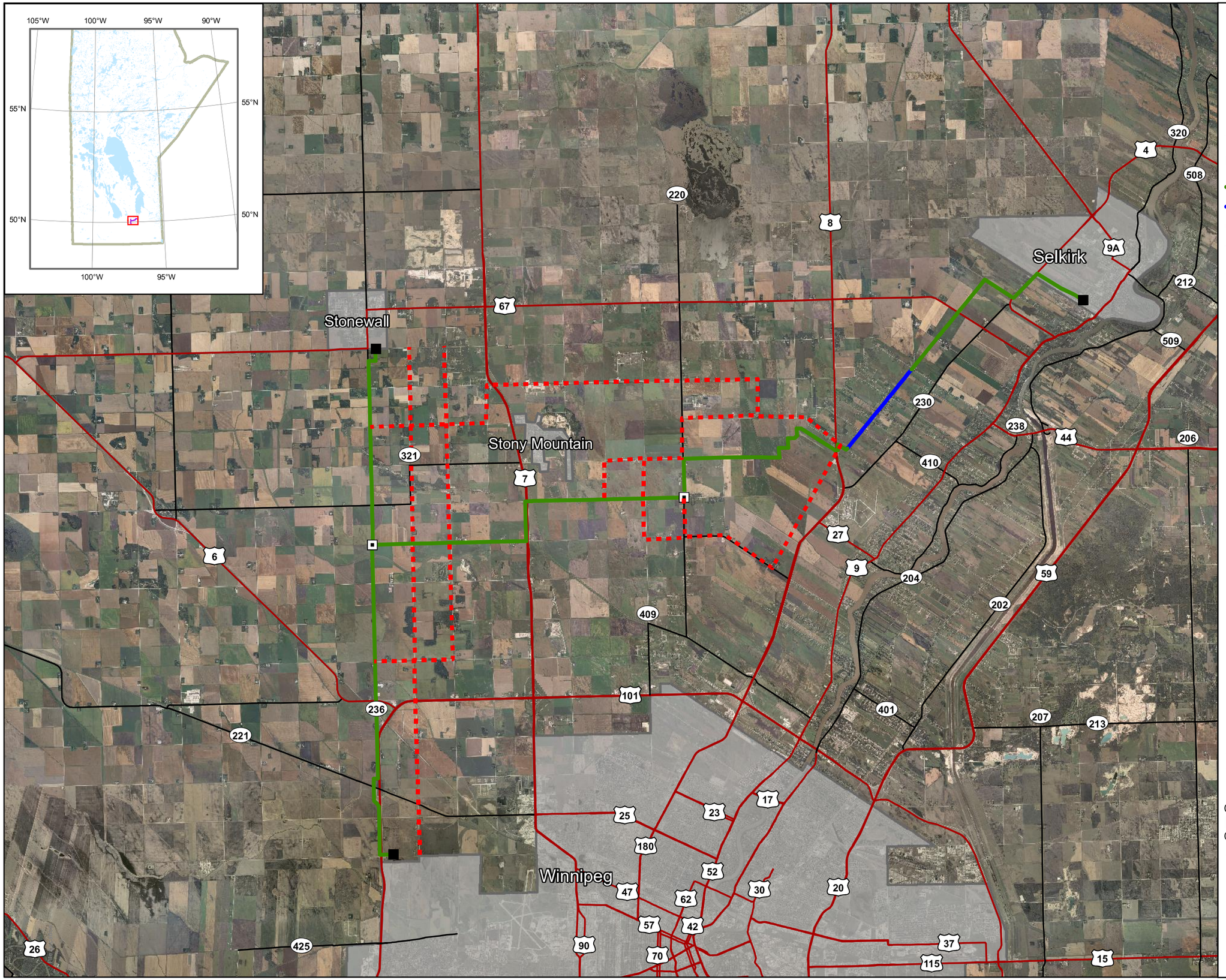
The planning, design, preconstruction, and operation of the proposed Project will be conducted primarily by Manitoba Hydro employees. A contractor will be hired to complete the construction. All construction activities will be supervised by Manitoba Hydro inspectors.

The workforce during construction will be on average of approximately 15-20 people to a maximum of 40 if the contractor decides to send out two crews and work in opposing directions.

3.13 Project Schedule

The anticipated in-service date for the proposed project is Fall 2016. Project schedule milestones to achieve this in-service date include:

- Final Design – Spring 2015
- Public Notification – November 2014
- Public Engagement – January – March 2015
- Submission of Environmental Assessment to Manitoba Conservation and Water Stewardship – June 2015
- Receipt of Environment Act Licence – Estimated Fall 2015
- Construction – Spring 2016 to Fall 2016
- In-service Date – Fall of 2016



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Preferred Route
- Existing Natural Gas Transmission Pipeline
- Alternative Routes
- Provincial Road
- Provincial Trunk Highway
- Existing Valve Site
- Proposed Valve Site

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

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0 3 6 mi
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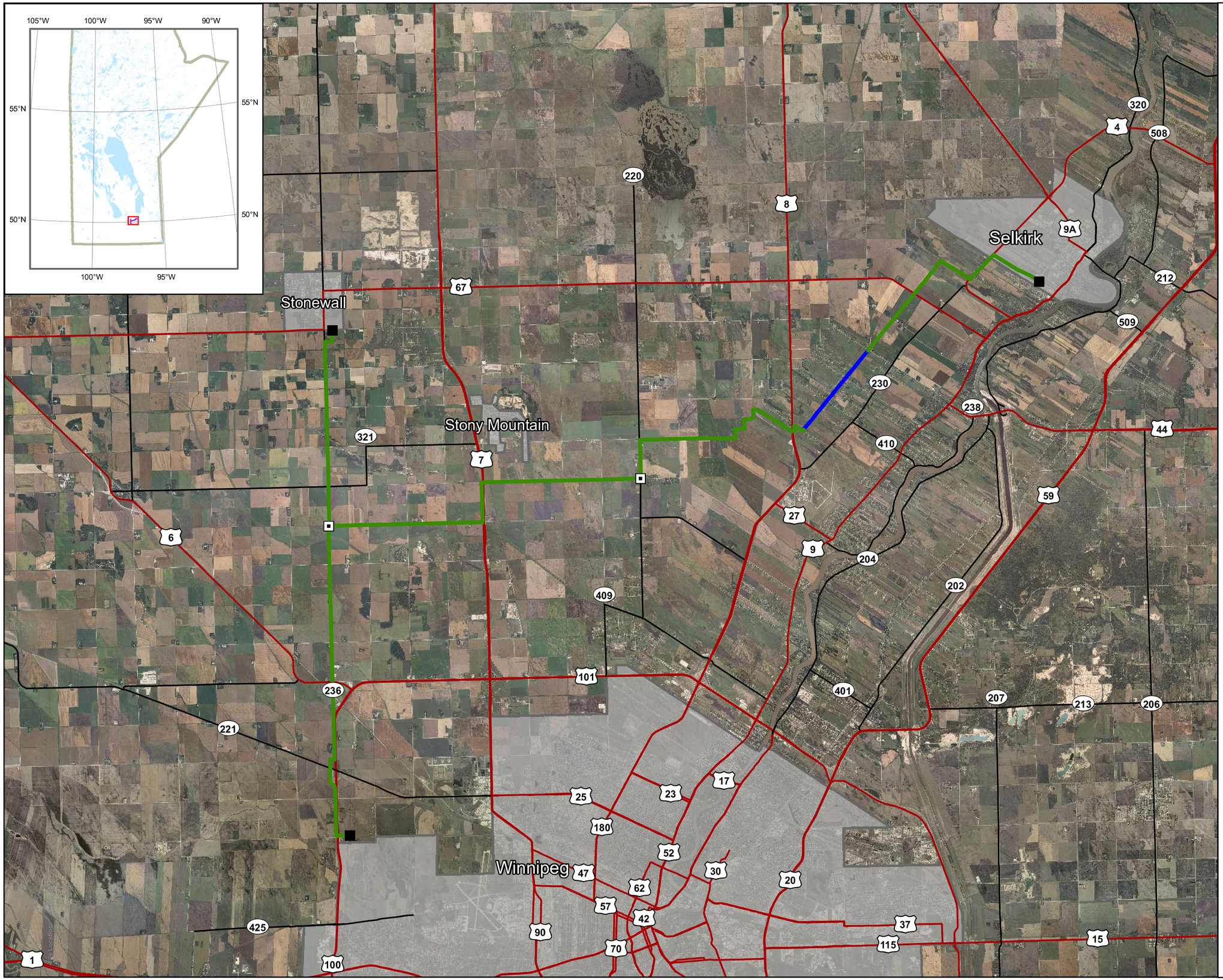
Northwest Gas Transmission Project

Alternative Routes

Draft: For Discussion Purposes Only

Map 3-1



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Preferred Route
- Existing Natural Gas Transmission Pipeline
- Provincial Road
- Provincial Trunk Highway
- Existing Valve Site
- Proposed Valve Site

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

0 5 10 km
0 3 6 mi
1:150,000

Northwest Gas Transmission Project

Preferred Route

Draft: For Discussion Purposes Only

Map 3-2

4.0 PUBLIC ENGAGEMENT PROCESS

This chapter of the environmental assessment report describes the Public Engagement Process (PEP) carried out for the proposed Project. The PEP consisted of:

- meetings with government departments (i.e. Manitoba Infrastructure and Transportation), municipal officials, stakeholders (CentrePort Canada);
- notification by direct mailings, unaddressed postcard campaign and newspapers advertisements;
- letters to property owners and area residents;
- public open houses and
- other contacts.

A summary is provided below. The report for the PEP conducted for the proposed project can be found in Appendix D.

4.1 Goals

Manitoba Hydro developed goals for the PEP and shared these goals with the public and stakeholders. The PEP aimed to:

- share information as it becomes available;
- obtain feedback for use in the assessment process;
- gather and understand local interests;
- integrate interests and concerns into the assessment process;
- discuss potential mitigation measures.

These goals were the basis for developing a process that would have public feedback influence the environmental assessment and route determination processes for the Project.

4.2 Notification Methods

Manitoba Hydro utilized four (4) notification methods to ensure that the public was aware of activities for the Project in the area including: direct mailings, postcard mailings, newspaper advertisement and website.

4.2.1 Direct Mailings

Letters outlining Project details, need, regulatory requirements, open house locations, and Manitoba Hydro contact information were mailed to 194 landowners in the Project area. Project material provided in mailings included a project newsletter, a map of the proposed alignment and the above noted letter (project materials can be found in Appendix D).

The RMs of Rosser, Rockwood, St. Andrews and West St. Paul were notified of the project by email, which included a personalized letter, project newsletter and map of the proposed Project alignment. Notification packages containing the same project materials were mailed to the

following: City of Selkirk, Town of Stonewall, Manitoba Infrastructure and Transportation Region 1 and 2, Cartier Water and CentrePort Canada.

4.2.2 Unaddressed Postcard Mailing

Unaddressed postcards were mailed to 19,006 individuals (both residential and commercial) to inform the general public of the proposed Project. Project information on the postcard included a brief project summary; a simplified map of the proposed project; and the date, time and location of upcoming public open houses, as well as the tollfree Project phone line and Project email address. A copy of the postcard mailer that was sent can be in found in Appendix D.

4.2.3 Newspaper Advertisements

Advertisements for the proposed Project were posted in the following newspapers to notify the general public of the upcoming public open houses:

- Winnipeg Free Press (issued January 24, 2015);
- Winnipeg Sun (issued January 25, 2015);
- Canstar Weeklies (issued January 21, 2015);
- The Times (issued January 28, 2015);
- Selkirk Journal (issued January 22 and January 29, 2015);
- Selkirk Record (issued January 22 and January 29, 2015); and
- Stonewall Argus/Teulon Times (issued January 22 and 29, 2015).

The advertisements included a brief project summary, a simplified map of the proposed location of the Project as well as time, date and location of the public open house. Manitoba Hydro contact information was also provided in the newspaper advertisement. An example of the newspaper advertisement can be found in Appendix D.

4.2.4 Website

Manitoba Hydro developed a website where project information was shared with the public and updated as needed. Information on the website included: project description and schedule; public engagement goals and information; environmental assessment information; contact information; and a document library containing open house materials, newsletter, postcard, open house advertisements and a map of the preferred route. A screenshot of the website can be found in Appendix D.

4.3 Project Phone Line

Manitoba Hydro provided a toll free phone number in all direct mailings, materials and advertisements for stakeholders to use if they had questions or required additional information regarding the proposed project. A total of nineteen individuals or stakeholder groups contacted Manitoba Hydro through the direct phone line.

4.4 Meetings

As part of the PEP, Manitoba Hydro offered meetings to discuss the Project with local municipalities, and other interested stakeholders. Meetings that were held with local municipalities and other stakeholders are outlined in Table 4-1.

Table 4-1: Public Engagement process Meetings

Stakeholder	Date
RM of St. Andrews Council	August 26, 2014
RM of West St. Paul Council	September 9, 2014
Public works representatives for routing in RM of Rosser	September 16, 2014
Centre Port Canada	September 18, 2014
Manitoba Infrastructure and Transportation Region 1	October 2, 2014
City of Selkirk	January 26, 2015 (telephone meeting)
RM of Rosser Council	February 10, 2015

The purpose of the meetings were to inform local municipal officials, government representatives and other stakeholders about the proposed. Project; and to provide a map of the project area and proposed routes, provide information on upcoming open houses, identify municipal approval requirements and record any questions, issue or concerns about the project identified during the meetings.

4.5 Public Open Houses

Three (3) public open houses were held to provide project information in the form of storyboards, mapping, a construction and remediation slideshow and display of construction materials. The public was informed about the Public Open Houses through direct mailings, emails and newspaper advertisements so that interested members of the public could visit these venues to receive information on and discuss the Project with representatives from Manitoba Hydro.

The date and location of the public open houses are as follows:

Rosser/Grosse Isle
February 3, 2015
4 p.m. to 8 p.m.
Hitch n Post Ranch
(Highway 6 at Ridge Road)

Selkirk
February 4, 2015
4 p.m. to 8 p.m.
Royal Canadian Legion
Selkirk Branch 42
(403 Eveline St)

Stonewall
February 5, 2015
4 p.m. to 8 p.m.
Parochial Hall
(435 First Ave N)

Manitoba Hydro shared information during the open houses on the following topics: project description and project need; pipeline safety and installation (through storyboards, display of

construction materials and a construction and remediation slideshow); landowner compensation; environmental assessment; project schedule; and a map of the project study area.

Open houses also provided an opportunity for the public and stakeholders to provide feedback on the project and route selection.

Participants were greeted by a Manitoba Hydro representative who toured them through the material. Comment sheets were provided to each participant as well as a Project newsletter and map. Manitoba Hydro representatives from the Licensing and Environmental Assessment Department, Engineers and Property Department, were available to answer questions and address concerns.

Comments and concerns provided by the public were recorded on iPads and comment sheets during the open house sessions. A summary and discussion of the comments and concerns received on the proposed project is provided in Section 4.7 of this report.

4.6 Project Materials

Manitoba Hydro utilized a variety of materials to present project information to local municipal officials, interested stakeholders, general public and potentially affected landowners. A summary of project materials created are discussed below.

4.6.1 Newsletter

A newsletter was created for the Project that provided information on the following topics:

- Project Description;
- Environmental Licensing;
- Project Schedule;
- Environmental Assessment & Public Notification;
- Design Details;
- Construction;
- Safely Living and Working Around Pipelines; and
- Maintenance and Operation

The newsletter was sent to all landowners with property in or adjacent to the proposed pipeline RoW, stakeholders including affected municipalities, CentrePort Canada and Manitoba Infrastructure and Transportation Regions 1 and 2. The newsletter was also available for participants who attended the public open house and on the website. The newsletter contained a contact phone number and email address for a Manitoba Hydro representative to discuss any questions or concerns regarding the Project. A copy of the newsletter is provided as Appendix D.

4.6.2 Mapping and Photography

Project maps overlaying aerial imagery with a scale of 1:125,000 were used to represent the

project alignment and were provided in direct mailings, emails, public advertising and at the public open houses.

Poster sized (44” x 36”) mapping was placed in the center of the open house venue and 11” x 17” maps were available for participants. Maps were also available for participants to mark up on iPad devices. These maps allowed individuals to situate their landholdings in relation to the proposed location of the natural gas pipeline as well as provide commentary on specific sites along the proposed route.

Manitoba Hydro utilized a construction and remediation slideshow at the public open house, which assisted participants in understanding what to expect if the proposed project was to be licensed and construction was undertaken. The photographs included visual representation of the following steps: surveying, trenching, welding, installation and reclamation.

A copy of the project maps are provided in Appendix D.

4.6.3 Examples of Project Components

At the public open house, Manitoba Hydro had examples of steel natural gas pipeline segments of various sizes along with safety and warning signs that would be utilized for the Project, to assist participants in understanding the materials that would be required for this project.

4.7 Participant Comments

A comment sheet was developed for the Project to assist the Project team in collecting information from participants as well as allowing a method to track specific discussions. The comment sheet is provided as Appendix D.

A summary of the discussions held with participants, the concerns raised and questions that were asked and well as comments provided on the comments sheets is discussed in Section 4.8 Public Engagement Results.

4.8 Public Engagement Results

4.8.1 Meetings

4.8.1.1 Rural Municipality of St. Andrews Council

The Rural Municipality of St. Andrews (meeting on August 26, 2015) had no concerns with the proposed routing options, although they expressed preference for routing options along existing RoWs.

4.8.1.2 Rural Municipality of West St. Paul Council

The Rural Municipality of West St. Paul (meeting on September 9, 2014) indicated that there is a waterline along the south side of Rushman Road (PR321) and that Rushman Road is the boundary between the RM of West St. Paul and the RM of Rockwood. If Manitoba Hydro stays on the north side of Rushman Road the project will not be located in the RM of West St. Paul. The

RM also provided information on potential groundwater concerns along PR321 from Stony Mountain and the high amount of houses along Lawson and Fulsher Roads.

4.8.1.3 Rural Municipality of Rosser - Public Works

A meeting was held in the RM of Rosser between Manitoba Hydro and two public works representatives on September 16, 2014. Discussions at the meeting included possible routings through the RM which included paralleling PR236, Summit Road and Sturgeon Road resulting in Sturgeon Road being identified as preferred. It was also identified that Centreport Canada is responsible for a majority of land within the perimeter and that a 20 inch water pipe is being planned for Centreport. The route for the proposed water pipe is still under discussion. It was also identified that there are a lot of homes along Summit Road but they are located on the west side, resulting in the east side being the preferred routing option.

4.8.1.4 Centreport Canada

Centreport Canada (meeting on September 18, 2014) indicated that a large railroad, 8 to 12 lines wide, is proposed near the intersection of 221 and 101. In addition, Centreport also expressed concern regarding a number of interchange improvement initiatives and utility upgrades in the area and suggested that Manitoba Hydro contact MIT and Cartier Water Coop to discuss these proposed developments. Manitoba Hydro contacted and met with MIT (see below). Hydro also contacted Cartier Water Coop, no response has been received to date.

4.8.1.5 Manitoba Infrastructure and Transportation (MIT) Region 1

Manitoba Infrastructure and Transportation (MIT) Region 1 (meeting October 2, 2014) advised Manitoba Hydro that they had no concerns with the alignment along the west side of the Perimeter Highway from Selkirk Avenue to Provincial Road 236. MIT did inform Manitoba Hydro of their intent to add lanes to Provincial Trunk Highway 9. MIT also indicated that Manitoba Hydro should contact MIT Special Projects regarding potential future plans. A request was sent to meet with the special projects team but no response has been received.

4.8.1.6 Rural Municipality of Rosser Council

The Rural Municipality of Rosser (meeting held February 10, 2015) asked Manitoba Hydro specific questions in relation to the proposed project. Predominant interest of the municipality was in relation to specific routing details, reclamation of ditches following construction, and whether this Project would provide availability of gas to municipal residents and commercial operations. (residential/commercial).Email Responses

4.8.1.7 Rural Municipality of Rockwood

The Rural Municipality of Rockwood sent an email to Manitoba Hydro on August 25, 2014, indicating that they had no concerns with the proposed route options for the Project.

4.8.1.8 City of Selkirk

The City of Selkirk sent an email to Manitoba Hydro on August 28, 2014, indicating they had no

concerns with preliminary route options, but that they would like to be contacted when more details about the proposed project are identified. On January 26, 2015 representatives from the City of Selkirk contacted Manitoba Hydro to discuss the proposed project alignment and noted that no meeting with council was necessary.

4.8.2 Participant Comments

In total, nineteen (19) individuals/stakeholder groups contacted Manitoba Hydro through the toll free number regarding the Project. In addition 72 individuals participated in the public open houses and 25 comment sheets were received. The following provides a summary of the discussions, grouped by topic, which were held with participants, the concerns raised and questions that were asked.

4.8.2.1 Method of Notification

Feedback received on the open house comment sheets indicated that postcards, direct letters, word of mouth and newspaper were the notification methods used by those in attendance. Direct mailings and the postcard campaign were the most common methods individuals were made aware of the Project and the locations of the open houses. The website was the least common method in which attendees were informed of the Project.

4.8.2.2 Protection of Trees/Shelterbelts

Many landowners in the area expressed concern over the conservation of mature trees and shelterbelts with the potential to be damaged by excavation activities. Landowners have requested that the pipeline be rerouted to avoid specific shelterbelts. Manitoba Hydro has considered these requests to reroute the pipeline around the trees and has changed the alignment where possible. The location of each area of concern and description of how each concern was addressed is provided in Appendix D.

4.8.2.3 Potential for Natural Gas Distribution

Enquiries have been made with Manitoba Hydro representatives about the possibility of further expansion of natural gas distribution opportunities in the area. Those who expressed interest in tapping into the proposed pipeline were informed that the Project is a transmission line and cannot be used for distribution purposes. It was noted by Manitoba Hydro staff that this discussion was outside the scope of the activities being undertaken for this project; however, contact information was collected and in total four (4) individuals requested to be contacted by an appropriate Manitoba Hydro representative regarding the potential for natural gas distribution.

4.8.2.4 Agriculture & Compensation

Discussions regarding potential damages to crops during the construction phase were mentioned by some participants. Potential damages discussed included loss of crop, soil disturbance, or loss of seed. It was noted that any damages caused by Manitoba Hydro activities would be compensated for (i.e., loss of seed, creation of ruts, crop damage, etc.).

Manitoba Hydro informed landowners that they will be paid 75% of market value for the

easement expansion across private property as well as any potential construction related damages.

Some landowners also enquired about the possibility to resume agricultural operations within the easement once the pipeline was installed.

4.8.2.5 Topsoil

Some concerns were expressed regarding how topsoil would be stripped and restored in the Project area. Others expressed concern over soil quality and potential for erosion.

4.8.2.6 Access

Concerns were raised about the Project damaging or restricting access to approaches used to access homes and farm land. One individual was interested in developing a new approach to his property and was concerned that the Project may impact these plans.

4.8.2.7 Drainage

Concerns were raised about drainage in the easement and the potential for the project to result in further drainage issues in the area. Manitoba Hydro's plans to ensure proper drainage during construction and operation was also discussed and if Manitoba Hydro would be willing to assist with drainage solutions while installing the pipeline.

4.8.2.8 Utility Lines

A number of land users in the area expressed concern regarding the potential for the Project to conflict with underground utility lines within the easement. These included existing fibre optic cable, water, telephone and electrical lines.

4.8.2.9 Proposed Development

Concerns were discussed regarding plans to develop infrastructure in the area that may conflict with the Project. This infrastructure included construction of a barn on private land which occurs within the proposed Project easement. Manitoba Hydro does not allow permanent structures within the easement. If the project is approved, other options could be discussed with the landowner during easement acquisition.

4.8.2.10 Pipeline Design and Safety

Questions were asked about how the pipeline would be designed and concerns were expressed regarding the safety of the pipeline. The depth of the line was discussed to determine if it was safe to drive large equipment over the line. Concerns about the risks associated with damage to the pipeline were also raised and monitoring the condition of the line frequently was suggested as a mitigation measure.

4.8.2.11 Environment and Climate Change

Concerns were raised regarding the role of the Project in the advancement of the use of natural gas which was considered to be unsustainable and harmful to the environment.

4.8.2.12 Support for the Project

Many members of the public had no concerns regarding the project once they learned that the proposed alignment of the pipeline did not occur on their land. Many seemed surprised and relieved to learn that the pipeline would occur mostly within road rights-of-way or an existing Manitoba Hydro easement.

4.8.3 Route Modification (July 2015)

As a result of information received through the environmental assessment work undertaken and the sensitive site information obtained during the site reconnaissance activities, a minor adjustment to the proposed pipeline route was made to avoid potential environmental effects. The modification proposes to follow existing road right of way beginning in the RM of St. Andrews and terminating in the RM of Selkirk (as outlined in the following map).

Manitoba Hydro

Northwest Natural Gas Pipeline Project

Project Infrastructure

- Proposed Natural Gas Gate Station
- Preferred Route (July 2015)
- Previous Route (January 2015)

Infrastructure

- Existing Natural Gas Gate Station
- Existing Natural Gas Pipeline

Landbase

- Provincial Road
- Provincial Trunk Highway
- City / Town Boundary
- Rural Municipality
- Waterbody

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB
Date Created: July 8, 2015

N

0 2.5 5 Kilometres
0 1.5 3 Miles

1:110,000

Proposed Route Modification

Draft: For Discussion Purposes Only

File Location:

Manitoba Hydro wished to collect feedback from local landowners and stakeholder groups in the area. Manitoba Hydro contacted 44 landowners and four stakeholder groups by an express post package that outlined the proposed modification. The package contained a letter, newsletter, and route modification map. This letter was sent on July 9, 2015 asking for feedback by August 1st, 2015. The municipality of St. Andrews and the City of Selkirk were also notified by email.

The Project webpage was also updated to outline the modification and provide mapping for interested individuals.

Contact with Stakeholders

Manitoba Hydro contacted Manitoba Infrastructure and Transportation (MIT) to notify them of this minor route adjustment as it is approximately 300 metres north of the intersection of PR 230 and Highway 9. MIT indicated they had no concerns with the proposed modification.

Manitoba Hydro has had email and phone correspondence with the RM of St. Andrews regarding the modification. The RM prefers the previous alignment (February 2015) as it would minimize potential ditching issues along Calder Road. They have also requested a trenching depth of 1.5m, which is deeper than the 1.0m anticipated for the project. The RM sent a letter dated July 20th and has been appended to Appendix D, Public Engagement Process Summary Report.

Manitoba Hydro has had email and phone correspondence with the City of Selkirk regarding the modification. The City of Selkirk has indicated they have no major concerns regarding the project at this time.

Phone Line and Email

As of August 2nd, Manitoba Hydro received two phone calls from landowners. The comments provided by landowners were general in nature and drainage along Calder Road was a concern of one of the callers.

No emails have been received regarding this route modification.

4.8.4 Ongoing Engagement

As part of the Public engagement process, Manitoba Hydro will continue to keep interested individuals informed of the current status of the project. Manitoba Hydro will outline the decision made regarding the route modification and will do so through letters, emails and the project website. The Project website will be kept up to date with project related information and the email and toll free information line remain available for questions and comments from the public. Manitoba Hydro will notify the public, landowners and stakeholders, that the environmental assessment report has been submitted to regulatory authorities (Manitoba Conservation and Water Stewardship) and that the assessment is available for public review and comment.

5.0 FIRST NATION AND METIS ENGAGEMENT

From January to April 2015, Manitoba Hydro presented the Project and created opportunities to share information and receive feedback from First Nations and Metis.

5.1.1 Engagement Process Approach

5.1.1.1 Engagement Criteria

Manitoba Hydro endeavored to engage the Manitoba Metis Federation (MMF) as well as First Nations in the vicinity of the project or those who indicated an interest in the Project. Manitoba Hydro considered a number of factors in determining who to contact, including:

1. Interest in the Project

2. Treaty 1 signatories because this Project is located in Treaty 1 area

3. In proximity to the study area

Based on these factors, Manitoba Hydro made initial contact with the First Nations and the MMF as outlined in Table 5-1:

Table 5-1 Who Was Contacted and the Rationale for their Inclusion

First Nations and the MMF	Rationale for Engaging in the Project
Brokenhead Ojibway Nation	Proximity to the study area is approximately 23 kilometres northeast
Manitoba Metis Federation	Interest in the Project
Peguis First Nation	Interest in the Project as it is located within the Treaty 1 area
Roseau River Anishinabe First Nation	Proximity to the study area – parcel of reserve land in SW-7-12-2EPM approximately 100 metres from the proposed route
Swan Lake First Nation	Interest in the Project as it is located within the Treaty 1 area

5.1.1.2 Notification Methods

Manitoba Hydro began communicating project information with communities in January 2015. Manitoba Hydro used the following communication tools to inform First Nations and the MMF of the project (detail on each method can be found in the Public Engagement Section):

- Direct letters
- Project newsletters
- Advertisement in local newspapers
- Project posters

- Project website

Manitoba Hydro offered engagement methods that would provide direct opportunities for input. These methods included:

- Leadership meetings
- Community information session
- Telephone calls
- Emails

5.1.1.3 Engagement Activities

Brokenhead Ojibway Nation

Manitoba Hydro informed Brokenhead Ojibway Nation of the Project and asked if they would like to engage early in the process (Table 5-2). On January 15, 2015, a letter was sent to Brokenhead Ojibway Nation to introduce the Project. The letter indicated that if there is interest, Manitoba Hydro would like to engage members by holding a specific event in Brokenhead Ojibway Nation. The letter requested that Brokenhead Ojibway Nation representatives contact Manitoba Hydro by the end of February 2015 if they would like to schedule a meeting or community information session to discuss the project.

Table 5-2 Brokenhead Ojibway Nation Engagement

Date	Type of Engagement	Description
January 15, 2015	Letter	Letter from Manitoba Hydro requesting the opportunity to share information and discuss the Project
March 9, 2015	Phone Call	Manitoba Hydro representatives left a voicemail message and did not hear back regarding this Project. Manitoba Hydro has not heard concerns from Brokenhead Ojibway Nation with this Project and has subsequently met with Brokenhead representatives to discuss another project

Manitoba Metis Federation

Manitoba Hydro informed the MMF of the Project and asked if they would like to engage early on in the process (Table 5-3). On January 15, 2015, Manitoba Hydro sent a letter to the MMF to introduce the Project. The letter requested that the MMF contact Manitoba Hydro by the end of February 2015 if the MMF would like to schedule a meeting to discuss the Project. Manitoba Hydro received a letter in response from the MMF on February 25, 2015 indicating concern

about the potential for property acquisition for the Project. Manitoba Hydro sent a letter on March 3, 2015 responding to the concern and indicating that they would follow-up by phone to schedule a meeting to further discuss this concern. A meeting was held on March 11, 2015 where MMF representatives indicated that they would determine whether or not there is an opportunity to further discuss the Project at the Interlake Regional meeting. The MMF noted that should it be decided that a separate meeting is required; the MMF would send Manitoba Hydro a draft budget for holding this meeting. Manitoba Hydro followed up by email on April 7, 2015 to see whether or not the MMF had an opportunity to discuss the Project at the Interlake Regional Meeting. Manitoba Hydro has not yet received a response from the MMF.

Table 5-3 Manitoba Metis Federation Engagement

Date	Type of Engagement	Description
January 15, 2015	Letter	Letter from Manitoba Hydro requesting the opportunity to share information and discuss the Project
February 25, 2015	Letter	Letter from the MMF regarding the Project indicating concern about the potential for property acquisition for the Project
March 3, 2015	Letter	Letter from Manitoba Hydro responding to the MMF's concern and indicating that they would follow-up by phone to schedule a meeting.
March 3, 2015	Phone Call	Manitoba Hydro representatives spoke with MMF representatives to determine a date for a meeting to discuss the Project.
March 11, 2015	Meeting	Representatives from Manitoba Hydro and the MMF met to discuss the Project. MMF representatives indicated that they would determine whether or not there is an opportunity to discuss the Project at the Interlake Regional meeting. The MMF noted that if it is decided that a separate meeting is required, they will send Manitoba Hydro a draft budget to hold the meeting
April 7, 2015	Email	Manitoba Hydro sent a follow-up email to the MMF to see whether or not they had an opportunity to discuss the Project at the Interlake Regional Meeting. Manitoba Hydro has not yet received a response from the MMF.

Peguis First Nation

Manitoba Hydro informed Peguis First Nation of the Project and asked if they would like to engage early in the process (Table 5-4). On January 7, 2015, during a meeting, Manitoba Hydro informed the community about the upcoming Project. On January 15, 2015, a letter was sent to

Peguis First Nation to introduce the Project along with a newsletter providing information about the Project. The letter indicated that if there is interest in participating in the engagement process, Manitoba Hydro would like to engage members by holding a specific event in Peguis First Nation. The letter requested that Peguis First Nation representatives contact Manitoba Hydro by the end of February 2015 if they would like to schedule a meeting or community information session to discuss the project.

On January 16, 2015, a representative from Peguis First Nation acknowledged receipt of the letter and newsletter. Manitoba Hydro sent a follow-up email on April 7, 2015 asking whether Peguis First Nation would like any further information or a meeting on this Project. On June 9, 2015, Manitoba Hydro met with Peguis First Nation representatives to discuss a different project and asked if the representatives had any questions or concerns about the Northwest Gas Project. The representatives did not provide any feedback specific to the Project.

Table 5-4 Peguis First Nation Engagement

Date	Type of Engagement	Description
January 7, 2015	Meeting	Manitoba Hydro informed the community about the upcoming Project
January 15, 2015	Letter	Letter from Manitoba Hydro requesting the opportunity to share information and discuss the Project.
April 7, 2015	Email	Email from Manitoba Hydro asking whether Peguis First Nation would like any further information or a meeting to discuss this project.
June 9, 2015	Meeting	Manitoba Hydro asked if Peguis First Nation had any questions or concerns about the Project and representatives did not provide any feedback or share any concerns.

Roseau River Anishinabe First Nation

Manitoba Hydro informed Roseau River Anishinabe First Nation of the Project and asked if they would like to engage early in the process for the Project (Table 5-5). On January 15, 2015, a letter was sent to Roseau River Anishinabe First Nation to introduce the Project. The letter indicated that if there is interest, Manitoba Hydro would like to engage members by holding a specific event in Roseau River Anishinabe First Nation. The letter requested that Roseau River Anishinabe First Nation representatives contact Manitoba Hydro by the end of February 2015 if they would like to schedule a meeting or community information session to discuss the Project. Roseau River Anishinabe First Nation provided Manitoba Hydro the opportunity to present the Project to a focus group on April 9, 2015. A community information session occurred on May 7, 2015 to share Project information more broadly with RRAFN members. .

Table 5-5 Roseau River Anishinabe First Nation Engagement

Date	Type of Engagement	Description
January 15, 2015	Letter	Letter from Manitoba Hydro requesting the opportunity to share information and discuss the Project
April 2, 2015	Email	Manitoba Hydro sent a follow-up email regarding the Project to see whether there would be interest in meeting
April 8, 2015	Email	Roseau River representatives requested that Manitoba Hydro attend a focus group meeting to present the Project.
April 9, 2015	Focus Group Meeting	Manitoba Hydro attended a focus group meeting in Roseau River to provide information on the Project and answer questions

Swan Lake First Nation

Manitoba Hydro informed Swan Lake First Nation of the Project and asked if they would like to engage early in the process for the Project (Table 5-6). On January 15, 2015, a letter was sent to Swan Lake First Nation to introduce the Project. The letter indicated that if there is interest, Manitoba Hydro would like to engage members by holding a specific event in Swan Lake First Nation. The letter requested that Swan Lake First Nation representatives contact Manitoba Hydro by the end of February 2015 if they would like to schedule a meeting or community information session to discuss the project.

Table 5-6 Swan Lake First Nation Engagement

Date	Type of Engagement	Description
January 15, 2015	Letter	Letter from Manitoba Hydro requesting the opportunity to share information and discuss the Project
April 8, 2015	Meeting	Manitoba Hydro representatives met with a Swan Lake First Nation representative who indicated that they received the letter and would review to see if they had any concerns. Manitoba Hydro has subsequently met with representatives for different projects and has not heard back with any concerns related to the Project.

5.2 First Nation and Metis Feedback

5.2.1 Feedback from the MMF

On February 25, 2015, Manitoba Hydro received a letter from the MMF regarding the Project indicating concern about the potential for property acquisition for the Project. On March 11, 2015, representatives from Manitoba Hydro and the MMF met to discuss the Project. Principle questions and concerns related to the following: the continued focus on natural gas, property acquisition for the Project, and how Metis harvesters who might have permission to access private lands in the Project area will be informed about the Project. The summary of comments and concerns pertaining to the Project identified by participants during the meeting can be found below in Table 5-7.

Table 5-7: Feedback from the MMF

Category	Comment	Manitoba Hydro Response
Existing environment	The MMF has concerns about the continued focus on natural gas and feels that it only benefits southern Manitobans.	Natural gas burns cleaner than most other fossil fuels. It is a reliable and versatile fuel that can be used for everything from heating homes to drying clothes. The current distribution networks for natural gas only covers southern Manitoba, but Manitoba Hydro's plan is to expand the network as demand for natural gas increases.
Property acquisition	Concern about the potential of any property acquisition for the project	Manitoba Hydro is planning to obtain easement for a 30 m ROW. It is anticipated that the majority of this land will be on Provincial and Municipal Road ROWs with some land being from private landowners.
Engagement	Concerns about Metis harvesters who might have permission to access private lands and how they will be informed about the Project. MMF representatives indicated that they would determine whether there is an opportunity to bring up the topic at the Interlake Regional meeting. If the MMF	Manitoba Hydro wants to hear how the MMF wants to be engaged and share information about the project. Manitoba Hydro sent a follow-up email to the MMF to see whether they had an opportunity to discuss the

Table 5-7: Feedback from the MMF

Category	Comment	Manitoba Hydro Response
	decides that a separate meeting is required, MMF will send Manitoba Hydro a draft budget.	Project at the Interlake Regional Meeting. Manitoba Hydro has not yet received a response from the MMF.

5.2.1.1 Feedback from Roseau River Anishinabe First Nation

Roseau River Anishinabe First Nation provided Manitoba Hydro the opportunity to present the Project to their focus group on April 9, 2015. Principle questions and concerns related to the following: distance between switch-offs for the relay stations, and Crown land in the area of the preferred route. The following summary (Table 5-8) includes comments and concerns pertaining to the Project identified by participants during the focus group.

Table 5-8 Feedback from Roseau River Anishinabe First Nation

Category	Comment	Manitoba Hydro Response
Project Description	Is the pipeline for the Northwest Winnipeg Natural Gas Project above ground?	The pipeline is below ground. It will be installed one metre below.
Project Description	How far apart will the switch-offs for the relay stations be? This is based on the pipeline explosion that occurred in this area a year ago.	The pipeline is natural gas and would not be able to spill but would rather emit or vent into the atmosphere. This pipeline will not be used for oil. The valves are located as per Canada code CSA every 13 km or less on route for this pipeline and at stations.
Project Description	Who is the pipeline for?	The pipeline would be for the communities of Stonewall and Selkirk with an overall purpose to supply a continual and reliable source of natural gas to customers north of

Table 5-8 Feedback from Roseau River Anishinabe First Nation

Category	Comment	Manitoba Hydro Response
		Winnipeg.
Engagement	What type of role does Roseau River play in this proposed Northwest Winnipeg gas project? Roseau River is interested in information sessions for both its on and off reserve members.	Manitoba Hydro wants to inform Roseau River of this proposed project to see if the community requires any additional information or has any concerns about the proposed project. A community information session was held on May 7, 2015 in Roseau River Anishinabe First Nation.
Engagement	Is Roseau River being informed about this proposed gas project because of the land we have in the area?	Yes, the reserve land Roseau River has just off Highway 6 is close to the proposed project.
Crown Land	Is there lots of Crown Land in the area where the preferred route is for this gas line?	No, the majority of the lands are private, agricultural or within RMs and towns.
Environmental Assessment Process	Are there any impact studies done previously in this gas line area?	Part of this project involves conducting an environmental assessment to identify potential effects the project may have on the environment.

6.0 ENVIRONMENTAL DESCRIPTION

This chapter of the environmental assessment report provides a description of the existing environmental setting for the proposed Project, including the biophysical and socio-economic components of the environment.

6.1 Biophysical Environment

6.1.1 Ecological Classification

The majority of the proposed Project is located in the Prairies Ecozone, Lake Manitoba Plains Ecoregion and Winnipeg Ecodistrict. A small portion of the proposed Project, near the City of Selkirk is located in the Boreal Plains Ecozone, Interlake Plain Ecoregion and Gimli Ecodistrict (Smith et al., 1998). The following provides a summary of the ecodistricts traversed by the proposed project (Map 6-1).

6.1.1.1 Winnipeg Ecodistrict

The majority of the proposed Project is found within the Winnipeg Ecodistrict which occupies most of the southeast portion of the Lake Manitoba Plains Ecoregion. This ecodistrict is in the most humid subdivision of the Grassland Transition Ecoclimatic Region in southern Manitoba. The climate is characterized by short, warm summers and long, cold winters. The mean annual temperature of the ecodistrict is about 2.4°C, the average growing season is 183 days and the growing degree days number about 1,720 (Smith et al., 1998). The mean annual precipitation is approximately 515 mm of which less than 25% falls as snow.

The Winnipeg Ecodistrict lies in the central lowland of the Red River Plain and is characterized as being smooth, level to very gently sloping, clayey glaciolacustrine plain with a mean elevation of about 236 masl. The Red River meanders northward through the centre of the plain and empties into Lake Winnipeg, a remnant of former glacial Lake Agassiz, at 218 masl. Slopes range from level to less than 2% and are smooth and long, exceeding 150 m. This Project is situated in the northwest portion of the Winnipeg Ecodistrict, with water draining to both the Red and Assiniboine Rivers.

Generally soils in the ecodistrict are predominantly imperfectly drained Gleyed Humic Vertisols and Gleyed Vertic Black Chernozems, and poorly drained Gleysolic Humic Vertisols and Humic Gleysols which have developed on calcareous, clayey glaciolacustrine sediments. Gleyed Rego Black Chernozemic and Gleysolic soils also occur on shallow, extremely to very strongly calcareous, loamy to silty sediments, some of which occur in the form of intersecting bars and spits and were formed during the later stages of Lake Agassiz.

The native vegetation of the ecodistrict originally consisted of tall grass prairie, meadow grass prairie and meadow grass communities depending on natural drainage conditions. As a result of cultivation and the development of an extensive network of drainage ditches, the natural vegetation has largely disappeared. Only local pockets remain in some poorly drained locales,

as small portions of land that, due to their small size or limited access, have not been broken. In most of the ecodistrict, trees grow naturally only as a fringe along stream channels. On the better drained sites above and usually some distance away from the channels, bur oak and trembling aspen with an undergrowth of snow berry, hazelnut and red-osier dogwood commonly occur. On the alluvial floodplain deposits and lower river terraces, white elm, basswood, cottonwood, Manitoba maple and green ash with an undergrowth of ferns and associated herbaceous plants are found. Shrubs such as saskatoon, high bush cranberry and nanny berry are found both on the floodplain and on the highest terraces.

The region, which is part of the Netley-Grassmere Watershed, is underlain by bedrock that consists of limestone and dolostone which forms a major fresh water aquifer called the Carbonate aquifer which is a primary source of water supply in the Interlake Area (Manitoba Conservation and Water Stewardship, n.d.). Shale and sandstone are found underneath the limestone and dolostone. The sandstones have been identified as a productive aquifer but water quality is saline. The carbonate aquifer is considered highly productive with wells that are drilled into the aquifer able to produce sufficient water for a single family dwelling. In addition, wells have been drilled into the aquifer to supply water for municipal, industrial and irrigation water supplies. Municipal systems in the City of Selkirk and the Towns of Stonewall and Stony Mountain rely on groundwater service.

The Winnipeg Ecodistrict includes habitat for a variety of wildlife species including nine species of amphibians, six species of reptiles, 342 species of birds, and 46 species of mammals as residents or migrants (Manitoba Hydro, 2012).

A majority of soils are cultivated and used for a variety of agricultural crops including wheat, cereal grains and oil seeds. Limited production of potatoes, corn and a variety of garden crops are also grown to supply a seasonal market in Winnipeg and for export.

6.1.1.2 Gimli Ecodistrict

The Gimli Ecodistrict is a north-south elongated area extending from north of Fisher Bay to southeast of Birds Hill. This ecodistrict occurs within the more humid and cooler subdivision of the Sub-humid Low Boreal Ecoclimatic Region. The ecodistrict is characterized by short, warm summers and cold winters, with a mean annual temperature of 1.4^{o}C and an average growing season of 176 days (Smith et al., 1998).

The mean annual precipitation is about 520 mm, and varies greatly from year to year and is highest from late spring through summer. About one-quarter of the precipitation falls as snow. The ecodistrict contains a number of climate stations including locations at Arborg, Beausejour, and the now closed Gimli Station.

The Gimli Ecodistrict is a level to depressional lowland and a gently undulating lake terrace. Deposits include glaciofluvial, glaciolacustrine, and till. Slopes on the landscape are gentle and are less than 2%. The ecodistrict has little relief; however, a significant change occurs at Birds Hill which rises about 30 m above the surrounding area as a result of an interlobate glaciofluvial and moraine complex. Local relief also occurs along the rivers of 5 to 10 m. This Project is

located in the southern portion of the Gimli Ecodistrict, with water draining to Lake Winnipeg and Red River. Both are part of the Nelson River drainage system.

Soils in the lake terrace areas are dominantly well to imperfectly drained Dark Gray Chernozems; Gray Luvisols occur under the forest vegetation, and poorly drained Peaty Gleysols and shallow organic soils occur in the lowlands. Trembling aspen dominates the forest in this ecodistrict. Riverbanks support elm, Manitoba maple, green ash, and cottonwood. Low areas support willow, meadow grasses and sedges while vegetation in marshes consists of cattails, reeds and sedges.

The majority of the soils in the southern lake terrace are cultivated, while only those soils in the lowlands with improved drainage are cultivated. Crops include spring wheat, other cereal grains, hay crops and oil seeds. Native pasture and hay fields occur in areas where drainage has not been improved or where soils are too stony to cultivate.

6.1.2 Climate and Air Quality

6.1.2.1 Climate

The climate in the proposed Project area is described and is characterized by long, cold winters and short, warm summers (Smith et al. (1998). Table 6-1 shows selected climate data for the Town of Stonewall (Government of Canada, 2015a), Town of Stony Mountain (Government of Canada, 2015b) and City of Selkirk (Government of Canada, 2015c) which is relevant climate data for the proposed Project area.

The moisture and heat energy available for crop growth in the project area is sufficient to support a wide range of crops adapted to western Canada (Agriculture and Agri-Food Canada, 1999a). Climate information is summarized in Appendix E.

Table 6-1:Selected Climate Data

Parameters	Year	June – Aug.	May – Sept.	July	Jan.
Stonewall[1]					
Temperature ^{0}C	2.4	18.1	15.8	19.3	-18.4
Precipitation mm (equiv.)	519.6	226.4	336.8	67.9	24.0
Rain/Snow (mm/cm)	403.1/116.5	226.4/0.0	335.5/1.3	67.9/0.0	0.0/24.0
Stony Mountain[2]					
Temperature ^{0}C	3.1	18.7	16.2	19.9	-16.4
Precipitation mm (equiv.)	550.1	249.3	358.8	81.9	26.0
Rain/Snow (mm/cm)	435.6/114.5	249.3/0.0	357.4/1.4	81.9/0.0	0.0/26.0
City of Selkirk[3]					
Temperature ^{0}C	2.9	18.6	16.1	19.8	-17.5
Precipitation mm (equiv.)	510.4	247.1	361.2	79.6	16.0
Rain/Snow (mm/cm)	429.3/81.1	247.1/0.0	361.2/0.5	79.6/0.0	0.0/16

[1] Source: Government of Canada, 2015a: Climate Normals from 1971-2000.
[2] Source: Government of Canada, 2015b: Climate Normals from 1981-2010.
[3] Source: Government of Canada, 2015c: Climate Normals from 1971-2000.

6.1.2.2 Air Quality

The Province of Manitoba operates five air quality monitoring stations located in Thompson, Brandon, Flin Flon and two in Winnipeg. Air quality parameters measured at the monitoring station located at 65 Ellen Street in the City of Winnipeg are provided in table 6-2

Table 6-2: Air Quality Parameters for Winning Station (Ellen Street) on June 9th 2015

	PM10t	PM2.5s	CO	O_3	NO_2	SO_2
	µg/m^3	µg/m^3	ppm	ppb	ppm	ppm
Measurements	28.3	18.3	0.449	35.6	0.0059	0
Time Interval (1 hour, 8 hour or 24 hour average)	24 hour	24 hour	1 hour	8 hour	24 hour	24 hour

Source: Manitoba Conservation and Water Stewardship 2015

Manitoba Ambient Air Quality Criteria (July 2005) were reviewed to identify the maximum acceptable concentrations of pollutants deemed essential to provide adequate protection for soils, water, vegetation, materials , animals, visibility, personal comfort and well-being (Manitoba Conservation and Water Stewardship, 2015). Comparison of the air quality parameters in Table 6-2 to the Manitoba Ambient Air Quality Criteria identified all measurable parameters were below the maximum acceptable concentrations.

Environmental Canada (2015) provides information on Greenhouse Gas Emissions for Canada and by individual provinces/territories. Greenhouse gases that are estimated in the national inventory include carbon dioxide (CO); methane (CH_4); nitrous oxide (N_2O); sulphur hexafluoride (SF_6); nitrogen triflouride (NF_3); perfluorocarbons (PFCs); and hydrofluorocarbons (HFCs). Table 6-3 below provided a summary of Manitoba's GHG emission in 1990, 2005 and 2013.

Table 6-3: Summary of Manitoba's GHG Emissions in 1990, 2005, and 2013

Year	1990	2005	2013
CO_2 Equivalent[1] (kilotonnes)	18,700	20,700	21,400

1 CO_2 is a quantity used to describe for a given amount of GHG the amount of CO that would have the same global warming potential over a certain timescale.

In 2013, the total amount of GHG emissions produced by Canada was 726,100 kilotonnes of CO_2 equivalent. Of that 726,100 kilotonnes, Manitoba contributed 3% or 21,400 kilotonnes of CO_2 equivalent

6.1.3 Geology and Physiography

The bedrock in the Project area is from the Ordovician period and belongs to the Fort Garry Member of the Red River Formation, the Gunn, Penitentiary, and William Members of the Stony Mountain Formation and the Stonewall Formation (no members) (Manitoba Mineral Resources, 2013). Areas of bedrock geology in the project area are characterized as being dolomitic limestones, argillaceous dolomite; calcareous shale and/or fossiliferous limestone (Manitoba

Mineral Resources, 2013).

The surficial geology of the local assessment area is characterized as being glaciolacustrine sediments comprised of clay, silt and minor sand. These sediments range in thickness from 1 to 20 metres and are found in areas of low relief (Manitoba Mineral Resources, 2013).

Physiographically, the project area is characterized as being generally flat slopes of less than two percent. The land surfaces decreases gradually and small land gradients result in slow to poor surface drainage. Surface drainage for agricultural purposes is facilitated through man-made drains constructed to enhance runoff and reduce the ponding (Agriculture and Agri-Food Canada, 1994). Naturally, poor surface drainage is facilitated mostly by Netley, Wavey and Parks Creeks that flow to the southeast and east to the Red River (Agriculture and Agri-Food Canada, 1999c).

6.1.4 Soils

Generally, in the RM of Rosser, soil materials are comprised of shallow and deep clayey lacustrine sediments (Agriculture and Agri-Food Canada, 1994). Towards the northern portion of the RM of Rosser, the deposits are more shallow consisting of a loam textured, stony, glacial till close to the ground surface. The RM of Rockwood, is characterized by deep, clayey to silty and loamy lacustrine sediments. The majority of the land in this municipality has rich, fertile soils, which allows successful crop and livestock productions. Flat topography in the RM of Rockwood results in a majority of the soils found being classified as imperfectly to poorly drained (Agriculture and Agri-Food Canada, 1999a). Within the RM of St. Andrews, materials consist of both thin, clayey lacustrine sediments (Red River Valley) as well as thin, clayey lacustrine and till materials underlain by loam textured stony glacial till (Agriculture and Agri-Food Canada, 1999b).

The Winnipeg Region Soil Survey provides information on the specific soils that are found in the study area (Michalyna, 1975). Dominant soils in the project area are Black Chernozems from the Red River, Scanterbury, and Grosse Isle series that have developed on moderately to strongly calcareous fine textured lacustrine deposits and are characterized as being imperfectly to moderately well drained. Native vegetation use to consist of prairie grasses, aspen and bur oak, but over time the land use has been converted to dominantly agricultural land use. Small areas of grasses, willows, aspen and bur oak can be found in the project, local and regional assessment area. Topography is defined as being level to gently sloping and runoff ranges from low to moderate.

Inclusions of poorly drained soils (Gleysols) from the Glenmoor, Osbourne, Kline and Sifton series are also found in the project area and are typically found in depressions and runoff is characterized as being negligible to slow. Native vegetation includes meadow grass, sedge, weeds, cattails and some willow.

Inclusions of soils high in salts (saline phases) can also be found in the project area indicating that they contain soluble salts in the rooting zone that can affect crop growth. These soils include Black Chernozems from the Niverville, Lakeland and Plume Ridge soil series and

Gleysols from the Sifton soil series. These soils range from being imperfectly to poorly drained. Topography ranges from depressional to very gently sloping and runoff is slow. Native vegetation may include meadow grasses, willow, and sedges.

For the general Project area, the Canada Land Inventory (1974a) classifies the area as dominantly having soils that have moderate limitations that restrict the range of crops or require moderate conservation practices as a result of areas that have excess soil moisture. There are inclusions of soils classified as having moderately severe to severe limitations as a result of areas of deficient soil moisture or areas with excessive soil moisture. These inclusions are found in the vicinity of the Town of Stonewall and community of Stony Mountain.

6.1.5 Surface Water

The proposed project falls within two Watersheds: the Netley-Grassmere Watershed which is part of the Red River Basin and the Lower Assiniboine Watershed, which is part of the Assiniboine River Basin.

6.1.5.1 Netley-Grassmere Watershed

The Netley-Grassmere Watershed is located north of the City of Winnipeg along the western bank of the Red River and stretches northward to the south western shore of Lake Winnipeg south basin.

The drainage area of the watershed is approximately 2,362 km^2 and contains four sub-watersheds:

- the Netley Creek sub-watershed (977 km^2),
- the Wavey Creek sub-watershed (662 km^2),
- the Grassmere Creek sub-watershed (479 km^2), and
- the Parks Creek sub-watershed (244 km^2).

In the project area, these drains are man-made drainages and designed to remove excess rainfall and snowmelt from cropland during the growing season to improve the productive capability of the soil. During some springs, the portion of the eastern region of the Netley-Grassmere watershed, along the Red River, experiences flooding due to high water levels and ice jams.

The Netley-Grassmere watershed was once largely covered by an extensive marsh, the St. Andrews bog, but since has been widely drained to support the agricultural industry. There are presently 1,542 km of ordered drains in the watershed, only a fraction of which are natural water courses.

Agriculture is the primary land use in the Netley-Grassmere watershed. Based on 2005 land cover data, almost half of the land within the watershed was classified as annual cropland. Between 1994 and 2005, an increase of 93% in forage crops occurred as a result of programs that provide incentives for the conversion of marginal lands from annual crops to perennial crop

cover.

6.1.5.2 The Lower Assiniboine Watershed

The Lower Assiniboine Watershed lands are municipal lands that are not part of a conservation district and therefore no Integrated Watershed Management Plan has been developed. The portion of the proposed project that is located in the RM of Rosser is contained within the Lower Assiniboine Watershed. In the project assessment area, two waterways are traversed by the proposed pipeline including Omand's Creek in SE-25-11-1EPM and East Branch Colony Creek in NE-24-12-1EPM. Both creeks begin northwest of the City of Winnipeg, with the East Brach Colony Creek draining into Omand's Creek in NE-21-11-2EPM, which drains into the Assiniboine River in the City of Winnipeg. Although no species of conservation concern were identified in the portion of the creeks located in the local or project assessment areas, they both provide refuge for land and water wildlife.

6.1.6 Groundwater

As described in Sections 5.13, and 5.14, the project area is located in the Netley-Grassmere Watershed which is underlain by bedrock that consists of limestone and dolostone which forms a major fresh water aquifer called the Carbonate aquifer (Manitoba Conservation and Water Stewardship, n.d.). This Carbonate aquifer extends throughout the Interlake Region and is the primary source of water supply in the region. Clay and glacial till of variable thickness overlay the bedrock and sand and gravel that is found between the till and bedrock is thick enough to form an aquifer that is productive.

In the western portion of the Netley-Grassmere watershed, a major argillaceous unit occurs which forms an extensive aquitard that restricts the movement of groundwater between the overlying limestone and dolostone to the carbonate rocks located below the aquitard.

Wells that are drilled into the carbonate aquifer are highly productive with enough water produced for a single family dwelling. In addition, a number of high capacity wells have been constructed to provide water for municipal, industrial and irrigation supply. The City of Selkirk, Town of Stonewall and Stony Mountain have municipal systems that rely on water from groundwater sources.

The movement of groundwater in the region is generally from northwest to southeast. An area in the central Interlake is the primary recharge for the Carbonate aquifer. Groundwater discharge occurs both as springs into streams or directly into the Red River.

Groundwater in the Netley-Grassmere Watershed is vulnerable to contamination where bedrock aquifers are found at or near the surface or where thin layers of deposits (i.e. clay, till) covers the aquifer. Potential groundwater pollution sources in watershed includes: waste disposal grounds, manure solid or liquid storage sites, agricultural practices, abandoned wells or drainage wells, municipal lagoons, and industrial activities (Manitoba Conservation and Water Stewardship, n.d.). Practices such as the installation of liners for municipal and agricultural lagoons can reduce the risk of groundwater contamination from leachates.

The Rockwood Sensitive Area, is an area north-east of Stony Mountain, where groundwater was contamination from an industrial facility at the Bristol Aerospace Plant (MCWS, 2014; Manitoba Conservation and Water Stewardship, n.d.). Areas that had been contaminated with TCA and TCE (organic solvents) were detected, one near the plant site and another southeast of Stony Mountain (MCWS, 2014). A pump and treat facility was constructed in 1994 and has successfully contained the area of contamination, 5 km north of the project. Currently a permit is required to drill or modify a well within or immediately adjacent to the contaminated area.

6.1.7 Vegetation and Wetlands

Prairie areas once found in the Winnipeg and Gimli ecodistricts have largely disappeared as a result of cultivation (spring wheat, other cereal grains and oil seeds) and the development of an extensive network of drainage ditches (Smith et al. 1998). Forested areas provide habitat for white-tailed deer, black bear, ruffed grouse and songbirds. Wetlands are important for waterfowl and migratory bird staging. The principal sources of water in the ecodistrict are groundwater from the aquifers and surface water from Lake Winnipeg, and the Red, Icelandic, and Fisher Rivers.

Dominant land cover in the project area is agriculture. Along the proposed Project the approximate percentages of vegetated land use and other use along the proposed ROW are as follows:

- 80% is existing road right-of-way
- 17% is agriculture
- <1% is wetland/shrub
- <1% is urban
- <1% is rural residential

Table C-1 in Appendix C identifies land uses within the sections traversed by the proposed pipeline RoW.

To understand vegetation and wetland characteristics in the project area, field visits were focused on identifying areas of shelterbelts, treed areas and wetlands that may be affected by project activities outside or within roadside allowances.

6.1.7.1 Shelterbelts

Approximately 31 shelterbelts and 3 treed areas were noted adjacent to the project ROW. Tree species that were observed in the shelterbelts included: white spruce (*Picea glauca*) and willows (*Salix* spp.). Photograph 6-1 shows an example of a shelterbelt found in the project area. Treed areas included species such as trembling aspen (*Populus tremuloides*), bur oak (*Quercus macrocarpa*), balsam poplar (*Populus balsamifera)*, and red-osier dogwood (*Cornus sericea*). Photo 6-2 shows an example of a natural treed area found in the project area.

Photo 6-1: Shelterbelt found in the project area

Photo 6-2: Treed areas found in the project area

6.1.7.2 Wetlands

The Netley-Grassmere watershed, of which the project traverses, was once largely covered by an extensive marsh, the St. Andrews bog (AAFC-PFRA et al. 2010). The St. Andrews bog has been widely drained and natural vegetation has largely disappeared as a result of cultivation, development of drainage ditches and urban community development. Some local pockets of natural vegetation do occur in poorly-drained areas on unbroken land.

Within the RM of St. Andrews, in the local assessment area, areas of emergent marshes, as defined by the Canada Wetland Inventory (Ducks Unlimited, 2015), were identified through a review of satellite imagery and site reconnaissance activities. These poorly-drained areas contain species such as coltsfoot, cattails, willow sp., water parsnip, and pondweed. No open areas of water were identified but pooling of water in the nearby ditches and saturated soil conditions were noted in these marsh wetlands (Photo 6-3).

Photo 6-3: Looking north at a marsh wetland in an existing Manitoba Hydro Transmission Line ROW

One area of emergent marsh wetland is traversed by the proposed pipeline along an existing Manitoba Hydro transmission line right of way. The location of this marsh wetland is 14U 645628 E 5556227 N to 14U 645853 E 5556507 N and approximately 362 metres of the marsh wetland will be horizontally direction drilled.

6.1.8 Fish

Waterways located in the vicinity or that are traversed by the proposed project assessment area include the East Branch Colony Creek (traversed), Omand's Creek's (traversed), Parks Creek Drain (traversed), Grassmere Creek Drain (traversed), Red River (vicinity), and Bruneau Drain (vicinity).

Omand's Creek and East Colony Creek both originate in the RM of Rosser. Omand's Creek is a seasonally flowing water course with headwaters originating northwest of the City of Winnipeg and flows southwest to join with the Assiniboine River in the City of Winnipeg. According to the City of Winnipeg Fish Sampling Report that was completed in 2006, in Omand's Creek, northern pike were found on spawning runs as far north as Klimpke Road. This finding indicates that upstream areas of the creek do represent spawning habitat for this species. In 2006, sampling was conducted in Brookside Cemetery (City of Winnipeg) upstream and downstream of the new riffle structures and species caught included northern pike, brook stickleback and fathead minnows. Photo 6-4 below shows where Omand's Creek will be directional drilled for the pipeline crossing. East Branch Colony Creek originally used to drain as a distinct watercourse into the Assiniboine River, but was diverted into Omand's Creek (NE-21-11-2EPM). The portion of the East Branch Colony Creek that is traversed by the proposed pipeline was observed during field visits and no distinct watercourse or fish and fish habitat was observed.

Photo 6-4: View looking west where the proposed pipeline will traverse Omand's Creek

A watershed riparian assessment survey was conducted in 2007 and 2008 (North/South Consultants Inc., 2008) to provide the East Interlake Conservation District with a comprehensive review of riparian and land use conditions affecting Watershed 05OJ. Third order drains and higher included in the survey that are also traversed by the Project include Grassmere Creek Drain and Parks Creek. Fish species observed included black crappie, brook stickleback, johnny darter and pearl dace. The majority of the land use adjacent to Grassmere Creek Drain was characterized as agricultural land with areas of hayland and residential/commercial land use. Photograph 6-5 shows the location where the proposed pipeline will cross Grassmere Creek Drain.

Photo 6-5: Looking west at the Grassmere Creek Drain crossing

Fish utilization surveys conducted in Parks Creek (North/South 2008), revealed species such as brook stickelback, northern pike and pearl dace. Land use along Parks Creek was classified as being dominantly cropland with areas of residential commercial and mixed forest land. Photograph 6-6 shows Parks Creek in the project area. The propose Project will be directionally drilled south of where this photograph was taken.

Photo 6-6: Looking north one mile from where the proposed pipeline RoW will traverse Parks Creek Drain

6.1.9 Amphibians and Reptiles

The project study area supports eleven species of amphibians (Table 6-4). All species are considered common, with most being ranked by the Manitoba Conservation Data Centre as widespread and abundant in southern Manitoba (MCDC 2015). The northern leopard frog is listed by the *Species at Risk Act* as “Special Concern” in western Canada, but is considered abundant across the Manitoba part of its range. All amphibian species that occur in the project study area concentrate where near suitable breeding habitat in the spring (e.g. small ponds, marshes, watercourses, ditches). Adult wood frogs were particularly abundant during spring visual encounter surveys (Appendix F), with egg masses and tadpoles being widespread in suitable wet habitat (Photograph 6-7). After winter emergence and spring mating season all amphibian species disperse to find available foraging habitat (e.g. streams, marshes, grasslands, forests) throughout the region.

Table 6-4: Amphibian species present in the project study area (Manitoba Herp Atlas 2015; Preston 1982).

Common Name	Scientific Name
Spring peeper	*Pseudacris crucifer*
Northern leopard frog	*Lithobates pipiens*
Common mudpuppy	*Necturus maculosus maculosus*
Blue-spotted salamander	*Ambystoma laterale*
Barred tiger salamander	*Ambystoma mavortium*
American toad	*Anaxyrus americanus*
Canadian toad	*Anaxyrus hemiophrys*
Gray treefrog	*Hyla versicolor*
Cope's treefrog	*Hyla chrysoscelis*
Boreal chorus frog	*Pseudacris maculata*
Wood frog	*Lithobates sylvaticus*

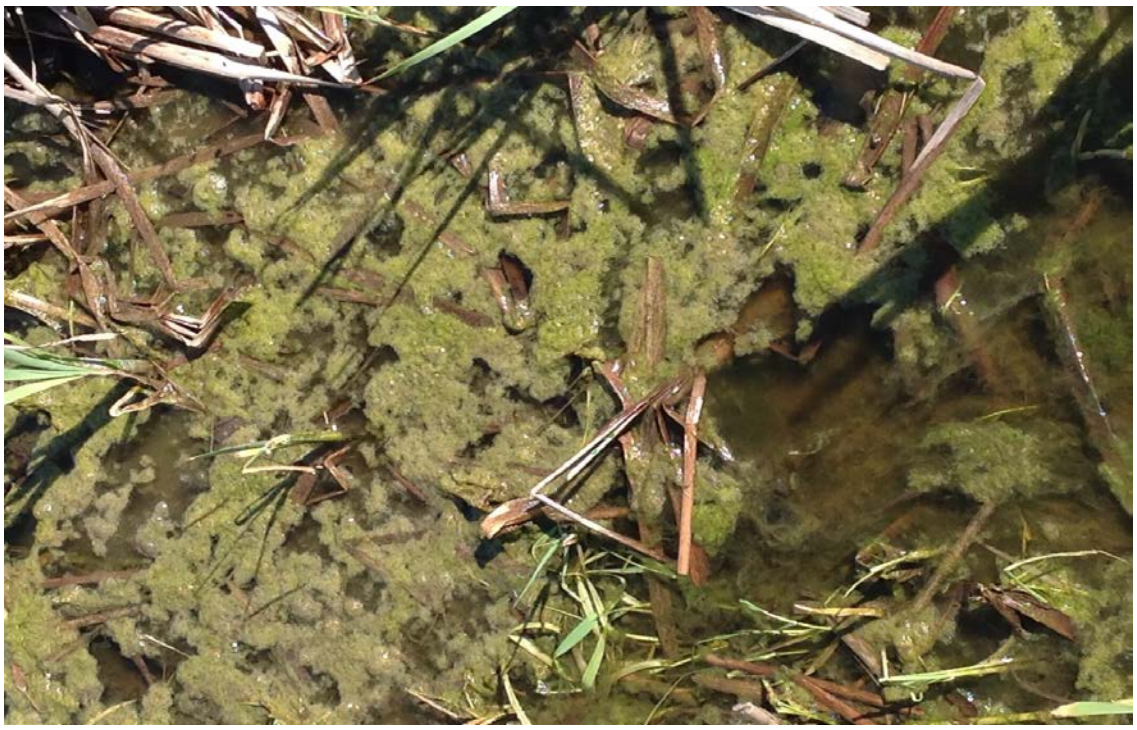


Photo 6-7: Cluster of woodfrog eggmasses situated on a tributary of Omand's Creek

The project study area supports six species of reptiles (Table 6-5).

All are considered common across southern Manitoba with most being ranked by the Manitoba Conservation Data Centre as widespread and abundant in southern Manitoba (MCDA 2015). All reptiles in the project study area overwinter by hibernating below the frost or water line. Some species, like the common garter snake, hibernate in communal dens below the ground. After winter emergence and spring mating season all amphibian species disperse to find available foraging habitat (e.g. streams, marshes, grasslands, forests) throughout the region.

Table 6-5: Reptile species present in the project study area (Manitoba Herp Atlas 2015; Preston 1982).

Common Name	Scientific Name
Plains garter snake	*Thamnophis radix*
Common garter snake	*Thamnophis sirtalis*
Northern red bellied snake	*Storeria occipitomaculata occipitomaculata*
Smooth green snake	*Opheodrys vernalis*
Western painted turtle	*Chrysemys picta*
Common snapping turtle	*Chelydra serpentina*

6.1.10 Mammals

The Winnipeg Ecodistrict, in which a majority of the proposed project is located, includes habitat for 46 species of mammals that are either residents or migrants (Manitoba Hydro, 2012). The region includes habitat for several mammal species (Table 6-6). The white-tailed deer is especially well established in the region where it thrives in the mixture of agricultural lands, pastures and deciduous forests.

The proposed project is located adjacent to or on lands that are dominantly agricultural and therefore the presence of high quality wildlife habitat is not present. Whitetail deer tracks, coyote tracks, red fox (*Vulpes vulpes*) tracks and ground squirrels were identified in the project area during field visits.

Table 6-6: Common mammal species in the project study area

Common Name	Scientific Name
white-tailed deer	*Odocoileus virginianus*
coyote	*Canis latrans*
rabbits	*Lepus* spp
ground squirrels	*Spermophilus* spp.

6.1.11 Birds

Several bird species are characteristic to this area of Manitoba including hawks, owls, woodpeckers, sparrows, blackbirds and waterfowl. Table 6-7 provides representative birds of the Manitoba portion of the ecozone (Smith et al. 1998). Even though a significant reduction in acreage and numbers of wetlands has occurred through previous activities, there are areas in the regional assessment area that provide major breeding, staging and nesting habitat for various breeds of ducks, geese and other waterfowl (i.e. Oak Hammock Marsh).

The Winnipeg Ecodistrict includes habitat for 342 species of birds of which more than 90 of these bird species are known to overwinter in the Winnipeg area. Within the Gimli Ecodistrict, rough grouse, raptors and songbirds can be found and wetlands interspersed throughout the Ecodistrict are important for waterfowl breeding and migratory bird staging.

A much smaller subset of these species occur at the Project site given the narrow, limited extent of habitat and the impacts from development in the local study area. Field visits (Appendix F) identified a very limited amount of nesting activity directly along the proposed route. Only red-winged blackbirds (*Agelaius phoeniceus*) were observed nesting in stands of cattails along the route.

Table 6-7: Common bird species in the project study area

Common Name	Scientific Name
Great blue heron	*Ardea herodias*
black-billed magpie	*Pica hudsonia*
Baltimore oriole	*Icterus galbula*
veery	*Catharus fuscescens*
brown thrasher	*Toxostoma rufum*

6.1.12 Species at Risk

The term "species of conservation concern" includes species that are rare, disjunct, or at risk throughout their range in Manitoba and in need of further research (Manitoba Conservation Data Centre, 2015). These species are listed by the Manitoba Conservation Data Centre (MBCDC) as very rare to uncommon. The term species of conservation concern also encompasses species that are listed under *The Endangered Species and Ecosystems Act* – Manitoba (ESEA), the federal *Species at Risk Act* (SARA) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The MBCDC lists flora and fauna of conservation concern in the Interlake Plain Ecoregion and Lake Manitoba Plain Ecoregion (Appendix G), of which both ecoregions encompass the project area. Potential species of concern that could occur in the region include, seven animal assemblages, 14 invertebrate animals, 85 vertebrate animals and 219 vascular plants.

6.1.12.1 Desktop Analysis and Field Studies

A search of the MBCDC database in December 2014 and January 2015 indicated the following records for species of conservation concern within the local assessment area:

- two records for Barn Swallow (*Hirundo rustica*);
- 13 records for Bobolink (*Dolichonyx oryzivorus*),
- one record for Eastern Wood-pewee (*Contopus virens*);
- one record for Red-headed Woodpecker (*Melanerpes erthrocephalus*), and
- eight records for Eastern Loggerhead Shrike (*Lanius Ludovicianus migrans*).

Field visits was conducted for the proposed Project (where road accessible) between January and May 2015. Information collected during these visits included existing land use information (i.e. agricultural land; shelterbelts; wetlands); observances of wildlife including mammals and birds; and visual encounter surveys for amphibians. One observation of bobolink was recorded during field visits and nesting locations for barn swallows were also identified under two adjacent bridge structures (Photograph 6-8).

Photo 6-8: Barn Swallow nest situated underneath a bridge of a Perimeter Highway access road.

Table 6-8 provides information on the species of conservation concern and their status rankings.

Table 6-8: Species of Conservation Concern in the Vicinity of the Proposed Project

Scientific Name	Common Name	COSEWIC	SARA	ESEA	MBCDC
Lanius ludovicianus migrans	Eastern Loggerhead Shrike	Endangered	Endangered	Endangered	S1
Melanerpes erythrocephalus	Red-headed woodpecker	Threatened	Threatened	Threatened	S2
Hirundo rustica	Barn Swallow	Threatened	-	-	S4
Dolichonyx oryzivorus	Bobolink	Threatened	-	-	S4
Contopus virens	Eastern Wood-pewee	Special Concern	-	-	S4

Note: Provincial (S) rank range from (MBCDC).

1 Very rare throughout its range or in the province (5 or fewer occurrences, or very few remaining individuals). May be especially vulnerable to extirpation.

2 Rare throughout its range or in the province (6 to 20 occurrences) May be vulnerable to extirpation

4 Widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, by the element is of long-term concern (>100 occurrences)

6.2 Socio-Economic Environment

The proposed Project is located in both the South Interlake Planning District in the RMs of Rosser and Rockwood and the Red River Planning District, in the RM of St. Andrews. Towns and communities in the project area include the Town of Stonewall, community of Stony Mountain and the City of Selkirk (Map 6-1).

6.2.1 First Nations

The Regional Assessment Area is located in the Treaty 1 Area. Within the local/project assessment area, only Roseau River Anishinabe First Nation has reserve land. On the east side of PTH 236 in SW-7-12-2EPM, Roseau River Anishinabe First Nation Reserve No. 2B is situated which is approximately 75.4 ha (305,000m^2) of land. There are no reported Treaty Land Entitlements in the area of the proposed Project.

6.2.2 Manitoba Metis Federation

Based on the agreement made between the Manitoba Metis Federation and the Province of Manitoba in September 2012, the Project area lies within the Metis Natural Resource Harvesting Zone.

6.2.3 Population, Employment and Economy

6.2.3.1 Municipality of Rosser

The RM of Rosser became a municipality in 1893. At that time it was made up of land formerly

in the municipalities of St. Francois Xavier, Assiniboia and St. Paul. The portion of Assiniboia which became part of Rosser included the Village of Brooklands. In 1895 the boundaries were adjusted to include an area of land previously in the municipality of Kildonan and gave up one township to St. Paul (Rosser Municipality Centennial Book Committee. 1993).

The RM was initially 108,000 acres and extended 24 miles from Stony Mountain west to Marquettte. It was bordered to the south by riverlots and to the north were the RM of Rockwood and Woodlands. Villages in the RM included Rosser, Grosse Isle, Meadows and Marquette. The communities of little Mountain, Gordon and Lilyfield were organized later on. Settlers who located in the municipality purchased land from the Metis or from speculators who had already purchased Metis lands. Farms in the area were originally 240–acre parcels. In the initial years there was very little acreage that was cultivated. The first crops were oats, mainly to feed oxen and horses which were the working animals for the settlers. Agriculture developed at a very fast rate and by the 1900s large fields were being cultivated.

Population

The Rural Municipality of Rosser today covers an area of 44,324 ha (approximately 4.8 townships) in southern Manitoba. Grosse Isle is the largest population centre in the municipality. Smaller concentrations of people reside in Meadows and Rosser. In 2011, the RM of Rosser had a population of 1,352 (Manitoba Hydro, 2012). The population of the RM of Rosser has increased 0.2% from 1996 to 2011. Table 6-9 summarizes population information for the RM of Rosser.

Table 6-9: Population Summary for the RM of Rosser

1996 Population	2001 Population	2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
1,349	1,412	1,364	1,352	-3.4	-0.9

Source: Statistics Canada. 2001, 2006 and 2011 Census Data.

Employment and Economy

Rosser is home to a number of businesses and services. Prominent employers in the region include the BFI disposal grounds, Bel Acres Golf and Country Club, Maxim Transport and Collision Centre, Manitoba Hydro and Player's golf course. The municipality has a strong agricultural presence with many residents employed as farmers or in agricultural businesses. Rosser has four large grain elevators, six seed plant cleaners, and several farm equipment suppliers and implement dealers. The Manitoba Hydro Dorsey Converter Station and the large static inverter plant for the Nelson River Bipole HVDC power transmission scheme are located by the Village of Rosser. CentrePort Canada will also be located partly within the RM of Rosser.

Because of its location on the northern border of Winnipeg and along the Perimeter Highway, Rosser is home to many trucking trailer services and terminals. Prominent transport companies such as Trans X, Quick X, Pro Line Trailers, EBD Enterprises and Peterbilt Truck Sales are found within the municipality's borders, along with many smaller independent companies. Some

of these companies are also expanding and developing their facilities further.

The municipality also has a very strong agricultural presence. Many residents are employed as farmers or in agricultural businesses. The area includes four large grain elevators, six seed plant cleaners and several farm equipment suppliers and implement dealers. Table 6-10 below provides information on the industry and workforce breakdown for the RM of Rosser (RM of Rosser City-data.com website, 2015).

Table 6-10: Industry and Workforce in the RM of Rosser

Industry	% Workforce
Agriculture and other resource-based industries	26%
Other Services	16%
Business Services	12%
Retail Trade	11%
Manufacturing	9%
Health Care and Social Services	8%
Educational Services	7%
Wholesale Trade	5%
Other	5%

6.2.3.2 Municipality of Rockwood

The RM of Rockwood was incorporated in 1880. The Rural Municipality of Rockwood now consists of Townships 13 to 17, Ranges 1, 2 and the west-half of 3 EPM. For voting purposes, there are six Wards and six Councillors with a Reeve as the head of the Municipality (Manitoba Hydro 2012).

Population

The Rural Municipality of Rockwood covers an area of 121,317 ha (approximately 13.2 townships) in the Southern Interlake Region. The municipality is located about 8 km from the north Perimeter Highway (101) of the City of Winnipeg. The Towns of Stonewall, Stony Mountain and Teulon are the largest population and service centres with smaller concentrations of people residing in Balmoral, Gunton, Komarno, Argyle and Grosse Isle. Rockwood has continued to grow since it became a municipality with a population of about 7,964 in 2011. The population of the Rural Municipality of Rockwood has increased 6.1% from 1996 to 2011. Table 6-11 summarizes population information for Rockwood.

Table 6-11: Population Summary for the RM of Rockwood

1996 Population	2001 Population	2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
7,504	7,654	7,692	7,964	0.5	3.5

Source: Statistics Canada. 2001, 2006 and 2011 Census Data.

Employment and Economy

Rich, fertile soils, are common in the municipality which allows successful crop and livestock productions. The fields are dotted with many small wooded areas of ash and poplar trees. Most of the farmers in the area are grain farmers, growing wheat, barley, oats, canola, flax and alfalfa-grass mixtures. Beef feedlots, swine and dairy operations are also located within these grain-producing areas. Farms with beef cows generally have pasture lands in the marginal land available northwest of Teulon. Historically, the area has had many dairy farmers due to its proximity to the large milk-consuming population in nearby Winnipeg. Currently, the area contains the highest concentration of dairy operations in the South Interlake Region. In recent years, more farmers in the Municipality have diversified their operations (e.g., "U-pick" berry operations and elk ranching). The sizes of farms in the area are also increasing in keeping with the national trends.

The Rural Municipality of Rockwood has a diverse economy formed by different industries and services that provide for the surrounding community and the rest of the world. The municipality has established an agricultural presence with local farmers and cattle producers who rely on the Town of Teulon for supplies like machinery and crop inputs. Teulon also provides a market for many crops produced by local farmers. As a major urban centre in Rockwood, Teulon provides a wide array of businesses integral to residents in the northern section of the municipality. Over the years many small manufacturing firms have established themselves in Teulon.

In addition to agricultural farms and related agricultural businesses, major employers in the municipality include limestone quarry industries, the aerospace industry, federal corrections institutes, Oak Hammock Marsh and Interpretive Centre, and Manitoba Hydro's training facility. There are also several natural attractions such as Oak Hammock Marsh, Narcisse snake dens and one of the largest collections of fossils in the Interlake Region, located in the Stony Mountain abandoned quarries.

Information on the industry and workforce breakdown for the RM of Rockwood (RM of Rockwood City-data.com website, 2015) is provided below in Table 6-12.

Table 6-12: Industry and Workforce in the RM of Rockwood

Industry	% Workforce
Other Services	19%
Business Services	19%
Agriculture and other Resource-based Industries	14%

Other	12%
Health Care and Social Services	12%
Manufacturing	9%
Retail Trade	8%
Construction Services	7%

6.2.3.3 Municipality of St. Andrews

The RM of St. Andrews was incorporated in 1880. When the municipality was first established, it seemed (records are unclear) to have included both sides of the river and even the Town of Selkirk initially. Over time the boundaries seemed to change as the Town of Selkirk appeared in records. On January 1, 1884, the re-organized RM of St. Andrews was set up including the present area and now the Town of Winnipeg Beach and Village of Dunnottar.

The Rural Municipality of St. Andrews covers an area of 83,906 ha (approximately 9.1 townships) in the South Interlake Region of Manitoba. The Municipality is located west of the Red River and extends north from the RM of West St. Paul to the south end of Lake Winnipeg. Selkirk is the largest population and service centre with smaller concentrations of people resident in Winnipeg Beach, Lockport, Clandeboye, Petersfield and several smaller communities along the Lake Winnipeg shore.

Population

The population of the area increases during the summer season with an influx of cottagers attracted to the water-based recreation activities associated with Lake Winnipeg. St. Andrews had a population of 11,875 in 2011. The population for the RM of St. Andrews has increased 17.1% from 1996 to 2011. Table 6-13 summarizes population information for the RM of St. Andrews.

Table 6-13: Population Summary for the RM of St. Andrews

1996 Population	2001 Population	2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
10,144	10,695	11,359	11,875	6.2	4.5

Source: Statistics Canada. 2001, 2006 and 2011 Census Data.

Employment and Economy

The economic activity in St. Andrews is diverse. The north and central portions of the municipality are actively involved in agriculture and farming. Many small and large family farms produce several varieties of cereal grains and oilseeds. There are also livestock producers that operate in the municipality, mostly dairies supplying raw milk to several processors in the City of Winnipeg. Several small and large manufacturing firms operate in the municipality, many

located close to the cities of Winnipeg and Selkirk. The Industrial Park has a wide variety of businesses including trucking outfits, general contractors, recycled autoparts, recreation vehicle manufacturers, amusement rides for Carnival midways, and a storage building for Western Canadian Aviation Museum. St. Andrews Airport and associated industries employ approximately 150 people making it a major economic employment centre in the district.

There are cottage areas located along Netley Creek and Wavey Creek, Red River and Lake Winnipeg. These are all popular vacation retreats for many residents of the community and the nearby cities. The municipality's biggest tourist attraction is the Lower Fort Garry National Historic Site. Table 6-14 provides information on the industry and workforce breakdown for the RM of St. Andrews.

Table 6-14: Industry and Workforce in the RM of St. Andrews

Industry	% Workforce
Other Services	20%
Business Services	17%
Manufacturing	10%
Health Care and Social Services	10%
Retail Trade	10%
Other	9%
Construction	8%
Agriculture and other resource based industries	8%
Educational Services	7%

6.2.3.4 Town of Stonewall

The closest communities to the proposed Project in the local assessment area are the City of Selkirk, City of Winnipeg, Town of Stonewall, and the community of Stony Mountain. As the proposed project is located within the RM of Rosser, Rockwood, and St. Andrews the focus of this environmental assessment will be on the communities of Stonewall, Stony Mountain and the City of Selkirk.

The Town of Stonewall is located in the Rural Municipality of Rockwood. It was found in the 1800s as a major limestone production centre. Samuel Jacob Jackson acquired the land the town is built on in 1875 and the town was founded in 1878. The Quarry opened in the early 1880s with the focus on production of quicklime.

It is approximately 25 km north of Winnipeg on PTH 67 and approximately 2.4 km north of the proposed Project (Map 6-1). Stonewall still maintains its heritage of limestone production through their many historic buildings. One of the abandoned quarries has been beautified and developed into the Stonewall Quarry Park. In the 1960s, Stonewall began to diversify its economy and move away from its dependence on limestone. Planning and development have resulted in a prosperous community, with a positive and diverse economic environment.

Stonewall continues to be one of Manitoba's fastest growing communities that is home to variety of businesses.

Population

Population data for the Town of Stonewall is outlined on Table 6-15. The population of the community has increased 23% from 1996 to 2011.

Table 6-15: Population Summary for the Town of Stonewall

1996 Population	2001 Population	2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
3,689	4,012	4,376	4,536	9.1	3.7

Source: Statistics Canada. 2001, 2006 and 2011 Census Data.

Employment and Economy

The Town of Stonewall's businesses provide supplies and services to the local agricultural community. There are many types of businesses that provide an array of goods and services and the retail market is strong and diverse enough to support the shopping needs of the town and surrounding areas. Stonewall also has an industrial park whose local industries are supplied with natural gas and electricity. Stonewall features a number of commercial, educational and medical services that suits the diverse needs of growing families. Stonewall boasts day care facilities, schools, a new hospital, year-round recreational facilities, low residential tax, and prime commercial space for rent. Table 6-16 provides information on the industry and workforce breakdown for the Town of Stonewall (Town of Stonewall City-data.com website, 2015.

Table 6-16: Industry and Workforce in the Town of Stonewall

Industry	% Workforce
Other Services	22%
Business Services	21%
Other	16%
Health Care and Social Services	14%
Retail Trade	13%
Manufacturing	7%
Educational Services	6%

6.2.3.5 Stony Mountain

Stony Mountain was built in the 1880s. In 1872 the Federal Government authorized setting up a penitentiary in Manitoba. It was opened in 1876. Stony Mountain's first warden was Colonel Sameul L. Bedson. On August 20th of the year 1873 in order of the council No.1111 southwest

¼ and the southeast ¼ of section 11-12-2 east were expropriated. Morrison and Barclay of Guelph, Ontario were given a contract to build the Manitoba Penitentiary, now known as Stony Mountain Institution.

The community of Stony Mountain is classified as an unincorporated urban centre located in the Rural Municipality of Rockwood. The community is approximately 11 km north of the City of Winnipeg, off PTH No.7 and 1 km north of the proposed Project (Map 6-1).

Population

In 2011, Stony Mountain had a population of 1,696 which was down 3.5% from 2006 (Table 6-17).

Table 6-17: Population Summary for the Community of Stony Mountain

2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
1,757	1,696	9.1	-3.5

Source: Statistics Canada. 2011 Census Data.

Employment and Economy

The community of Stony Mountain offers minimal business, trades and professional services and is the location of the Stony Mountain ski area. The Federal Penitentiary (Stony Mountain Penitentiary) and Rockwood Institution employs approximately 200 people and is considered the largest employer in the municipality. Magellan Aerospace, a prominent aerospace producer has a plant in Stony Mountain employing approximately 75 residents. Other prominent employers include Interlake Supply, a local auto wrecker and bodyshop, Rockwood Turkey Farm, and Charison Hatchery.

Stony Mountain also has a fire department, curling rink, recreation center/arena, training facility, daycare, nursery school, gas stations, hairdresser, post office, grocery store, restaurants and motel accommodations.

City of Selkirk

The City of Selkirk is located 25 km northeast of the City of Winnipeg (Map 6-1) in the Interlake Region of Manitoba and is separated into east and west by the Red River. PTH 9 (Main Street) passes through Selkirk and veers northwest towards Lake Winnipeg.

Selkirk Post Office was the town's first public building constructed between 1907 and 1909. It was originally envisioned as Manitoba's centre for trade, export and finance, however, that vision was short lived as by turn of century it was apparent that the main rail line would cross through Winnipeg and not Selkirk. Selkirk then changed its focus to become the centre of agriculture of the Interlake Region and summer resort for Winnipeggers.

Population

Population data for the City of Selkirk for 2006 and 2011, and percent population change between 2006 and 2011 are outlined on Table 6-18. The population of the community has increased 3.4% from 1996 to 2011. There are 4,062 private dwellings and the population density is 395.4 residents/km^2 (2011 Census, Statistics Canada, 2012).

Table 6-18: Population Summary for the City of Selkirk

1996 Population	2001 Population	2006 Population	2011 Population	% Population Change 2001-2006	% Population Change 2006-2011
9,881	9,752	9,515	9,834	-2.4	3.4

Source: Statistics Canada. 2001, 2006 and 2011 Census Data.

Employment and Economy

The City of Selkirk is an industrial, commercial and agricultural centre. It is home to a wide variety of businesses and services, including major employers such as the Gerdeau MRM Steel Mill, which employs 450 people and Selkirk Mental Health Centre. The Selkirk General Hospital is also another important support of the local economy (City of Selkirk website, 2015).

Currently, the first phase of the Selkirk Industrial Park is scheduled to have 10 lots ready for spring of 2015. The land area of the park is greater than 275 acres and its four phases will accommodate 80 small and medium sized businesses. It is estimated that the park will generate 50-250 new jobs and will attract skilled workers and entrepreneurs to the city. The industrial park will also have a commercial area for big box stores.

The Red River offers a variety of recreation and sporting activities, and provides fertile fields surrounding the city on all sides. The City hosts manufacturing firms including the multi-national. Selkirk businesses range from small to large fabricating and manufacturing firms, providing many products and services to the surrounding area. The Selkirk Mental Health Centre, the largest mental health facility in the province, is a major employer in the City. In addition, Selkirk has a thriving tourism industry, based on its proximity to the Red River and the prime location for trophy catfish fishing.

The Selkirk Marine Museum preserves the history of the area settlement, and the Selkirk Arena and the Selkirk Recreational Complex offer recreational activities and sporting events for the City residents.

Table 6-19 below provides information on the industry and workforce breakdown for the City of Selkirk.

Table 6-19: Industry and Workforce in the City of Selkirk

Industry	% Workforce
Other Services	23%
Health Care and Social Services	21%

Other	15%
Business Services	12%
Manufacturing	11%
Retail Services	10%
Educational Services	7%

6.2.4 Land Use

The proposed project is located in a dominant agricultural area in southeast Manitoba with some transportation, municipal infrastructure and residential developments. The majority of the proposed pipeline will be located predominantly in existing road RoW as well as parallel an existing Manitoba Hydro transmission line for a portion of its length. The land use is encompassed by two Planning Districts for the proposed project, the Red River Planning District (Selkirk and District Development Plan By-Law 190-08) and the South Interlake Planning District (South Interlake Planning District Development Plan 2011, By-Law 03/10).

6.2.4.1 Land Use Zoning

South Interlake Planning Development Plan By-Law

Agricultural activities are the dominant use in the rural area of the planning district and policies protect existing agricultural activities and provide support for enhancing those activities. The majority of the proposed Project in the South Interlake Planning District traverse lands designated as Agricultural Rural Areas (A) which generally allow the full unrestricted range of agricultural activities. A small portion of the project area occurs on lands designated as urban centre lands.

With the exception of wind farms, essential activities of public and private utilities are permitted in any land use designation, subject to municipality zoning by-laws. Cooperation and liaison are maintained with Manitoba Hydro, Manitoba TeleCom Services and other similar utilities to ensure the provision of their services in the most economical and efficient manner possible to minimize conflict with the orderly provision of municipal sewer, water and roadway services.

The portion of the proposed project, located in SW-19-11-2EPM, traverses lands designated as CentrePort Canada Area (South Interlake Planning District Development Plan, 2011). Currently a planning and development framework for CentrePort Canada has not been developed and as a result, the policies and guidelines set out in Provincial Regulation Man. Reg. 81/2011 will apply to any proposed development on the CentrePort lands.

Selkirk and District Development Plan

The portion of the proposed pipeline that occurs from NW-3-13-3EPM to the tie-in to the exiting valve site near Pittsburgh Avenue in the City of Selkirk, are located on lands covered by the

Selkirk and District Development Plan. The majority of the land is designated as Resource and Agriculture (RA) which are defined as areas that are predominantly reserved for agriculture and other natural resource related industries and used. The portion of the 12 inch pipeline located immediately east of PTH 9 travelling to immediately west of Railway Street, lands are designated as Agriculture Restricted defined as areas in which small holding development allows for smaller scale less intensive agricultural operations and low density on-farm residential use.The existing valve site located just east of Railway Street is on lands designated as General Development meaning areas where signficant residential development exists or is planned when centralized waste and water services become available (Selkirk and District Planning Area Board 2008).

6.2.4.2 Dwellings and Farmsteads

The proposed Project is located near the Town of Stonewall, community of Stony Mountain and the City of Selkirk, and located along road allowances and agricultural land. The approximate number of dwellings (residences) and farmsteads located in the quarter section traversed by the proposed pipeline, based on recent orthophoto imagery is outlined in Table 6-20.

The greatest concentration of dwellings (residences) occur in NW Quarter Section 19, Twp 13, Rge 2 EPM (14 dwellings) and on the river lots traversed by the proposed pipeline in the vicinity of the City of Selkirk (approximately 57 dwellings).

Table 6-20: Number of dwellings and farmsteads

Rural Municipality	Property Description	Number of Dwellings and Farmsteads
RM of Rosser	SE Quarter Section 24, Twp 11, Rge 1 EPM	2
	NE Quarter Section 24, Twp 11, Rge 1 EPM	2
	SE Quarter Section 36, Twp 11, Rge 1 EPM	1
	SE Quarter Section 1, Twp 12, Rge 1 EPM	1
	NE Quarter Section 1, Twp 12, Rge 1 EPM	1
	SE Quarter Section 12, Twp 12, Rge 1 EPM	1
	NE Quarter Section 12, Twp 12, Rge 1 EPM	1
	SE Quarter Section 24, Twp 12, Rge 1 EPM	1
	NE Quarter Section 30, Twp 12, Rge 2 EPM	1
	NW Quarter Section 28, Twp 12, Rge 2 EPM	1
	NE Quarter Section 28, Twp 12, Rge 2 EPM	1
	NW Quarter Section 27, Twp 12, Rge 2 EPM	1
	SW Quarter Section 35, Twp 12, Rge 2 EPM	3
RM of Rockwood	SW Quarter Section 7, Twp 13, Rge 2 EPM	1
	NW Quarter Section 7, Twp 13, Rge 2 EPM	1
	SW Quarter Section 18, Twp 13, Rge 2 EPM	1
	NW Quarter Section 18, Twp 13, Rge 2 EPM	1
	SW Quarter Section 19, Twp 13, Rge 2 EPM	2
	NW Quarter Section 19, Twp 13, Rge 2 EPM	14

Table 6-20: Number of dwellings and farmsteads

Rural Municipality	Property Description	Number of Dwellings and Farmsteads
	SW Quarter Section 6, Twp 13, Rge 3 EPM	2
	SE Quarter Section 6, Twp 13, Rge 3 EPM	1
	SE Quarter Section 5, Twp 13, Rge 3 EPM	1
	SW Quarter Section 4, Twp 13, Rge 3 EPM	4
	NW Quarter Section 4, Twp 13, Rge 3 EPM	2
	NE Quarter Section 4, Twp 13, Rge 3 EPM	4
RM of St. Andrews	NE Quarter Section 3, Twp 13, Rge 3 EPM	1
	River Lots traversed by the proposed line	60

6.2.4.3 Mineral and Aggregate Resources

The Rural Municipality of Rockwood and to a lesser extent the RM of Rosser, contain high quality aggregates, particularly crushed limestone that is important for the supply of building materials to southern Manitoba (South Interlake Planning District, 2011). Reserves of sand, gravel and crushed limestone are estimated to be sufficient to meet all requirements within the Southern Interlake Planning District in excess of 25 years. The primary source of aggregate within the Southern Interlake Planning District is derived from crushed limestone. Within the RM of Rockwood there is approximately 3,000 ha of near-surface limestone bedrock. In the Red River Planning District, the Selkirk and District Development Plan (2008) indicates that aggregate sources are derived from gravel deposits and near surface dolomitic limestone bedrock.

The aggregate resources compilation map series for Selkirk (1988) identified aggregate deposits and a private sand and gravel pit immediately north of Selkirk. Numerous bedrock quarries, both crown and private were identified north of Stony Mountain and Stonewall. Where PR 321 meets PTH 236 aggregate deposits and private sand and gravel pits are located in a northwesterly to southeasterly band approximately 6.4 km in length.

A detailed review of the Province of Manitoba Mineral Resources GIS Map Gallery website (2015) was conducted and no mineral occurrences, mining claims, mines or quarry leases or quarries are located in the local assessment area.

6.2.4.4 Parks and Protected Areas

Within the regional assessment area, Oak Hammock Marsh and Grant's Lake are the closest Wildlife Management Areas (WMA) to the proposed project area. Provincial Parks located in the Regional Assessment Area include Norris Lake Provincial Park and Winnipeg Beach Provincial Park and municipal parks include Stonewall Quarry Park and Little Mountain Park (Manitoba Conservation and Water Stewardship website, 2015). Parks and protected areas located in close proximity to the proposed Project are discussed below.

Oak Hammock Marsh Wildlife Management

Oak Hammock Marsh and Interpretive Center is located 10 km north of the proposed Project north on PTH No. 67, just east of PTH No. 7. The Wildlife Management Area is 36 km^2 of tall prairie grass, meadow and marsh. The marsh is a remnant of the once vast St. Andrews Bog set between the Stonewall ridge to the west and the lower Selkirk ridge to the east. Early attempts at drainage all but eliminated the marsh, but it was restored through the construction of dykes and the creation of several impoundments. The marsh is now surrounded by remnants of tall-grass prairie and formerly cultivated areas that have been seeded to nesting cover. There is also a small stand of bur oak. The area is a premier wildlife viewing location and home to the Oak Hammock Marsh Conservation Centre. It is a major staging area for Canada geese (*Branta canadensis*) and other waterfowl. The marsh also attracts numerous gull species and shorebirds, and it has a large muskrat (*Ondatra zibethicus*) population.

Grant's Lake Wildlife Management Areas

Grants Lake Wildlife Management Area is next to Grants Lake Game Bird Refuge and is located approximately 14 km west of the proposed Project. The lake is approximately 395 ha in size and occurs 3 km northeast of Meadows. Grants Lake is a major waterfowl staging area, particularly for snow geese. Most of the wildlife management area consists of wetland interspersed with areas of young poplar and willow stands. The management area also provides habitat for a variety of shorebird species. Ducks Unlimited Canada undertook a project to develop small ponds, ditches, and nesting islands. A managed hunting program occurs around the perimeter of the wildlife management area, while the lake acts as a game bird refuge (Manitoba Conservation and Water Stewardship website, 2015).

Stonewall Quarry Park

Stonewall Quarry Park, a 32 ha multi-use park located at the north end of the Town's Main Street, provides a natural area, swimming and picnic facilities, camping and walking trails. Quarry Park also displays the many aspects of limestone production and the history of the quarry is documented through a museum and interpretive program (Stonewall Quarry Park website, 2015).

Little Mountain Park

Little Mountain Park is located 5 km north of the James Richardson International Airport, at the northwest edge of Winnipeg. The park was created in 1965 both as a natural area and for its historical background. The park provides about 65 ha of trembling aspen woodland with open meadows of wildflowers. Wildlife includes owls, foxes, ground squirrels, and deer. There are several hiking and cross country ski trails throughout the park. The park occurs on a limestone ridge with bedrock near the surface, which has extensive rock fossilization. As a result, this led to the development of one of Winnipeg's first limestone quarries on site in 1896. Remnants of the abandoned quarry are still present, such as a scenic pond which once occurred as a quarry pit (City of Winnipeg, 2012).

6.2.4.5 Recreation

In addition to recreational activities that can be found in the parks and protected areas listed above, additional recreational activities in the project area include the following:

Stony Mountain Ski Hill

Stony Mountain ski hill is located approximately 3.2 km west of the proposed Project and 11 km north of Winnipeg on PTH 7 in the community of Stony Mountain. The ski area is the longest operating ski facility in the Winnipeg area, providing downhill skiing for almost 30 years. The area is equipped with groomed runs with a reputation for the best snow conditions within 10 km of Winnipeg (Stony Mountain Ski Area website, 2015).

Little Mountain Sportsplex

Recreational activities in Little Mountain Park include hiking and cross country ski trails throughout the park. In addition, the Little Mountain Sportsplex was established in 1999 and is a premiere sports facility located on 213 acres of greenspace adjacent to Little Mountain Park (Little Mountain Sportsplex website, 2015).

6.2.5 Infrastructure and Services

6.2.5.1 Infrastructure

Infrastructurce located in the immediate vicinity or traversed by the proposed project includes: Provinvical Trunk Highways (PTHs); Provincial Roads (PRs), existing Manitoba Hydro transmission and distribution lines; Canadian National and Canadian Pacific Raillines; and the Stony Mountain and Rockwood Institutions sewage lagoons (Map 6-2).

These and other infrastructure found in the region are discussed in the sections below.

Roads

Both major highways and provincial roads are found in the project assessment area and are traversed by the proposed Project. Provincial Trunk Highways (PTHs) and Provincial Roads (PRs) traversed by the portion of the project consisting of 12 inch pipeline includes: PTH 101 (Perimeter), 6, 7, 8, 9, and 67 (Fort Garry Road). Provincial Roads traversed by the proposed project include PR 221, 236, 321 (Rushman and Summit Road), and 220 (Blackdale Road). The portion of the proposed project consisting of 6 inch steel pipeline traverses only Provincial Road 321 (Rushman Road). The proposed project also traverses or parallels a number of municipal roads (from west to east) including: Grassmere Church Road, Rockwood Road, Miller Road, Pipeline Road, Duprez/Mud Road, Fulsher Road, Oak Hammock Road, Four Mile Road, Liss Road, Osterman Road, Little Britain Road, Centre Avenue, Calder Road, Pittsburg Avenue, and Railway Street.

PTH 101 (the Perimeter Highway) is a four lane divided highway that encircles Winnipeg and is

paralled by the proposed pipeline. The remainining five PTHs located in the project area, PTH 6, 7, 8, 9 and 67, are oriented in a north-south direction and are two lane undivided all weather roads where the proposed pipeline will be horizontally directionally drilled under each of them. The Provinicial Roads in the project area are oriented either north-south or east-west and are two lane stabilized all weather roads. Most of the munipcal roads located in the project area are gravel roads and are oriented north-south or east-west.

Railway Lines, Airports and Other Infrastructure

The proposed Project will traverse the Canadian National Rail line in NE-1-12-1EPM and three crossings of the Canadian Pacific Rail line in NE-25-11-1EPM, NW-35-12-2 EPM and near the tie-in to the existing valve site located immediately east of Pittsburg Avenue in the City of Selkirk.

There are two main air landing facilities in the vicinity of the proposed project: the St. Andrews Airport located 800 metres from the proposed project and the Selkirk Airport and Water Aerodrome (Selkirk and District Development Plan, 2008) which is approximately 1 km north of the City of Selkirk and approximately 3.2 km north of the proposed project. The Selkirk Airport is a private airport that is operated by Riverside Aircraft Maintenane Ltd. and provides approximately 914 metres of private gravel runway (Selkirk and District Development Plan, 2008). The Selkirk Water Aerodrome, which is defined as an area of open water used regularly by seaplanes or amphibious aircraft for landing and taking off, is also privately owned by Selkirk Air.

CentrePort Canada

CentrePort Canada is a Winnipeg-based inland port that will provide businesses with single-window access to free trade zone benefits, access to tri-modal transportation and a gateway to key markets in North America, Latin America, Asia and Europe. The development of CentrePort Canada will see the construction, over time, of some 3,642 ha of business parks, general industrial, aviation related industrial and distribution related facilities in the northwest area of Winnipeg and in the Rural Municipality of Rosser. The CentrePort Canada initiative includes development of a high-speed transportation corridor for the inland port. Currently more than 150 acres are in various stages of development or have been completed by 27 companies. In addition, the four lane divided highway which aims to better connect businesses within the inland port to national and international highways is more than 70% complete (Centreport Canada website, 2012).

Other Utilities

Within the regional assessment area, the majority of utilities include Manitoba Hydro's conversion, transmission and distribution systems. The system includes the Dorsey Converter Station, several transmission stations and various transmission lines. The Dorsey Converter Station is located 7.5 km west of the proposed Project. Dorsey is the southern terminus of the HVDC Bipole I and II transmission lines from the Radisson and Henday stations in northern

Manitoba. The facility converts the DC current to AC current for distribution via Manitoba Hydro's 230 kV system and interconnecting electrical systems to Saskatchewan, Ontario and the USA. Three other stations are located in the area around the proposed Project. These are the Rockwood Station (230-115 kV) located approximately 1.6 km north of the proposed Project in NE/SE-7-13-3EPM, Rosser Station (230-115 kV) located 7.5 km to the east in NE-5-12-1 EPM and Stony Mountain Station (115-12 kV) located 4 km to the north.

There are also numerous transmission lines, distribution lines and gas pipelines in the project area. MTS has telephone cables throughout the study area which service MTS telephone users. Overhead cables are generally found within the Town of Stony Mountain, while rural users are generally serviced by buried cables.

The closest sewage lagoons are located on the federal penitentiary grounds, which is adjacent to the proposed pipeline project located in the existing road ditch in SE-2-13-2 EPM.

6.2.5.2 Services

Local businesses and services in communities in the project area include post offices, financial services, regional libraries, fitness, personal care, automobile repair, building supply, restaurants, retail stores, and recreation areas.

Police services are provided by the Royal Canadian Mounted Police and the nearest detachments in the project area are the Town of Stonewall and City of Selkirk.

The nearest medical services in the project area are provided at the Stonewall and District Health Centre. The City of Selkirk health services are governed by the Interlake Regional Health Authority and The Selkirk & District General Hospital which is the largest acute care facility within the Interlake Regional Health Authority. Major hospitals are also located in the City of Winnipeg with Seven Oaks General Hospital being the closest to the proposed Project.

The proposed project area is located in both the Interlake School Division and Lord Selkirk School Division. Schools located near the proposed project include the Stony Mountain K-8 middle school that offers a full range of academic opportunities to students as well as the Stonewall Collegiate Institutes which is a senior school. Stonewall Collegiate has a student population of over 600, grades 9 through 12. The Lord Selkirk School Division has 14 schools (kindergarten to Senior 4), immersion and vocational programs.

Emergency Plans

In 2001, The Province of Manitoba mandated the rural municipalities to have an Emergency Plan. In August of 2002, the South Interlake Emergency Measures Board (SIEMB) was established. Included were the RMs of Armstrong, Rockwood, Rosser, Woodlands and the Town of Teulon. The board consists of an Emergency Coordinator, one Council Member and the Chief Administrative Officer from each community. Annually, each Municipality appoints a council member to the board. In 2003, the Emergency Plan was completed, meeting Manitoba's 60 point checklist. The SIEMB has established three locations to serve as Emergency Operation

Centres at a time of an emergency; the Multi-Purpose Room attached to the Warren/Woodlands Fire Hall at 159 McDonald Ave in Warren, the Teulon Town Office at #44 4th Ave SE, Teulon and the RM of Rockwood Office at 285 Main St, Stonewall. Each of these locations has emergency back-up electrical power and has been outfitted with emergency kits. In addition, the Rural Municipality of Rockwood has an emergency plan that is implemented in the event of a disaster, such as chemical spill.

In addition to emergency services such as fire, police and ambulance, the City of Selkirk has a comprehensive Emergency Preparedness Program. This includes all departments that operate within the City of Selkirk, RCMP, Fire Department and Regional Health Authority. The city has an Emergency Measure Support Team made of volunteers from the community that are being trained to fill required positions in the event of a large scale emergency.

6.2.6 Heritage Resources

Manitoba's Interlake Region has a diverse population and a wide variety of cultures. Historic settlement patterns have permitted individual group characteristics and values to persist. Common cultural origins include English, Ukrainian, Scottish, German, Ojibway, Cree, Métis, Irish, French, Polish and Icelandic (Manitoba). There are approximately 76,000 people living in the Interlake Region (2011). About 50% of the population is between the ages of 20 and 55 and about 35% are under 20 (Manitoba Hydro, 2012).

The Interlake Region of Manitoba is located between Lake Winnpeg and Lake Manitoba and is comprised of 14 Rural Municipalities (including Rockwood, Rosser and St. Andrews); the City of Selkirk; six towns (including the Town of Stonewall) and one village. The largest population in the region is the City of Selkirk, with the second largest population found in the Town of Stonewall.

6.2.6.1 Provincial and Federal Historic Sites

There are several provincial and federal historic sites in the Southern Interlake Region including the following:

All Saints Victoria Anglican Church

The All Saints Victoria Anglican Church is a Manitoba Provincial Heritage Site (No. 97) and is located in the RM of Rockwood, approximately 9.2 km north of the proposed Project.

Christ Church Cemetery

The Christ Church Cemetery is located on School Road in Stony Mountain, approximately 2.4 km west of the proposed Project.

Stony Mountain Pioneers and Veterans Monument

The Stony Mountain Pioneers and Veterans Monument is located in the Stony Mountain area,

approximately 2.4 km west of the proposed Project.

Administration Building

The Administration Building-A1 of the Stony Mountain Penitentiary is a recognized Federal Heritage Building because of its historical associations, and its architectural and environmental values and is located approximately 2 km from the proposed Project.

Rockwood School

The former Rockwood School (No. 19) is located on Rockwood Road west of PTH 7 in the Rural Municipality of Rockwood, approximately 3.2 km from the proposed Project.

Langtry Fox Farm Tower

The Langtry Fox Farm Tower is located in the Stonewall area approximately 3.7 km northwest of the proposed Project.

Balmoral Cairns

The Balmoral public school is approximately 15 km north of the proposed Project and three cairns in front of the Balmoral public school commemorate local men who died serving in Canadian military forces during the First World War and the Second World War; and pioneers of the Balmoral area.

In addition, several historic sites are located in the Stonewall area approximately 1 km north of the proposed Project and including:

- Stonewall Town Hall
- Stonewall Quarries
- Stonewall Cemetery
- Stonewall War Memorial
- Anglican Church of the Ascension
- Knox Presbyterian Church
- Orange Clark House
- Dominion Post Office Building

Rosser Centennial Cairn

The Rosser Centennial Cairn is located 8 km from the proposed Project, in front of the office of the RM of Rosser, on the east side of the village of Rosser.

St. Andrews on the Red

St. Andrews on the Red is the oldest Stone church in Western Canada being used as a place of

worship and was built between 1845 and 1849 and consecrated on Dec 19, 1849 by Rev. David Anderson, the first Bishop of the Anglican Diocese of Rupert's Land. It is located approximately 4.4 km from the proposed Project.

Lower Fort Garry National Historic Site

Lower Fort Garry, located approximately 3.7 km from the proposed project, is western Canada's major historic site which was built in 1830 by the Hudson's Bay Company, after Fort Garry, at the junction of the Red and Assiniboine Rivers, was destroyed by flood in 1826.

Lower Fort Garry evolved as a significant fur trade and shipment centre, and retail outlet for the Red River Settlement. The fort was commemorated by the Historic Sites and Monuments Board of Canada because of its significance as location of the signing of Treaty Number One with Ojibwa and Swampy Cree in 1871.

St. Andrew's Rectory

St. Andrew's Rectory is an example of mid-19th century Red River architecture and is located approximately 4.4 km from the proposed Project.

Captain Kennedy House

Captain Kennedy House, a Provincial Heritage Site, was the home built in 1866 for Captain William Kennedy, an explorer, entrepreneur and trader and is located approximately 10 km from the proposed project.

River Road Heritage Parkway

River Road Heritage Parkway is a scenic drive on west side of Red River on the oldest road in Manitoba and it contains five sites along the 11 km stretch designated as a provincial heritage parks. The River Road Heritage Parkway is located approximately 4.3 km from the proposed project.

St. Andrews Lock & Dam

Built in 1907, the St. Andrews Lock and Dam, located approximately 5.2 km from the proposed project, is the largest of its type in the world and was originally built to provide for movement of goods and passengers north and south along the Red River.

Little Britain United Church

Little Britain United Church, located approximately 3.8 km east of the proposed project is only one of five surviving original Red River Settlement stone churches in Manitoba.

6.2.6.2 Heritage

Heritage sites within the province of Manitoba are protected under the Heritage Resource Act of

1986 (Government of Manitoba 2013).

Heritage sites or archaeological sites are resources which consist of objects, structures, or groups of objects that are abandoned in antiquity and are found in buried, submerged, or surficial contexts. The majority of historic resources or archaeological structures within the Project area are typically precontact archaeological sites, small artifact scatters (typically from making stone tools), campsites, and bison kill sites. Historic heritage sites are also present within the area are typically historic artifact scatters and historic structures which include foundations, complete structures, and building depressions.

All archaeological sites in Canada are designated with a Borden Number, which is an alphanumeric code representing the location of the site and the order in which it was discovered. Borden Number Blocks are measured in degrees and minutes Latitude and Longitude and cover approximately 20,350 ha. The project area is located in DlLh, EaLf, EaLg, and EaLh.

A request was made to the Heritage Resources Registrar of the Historic Resources Branch of the Government of Manitoba. As part of the larger heritage site search, an area larger that the Project right of way that covered lands north to the Breezy Bend Point, south to Norbert , west to Beaudry and east to Beasejour, was established to research the previously recorded archaeological sites.

Heritage resource data were provided as ESRI Shape Files complete with tabular data containing much of the information available on a Manitoba Culture, Heritage, and Tourism Historic Resources Archaeological Site Inventory Form.

Record Review

A total of 377 heritage sites have been previously recorded by archaeologists within the Regional Study Area identified above. Of the 377 sites, two sites are found in the local assessment area identified for the proposed Project (Map 6-3) and are discussed below.

EaLf-10 – Eveline Street Burial

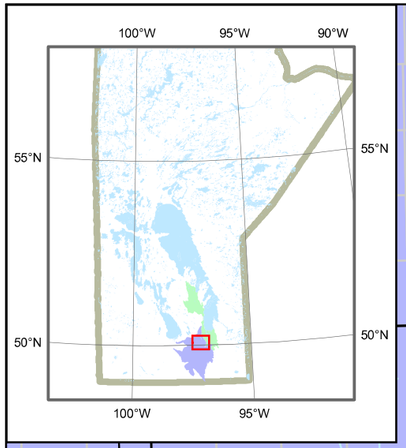
This site was a precontact Woodland burial site which contained the remains of five individuals within the town of Selkirk, Manitoba on the west bank of the Red River. These burials were excavated in 1988 with the remains removed to make way for a new development. This site was approximately 1000 meters southeast of the end of the proposed Project in Selkirk, Manitoba.

EaLf-27

This site was an isolated find discovered in 1988 in a cultivated field near Highway 9 and a CPR right-of-way. The artifact recovered was a single hammerstone which is an implement used in the manufacture of stone tools. No other information is available for this small heritage resource. This site was approximately 700 meters southwest of a segment of the proposed Project near Selkirk, Manitoba.

Heritage Potential for Impact on Undiscovered Sites

The heritage potential for intact archaeological sites for the Project right-of-way is low as this route will be located on lands that were previously disturbed by previous linear developments such as roads and pipelines, and heavy cultivation from farming activities. As a result, the potential for new intact Heritage sites is limited.



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

EcoDistricts

- Gimli
- Winnipeg
- Existing Natural Gas Transmission Pipeline
- Roads
- Rail Line
- Existing Valve Site
- Proposed Valve Site

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Initiative
Date Created: June 2015

N

0 5 10 km
0 3 6 mi
1:150,000

Northwest Gas Transmission Project

Eco Districts

Draft: For Discussion Purposes Only

Map 5-1

Manitoba Hydro

Northwest Natural Gas Pipeline Project

Project Infrastructure
- Gas Gate Station
- Preferred Route

Infrastructure
- Community
- Airport
- Existing Rail
- Existing Natural Gas Transmission Line
- Transmission Line (66 to 500 kV)
- Provincial Road
- Provincial Trunk Highway
- City / Town Boundary

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB
Date Created: June 24, 2015

N

0 2.5 5 Kilometres
0 1.5 3 Miles

1:115,000

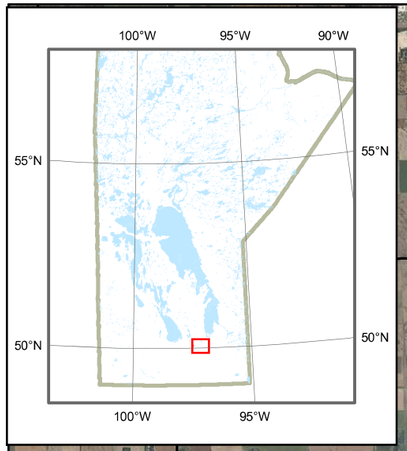
Northwest Natural Gas Pipeline Project

Overview

Map 6-2

Draft: For Discussion Purposes Only

File Location:



Manitoba Hydro

Northwest Gas Transmission Project

Key to Features

- Previously Recorded Archaeological Sites
- Existing Valve Site
- Proposed Valve Site
- Preferred Route
- Existing Natural Gas Transmission Pipeline
- Provincial Road
- Provincial Trunk Highway

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro; Manitoba Land Inititative
Date Created: June 2015

N

0 5 10 km
0 3 6 mi
1:150,000

Northwest Gas Transmission Project

Heritage Resources

Draft: For Discussion Purposes Only

Map 5-3

7.0 POTENTIAL ENVIRONMENTAL EFFECTS

The proposed project is to be constructed in an area where the topography of the land is dominantly flat and the majority of land use is agriculture (disturbed). In addition, a majority of the proposed pipeline will be construction predominantly within existing road right-of-way.

As a result, project activities are not expected to have substantial environmental effects on the VECs within the project area. The environmental effects analysis for potential environmental effects is summarized below and in Appendix H. Any residual effects, the anticipated effects that are remaining after consideration of the application of all mitigation measures, are also identified in each section below and in Appendix H.

7.1.1 Air Quality

The potential effects from the construction of pipelines on air quality have been reported in other pipeline environmental assessments (Kelly WM Scott & Associates 2011; Manitoba Hydro 2013; M. Forster Enterprises, 2013; Stantec Consulting Ltd 2014a). Potential effects include local increases in fugitive dust and emissions as a result of vehicular traffic and the use of heavy equipment during construction and maintenance activities. The proposed Project may result in increased fugitive dust, and increased emissions of volatile organic compounds (VOCs) in the local assessment area during construction and maintenance activities due to any type of vehicle operation (surveying and flagging; clearing of vegetation; topsoil removal; trenching, stringing and welding of pipe; directional drilling; hydrostatic pressure testing; and, site restoration and monitoring activities). There is also the potential for the release of natural gas into the atmosphere as a result of leaks from the pipeline and/or valve fittings and equipment during operation and maintenance activities (Manitoba Hydro. 2013; M. Forster Enterprises. 2013)

The duration of the construction period is moderate with an estimated 6 month construction period, with diesel machinery operating throughout that time. Air emissions that may be created as a result of construction activities are considered to be low and will be below stated limits for Manitoba Ambient Air Quality Guidelines. Machinery will be operating throughout the project area, which is small to moderate relative to both the biophysical and socioeconomic VECs under consideration.

Mitigation measures to minimize dust levels and VOCs include:

- minimizing construction activities during high wind events that increase airborne dust levels;
- restricting the speed of work vehicles and equipment as required; and
- limiting unnecessary vehicle and equipment idling

Adherence to the CEnvPP, including both general and specific mitigation, will minimize the potential for environmental effects to air quality and therefore no residual effects are anticipated.

Air emissions that may be created as a result of construction activities are considered to be low

and will be below stated limits for Manitoba Ambient Air Quality Guidelines. Follow-up includes inspections to ensure mitigation is implemented and effective.

7.1.2 Groundwater

The potential effect to groundwater resources is the possibility of a petroleum product or other hazardous substance spill during transport, storage or fuelling of vehicles; release of drilling mud during directional drilling; and the release of water during hydrostatic pressure testing (Manitoba Hydro 2013; M. Forster Enterprises, 2013 and 2014; Stantec Consulting Ltd 2014a). All of the above occurrences would be considered an accident or malfunction. Additional information on the potential effects to groundwater from accidents and malfunctions and proposed mitigation can be found in Chapter 8.0.

The duration of the construction period is moderate with an estimated 6 month construction period, with diesel machinery operating throughout that time. Potential effects to groundwater as a result of construction activities are considered low, because of the protective measures to be put in place, the location of hazardous substances storage sites away from creeks, drains and vulnerable/sensitive groundwater areas, and the low likelihood of occurrence. Machinery will be operating throughout the project area, which is small to moderate relative to both the biophysical and socioeconomic VECs under consideration.

Adherence to the CEnvPP, including both general and specific mitigation, will minimize the potential for effects to groundwater and therefore no residual effects are anticipated. Follow-up includes inspections to ensure mitigation is implemented and effective.

7.1.3 Creeks and Drains

Potential localized effects on surface water quality include the accidental release of drilling fluid during a frac-out from direction drilling; release of hydrostratic test water into surface water; ; spills from refuelling of vehicles and storage of fuels and other possible hazardous materials (Manitoba Hydro 2013; M. Forster Enterprises, 2013 and 2014; Stantec Consulting Ltd 2014a). All of the above occurrences would be considered an accident or malfunction. Additional information on the potential effects to creeks and drains from accidents and malfunctions and proposed mitigation can be found in Chapter 8.0.

The construction period for the Project is considered moderate with an estimated 6 month construction period. Diesel machinery will be operating throughout this period and horizontal directional drilling will occur at various intervals during the construction period. Hydrostatic pressure testing will occur once the pipeline has been constructed (sporadic). Potential effects to creeks and drains as a result of construction activities are considered low because of protective measures in place and the low likelihood of occurrence. Machinery will be operating throughout the project area, which is small to moderate relative to both the biophysical and socioeconomic VECs under consideration.

Adherence to the CEnvPP, including both general and specific mitigation, will result in minimization of the potential for effects to creeks and drains and therefore no residual effects

are anticipated. Follow-up includes inspections to ensure mitigation is implemented and effective.

7.1.4 Wetlands

Effects to wetlands have been documented in other environmental assessments (Manitoba Hydro 2011, Stantec Consulting Ltd. 2014a) for similar and other linear disturbances and include the crushing of vegetation; alteration of the physical nature of soils; soil compaction; and changes to the direction of water flow.

Potential construction effects to wetlands include temporary disturbance to marsh wetland vegetation due to the clearing of vegetation and topsoil removal. The potential for soil compaction, rutting and admixing of saturated soils exists due to any type of vehicle operation (surveying and flagging; clearing of vegetation; topsoil removal; trenching, stringing and welding of pipe; directional drilling; hydrostatic pressure testing; and, site restoration and monitoring activities). The potential for accidental release of drilling fluid during a frac-out from direction drilling; release of hydrostratic test water from hydrostatic pressure testing and spills from refuelling of vehicles and storage of fuels and other possible hazardous materials during the transport and storage of fuels and fuelling of vehicles during construction and operations may also occur.

Mitigation includes the following:

- Horizontal Direction Drilling of the marsh wetland/wetland shrub areas

If horizontal directional drilling is not feasible the following mitigation shall apply:

- Minimize clearing and disturbance to wetlands;
- Limit the amount and duration of vehicle and construction equipment on saturated soil;
- Use alternate products such as construction mats in situations where the RoW doesn't have dry ground conditions; and,

Additional information regarding potential effects and mitigation as a result of accidents and malfunctions can be found in Chapter 8.0.

The construction period for the Project is considered to be moderate with an estimated 6 month construction period. Diesel machinery will be operating throughout this period and horizontal directional drilling will occur at various intervals during the construction period. Hydrostatic pressure testing will occur once the pipeline has been constructed (sporadic). Adherence to the CEnvPP, and horizontal directional drilling of the marsh wetland, will avoid or minimize potential effects of the proposed project and as a result no residual effects are anticipated. Follow-up includes inspections to ensure mitigation is implemented and effective.

7.1.5 Shelterbelts

The effects of pipeline installation on shelterbelts or treed areas have been reported by other environmental assessments completed for similar pipeline projects (M. Forster Enterprises,

2013 and 2014; Stantec Consulting Ltd 2014a). The main effects include the loss of shelterbelts and treed areas and a loss of wildlife habitat (birds) as a result of clearing of vegetation and the removal of topsoil during construction activities, and the introduction of non-native and invasive species due to the operation of equipment and vehicles during surveying and flagging; clearing of vegetation; topsoil removal; trenching, stringing and welding of pipe; directional drilling; hydrostatic pressure testing; and, site restoration and monitoring activities. As a result of potential loss or damage to shelterbelts, ancillary effects such as loss of aesthetic value, loss of a visual, noise and wind barrier to those in close proximity to the affected shelterbelts.

The construction period for the proposed Project is anticipated to be 6 months (moderate) with clearing activities occurring first followed by the remaining activities required for pipeline installation. Potential effects to shelterbelts and treed area that may be removed as a result of temporary easements are considered low because of the routing of the pipeline and other mitigation measures proposed.

Mitigation includes:

- Modifying the route to avoid / minimize potential effects to shelterbelts;
- Horizontally directional drilling areas were shelterbelts potentially affected from conventional trenching of the pipeline;
- Minimizing the amount of trees removed for temporary work areas (if required);
- Using construction materials such as sand and gravel from clean sources (i.e., weed free);
- Washing construction equipment prior to site visits; and
- Adhering to Manitoba Hydro's Biosecurity Policy (Appendix I)

Adherence to the CEnvPP, including both general and specific mitigation, will result in a minimization of potential environmental effects to shelterbelts. Residual effects identified include the minimal loss of trees and effects were determined to be low in ecological value; high in societal value, low in magnitude, small in geographical extent, occurs once, moderate-term in duration and reversible. Follow-up includes inspections to ensure that mitigation is implemented, effective and identifies any unforeseen effects.

7.1.6 Key Species at Risk

Environmental assessments on other pipeline projects have found that construction, and maintenance activities can result in potential effects on species of conservation concern (Kelly WM Scott & Associates 2011; Stantec Consulting Ltd 2014a), including the loss of habitat, disruption of breeding activity, and the temporary displacement of species of concern as a result of noise.

The MBCDC identified two provincially and federally protected bird species known to occur in the vicinity of the project area, loggerhead shrike (*Lanius ludovicianus migrans*) and the red-headed woodpecker (*Melanerpes erythrocephalus*). During the visual encounter surveys, one occurrence of Bobolink (*Dolichonyx* oryzivorus) which is listed as threatened by COSEWIC was

observed nesting adjacent to the proposed pipeline RoW.

The northern leopard frog ((*Lithobates pipiens*) is listed by the *Species at Risk Act* as "Special Concern" in western Canada. Even though it is considered abundant across the Manitoba part of its range the species is declining in population in other parts of Canada. Wetland habitat is important to the northern leopard frog for egg laying, breeding and overwintering.

As a result of these occurrences and the presence of suitable habitat (i.e. shelterbelts, trees, ditches and wetlands) in areas of the project and local assessment area, species of conservation concern were identified as a VEC. Manitoba Hydro has committed to route modifications and construction mitigation (directional drilling) to minimize the loss of shelterbelts, trees and wetlands in the project assessment area. Potential project effects include temporary disturbance and displacement to species of conservation concern and the temporary disturbance to habitat due to noise from any type of vehicle or construction equipment operation during surveying and flagging; clearing of vegetation; topsoil removal; trenching, stringing and welding of pipe; directional drilling; hydrostatic pressure testing; and, site restoration and monitoring activities. Trenching of the pipe may also result in potential effects to wetland and northern leopard frog habitat. Removal of shelterbelts and trees from temporary easements may result in a loss of habitat for bird species of conservation concern.

Mitigation measures include:

- Conducting a preconstruction bird survey to determine if any bird species of conservation concern are nesting in the project assessment area;
- Horizontal directional drilling of wetland areas;
- Inspecting the trench before backfilling to ensure no frogs are being buried;
- Maintaining appropriate buffers for species of conservation concern if found nesting prior to construction activities (see MCWS suggested buffer widths);
- inspect the trench before backfilling to ensure no frogs are being buried if directional drilling of wetlands is not feasible;
- Conducting any tree clearing activities that are required outside of breeding bird activity windows (April 21 to August 15);
- Contacting an environmental inspector immediately to determine nesting species and recommended buffers if a bird nest is encountered along the route during construction;
- Ensuring construction activities are contained in the project area, which is primarily outside of natural areas; and
- Minimizing tree removal at temporary work areas.

The construction period for the proposed Project is anticipated to be 6 months (moderate) with clearing activities occurring first followed by the remaining activities required for pipeline installation. Construction activities are considered to be short-term and temporary. Potential effects to species of risk as a result of the project are considered to be low. Adherence to the CEnvPP, including both general and specific mitigation, will result in a minimization of potential environmental effects to key species at risk. As a result, no residual effects are anticipated. Follow-up includes a pre-construction bird survey and inspections to ensure mitigation is

implemented and effective.

7.1.7 Agriculture

Environmental assessments on pipeline projects have identified specific effects on agricultural soils such as compaction and erosion by construction and maintenance activities (Kelly WM Scott & Associates 2011; Manitoba Hydro 2013; M. Forster Enterprises, 2013 and 2014; Stantec Consulting Ltd 2014a). The proposed Project may have environmental effects on soil including disturbance of surface soils, soil compaction, and soil erosion due to the operation of vehicle and equipment during construction and operations activities. Effects to agriculture from the proposed project include the temporary loss of the use of agricultural land in areas identified for temporary work areas and easements, the permanent loss of agricultural land at the locations for the proposed valve sites, and soils compaction and erosion from construction and maintenance activities. There is also the potential for the impairment of soil quality as a result of the accidental release of fuels and hazardous substances, which is discussed in more detail in Chapter 8.0.

Mitigation for the temporary loss of agricultural lands includes:

- Compensating property owners in accordance with Manitoba Hydro policies;
- Coordinating with landowners during the intended construction period to reduce effects to agricultural operations;
- Completing reclamation of all disturbed agricultural land following construction (if required);
- Carrying out site preparation and construction and maintenance activities on non-saturated ground conditions;
- Establishing erosion control measures prior to soil clearing or grading, or release of hydrostatic test water discharge;
- Ensuring topsoil piles are replaced and re-seeding of ditches is conducted immediately following construction activities;
- Minimizing surface extent of soil disturbance;
- Locating fuel and hazardous substance storage 100 m from drainage ditch;
- Complying with provincial regulations, guidelines and licenses for hazardous substances;
- Dedicating petroleum storage areas and providing spill containment;
- Draining waste products such as oil and antifreeze into approved containers and removing to a licensed disposal ground; and
- Cleaning up spills immediately and reporting to Manitoba Hydro and Manitoba Conservation and Water Stewardship.

The construction period for the proposed Project is anticipated to be 6 months (moderate) although the removal of 0.14 ha of agricultural land for the vale sites is permanent. Construction activities are considered to be short-term and temporary. Residual effects identified include the permanent loss of agricultural lands at the valve sites. The residual effects were determined to be low adversity, low ecological and societal value, low to moderate in

magnitude, small to moderate in geographic extent, occurs once, long-term, and not reversible. Follow-up includes inspections to ensure that mitigation is implemented and effective.

6.2.3 Economic Conditions

The proposed Project may have potential beneficial effects including increased contract and employment opportunities and increased regional revenues during construction activities. Mitigation measures identified include purchasing local materials and supplies, and hiring local contractors and workers to the extent possible. As a result of only beneficial effects for economic conditions being identified for the Project, positive residual effects may result.

8.0 ACCIDENTS AND MALFUNCTIONS

Potential accidents and malfunctions that could occur during any phase of the Project and that may potentially result in significant adverse environmental effects include risks of vehicle accidents due to increased construction traffic, machinery and equipment; releases of hazardous substances (i.e. fuels); and the release of drilling mud while horizontally directionally drilling (HDD).

Vehicle Accidents

There will be increased vehicle and equipment traffic along roads in the area during the construction phase of the Project. Vehicles accidents can result in serious injury or death to both humans and wildlife as well as damage to property. Construction activity and vehicle movement will be relatively short-term in duration and will occur during normal daytime working hours.

Mitigation recommended to minimize prevent vehicle accidents as a result of construction activities for the proposed project include:

- Providing warning signs, speed control and flag persons if required;
- Adhering to all provincial highway safety regulations and codes and Manitoba Hydro's safe working procedures;
- Providing notifications to local residents and municipalities regarding project initiation and construction schedules.

Hazardous Substances

Fuels (gasoline, diesel, propane) as well as lubricating oils and greases will be used during construction of the Project. Storage, handling and transport of fuels will be in accordance with Manitoba Conservation's Storage and Handling of Petroleum Products and Allied Petroleum Products Regulation and guidelines as well as Manitoba Hydro's Code of Practice for Storage and Handling of Petroleum Products and Allied Petroleum Products Storage Tank Systems (2003) and Environmental Protection Guidelines, Construction, Operation and Decommissioning, Manitoba Hydro Work Sites and Facilities (2006).

Other hazardous substances that may be used during construction of the proposed project includes: lubricants (i.e. engine oil, transmission oil, hydraulic oil and lubricating grease); coolants (ethylene glycol and propylene glycol) and methanol, paints and solvents. Hazardous substances will be subject to provincial and federal workplace hazardous materials information system regulations and guidelines, and the Manitoba Workplace Safety and Health, Workplace Safety and Health Regulation, and will be managed in accordance with Manitoba Hydro's Hazardous Materials Management Handbook (2006).

To mitigate potential effects from the accidental release of hazardous substances the following measures should be implemented:

- Adhering to provincial fuel storage and handling regulations and guidelines;

- Ensuring project staff involved with waste management and hazardous materials have the required training;
- Locating fuel and hazardous substances a minimum of 100 metres from a drainage ditch and creeks;
- Providing required containment for hazardous substances; preventing fuel, lubricants or compounds from being released on the ground;
- Ensuring equipment is clean and in good working condition;
- Preparing and adhering to an emergency response plan;
- Draining waste products such as oil and antifreeze from serviced equipment into approved containers and removing them to a licensed disposal/treatment facility;
- Storing hazardous materials greater than 100 metres from any waterbody;
- Ensuring spill response equipment and materials are present on site or readily available; and
- Reporting spills immediately to Manitoba Hydro and Manitoba Conservation and Water Stewardship and clean up immediately.

Follow-up identified includes regular inspection of works sites and updating the emergency response plan.

Release of Drilling Mud

Horizontal directional drilling (HDD)will be used to install the pipeline under waterway crossings and existing roads. A risk associated with HDD is the inadvertent release of drilling mud. A release of drilling mud during construction activities can result in increased sedimentation if the drilling mud enters a waterway (M. Forster Enterprises 2014; Manitoba Hydro 2013; Stantec Consulting Ltd. 2014c.)

Mitigation measures identified for the release of drilling mud include:

- Adhering to Manitoba Hydro's Frac-Out contingency Plan (Appendix J) in the event of a release;
- Adhering to Manitoba Hydro's Natural Gas Pipeline Crossing Works Environmental Protection Plan;
- Adhering to DFO Manitoba Operational Statement for High Pressure Directional Drilling;
- Using nontoxic, bentonite clay-base materials for drilling mud;
- Monitoring and recording annular pressure; and
- Suspending drilling operations if there is an excessive loss of drilling mud or a change in pressure is detected.

Release of Water Used for Hydrostatic Pressure Testing

Water from existing municipal sources will be required for hydrostatic pressure testing of the pipeline. A release of hydrostatic pressure testing water during construction activities can result in a potential impairment to groundwater quality, and impairment to waters found in creeks and drains in the project area that support fish and fish habitat. Testing and the water released from

testing will be in accordance with the CEnvPP and the Manitoba Water Stewardship Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines (MWS 2007).

Mitigation measures identified for the release of water from hydrostatic pressure testing include:

- Obtain necessary approval and permit for the release of hydrostatic test water;
- Conduct hydrostatic testing in accordance with Manitoba Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines;
- Obtain necessary approval and permit for the release of hydrostatic test water; and
- Ensure hydrostatic test water is released on a grassed surface away from surface water and tested prior to release.

8.1.1 Likelihood of Accidents and Malfunctions

Manitoba Hydro will ensure it constructs and operates the proposed project with consideration for the health, safety and protection of the environment in order to minimize potential environmental effects. Through careful planning of the proposed project and adherence to the specific mitigations identified above and general protection measures in Chapter 6 and Chapter 10.0, it is unlikely that an event as a result from accidents and malfunctions will occur. As a result no effects to the VECs identified for the project are anticipated and no residual effects have been identified.

9.0 CUMULATIVE ENVIRONMENTAL EFFECTS

Cumulative effects are the environmental effects that are likely to result from a project in combination with the environmental effects of other past, existing and future projects or activities (Canadian Environmental Assessment Agency, 2014). The Canadian Environmental Assessment Agency Operational Statement (2012) provides guidance on how cumulative environmental effects should be considered under the Canadian Environmental Assessment Act 2012. The Agency's Practitioner's Guide (1999) outlines a five-step environmental assessment process for cumulative environmental effects that includes: Scoping, Analysis of Effects, Identification of Mitigation, Evaluation of Significance, and Follow-up. The cumulative effects assessment for the Project considers the residual effects of the project VECs and interactions with other past, existing and future project actions.

9.1.1 Scoping

The first step undertaken in the cumulative effects assessment for the proposed project was to define the scope of the assessment which helps to determine the VECs that should be included.

9.1.1.1 Valued Environmental Components

Valued Environmental Components (VECs) for the proposed Project were selected based on consideration of the following criteria (Section 2.5.1):

- Interaction between an ecological or socioeconomic component with the proposed project;
- VECs included in other Environmental Assessments completed for similar projects;
- Scientific, historical or archaeological importance;
- Part of the heritage of First Nations and Metis or a part of their current use of lands for traditional purposed; and
- Identified as an important issues or concern by stakeholders as part of the Public Engagement process.

The final VECs identified for the environmental effects assessment for the proposed Project included air quality, groundwater resources, creeks and drains, wetlands, key species at risk, agricultural land, shelterbelts and economy. Rationale for their selection can be found in Section 2.5.1.

Potential project effects were identified for each VEC. After a description of mitigation, residual effects were identified for two VECs: loss of agricultural land and shelterbelts. Positive effects of the proposed project on economy were also described and beneficial residual effects were identified (Chapter 6). As a result of the beneficial effects to economy, a cumulative effects assessment in conjunction with other past, existing and future projects with respect to economy is not warranted.

The following cumulative effects assessment will consider the potential residual effects for agricultural land and shelterbelts in conjunction with other past, existing and future project activities and actions.

9.1.1.2 Spatial and Temporal Boundaries

Spatial boundaries are generally greater and temporal boundaries are often longer for a cumulative effects assessment since the effects of other projects and activities may occur over a wider area and extend before and after the project boundaries. The spatial boundary identified for the cumulative effects assessment area includes the Rural Municipalities of Rosser, Rockwood and St. Andrews (2,455 km^2 or 244,500 ha) (Map 2-2). The lifespan of a steel pipeline is considered indefinite with proper and regular maintenance. For the purpose of this environmental assessment a temporal boundary of 50 years will be used for the duration of residual effects and any required follow-up.

9.1.1.3 Other Projects/Actions

Existing and future projects/activities that occur in the regional assessment area that have the potential to interact cumulatively with the two following VECs: agricultural land and shelterbelts include the following:

<u>Existing Projects/Activities</u>

- Centre Port Canada Way
- Stony Mountain Penitentiary
- Magellan Propellant Plant
- Industrial Use
- Agricultural land use
- Water treatment/lagoon (Sturgeon Creek Holding Company Ltd.)
- Transmission Projects (Rockwood Station, Stony Mountain Station, Rosser to Silver t-line)
- Roads development

<u>Future Projects/Activities:</u>

- CentrePort Canada
- Road development
- Residential development
- Industrial development
- Transmission projects (MMTP – Dorsey expansion)

Potential Effects: The potential environmental effects on VECs due to the proposed Project and other projects and activities in the regional assessment area for the reasonably foreseeable future are shown as interactions in Table 9-1.

Table 9-1: Potential Cumulative Effects Identification

Projects and Activities	VECs	
	Agricultural Land	**Shelterbelts**
Proposed Project		
Project construction	**X**	**X**
Project operation	**X**	
Existing Projects and Activities		
Centre Port Canada	**X**	**X**
Magellan Propellant Plant	**X**	
Industrial Use	**X**	**X**
Agricultural land use		**X**
Water Treatment/Lagoon	**X**	
Transmission Projects	**X**	**X**
Road development	**X**	**X**
Future Projects and Activities		
Centre Port Canada	**X**	**X**
Road development	**X**	**X**
Residential development	**X**	**X**
Industrial development	**X**	**X**
Transmission projects	**X**	**X**

9.1.2 Analysis of Effects

The potential cumulative effects of the proposed Project in combination with the effects of other projects and activities in the regional assessment area are summarized below:

Agricultural Land: The effects of construction and operation of the valve sites required for the Project may act cumulatively with the effects of the existing CentrePort Canada Way, Magellan Propellant Plant, industrial use, lagoons, transmission lines and future projects and activities such as CentrePort Canada, road, residential and industrial development, and transmission projects where agricultural land may be taken out of production.

Shelterbelts: The effects of construction activities (clearing) of the proposed Project may act cumulatively with Centre Port Canada, industrial use, agricultural land use, transmission projects and future road, industrial development, and transmission projects. There is the potential that tree clearing will be required along the existing Manitoba Hydro ROW and where directional drilling will occur.

9.1.3 Summary of Project Cumulative Environmental Effects

9.1.3.1 Agricultural Land

The total cumulative effect to agricultural land use consists of the permanent loss of agricultural land as a result of the valve sites for the proposed Project in conjunction with other existing and future projects identified in Table 9-1 above. The overall magnitude of the loss of agricultural land is relatively small in comparison to the amount of agricultural land found in the regional assessment area. Approximately 0.14 ha of agricultural land will be removed for the proposed

valve sites which is a fraction of <1% of the total amount of agricultural land (36 ha) occurring in the RAA. The potential cumulative effect to agricultural land as a result of the Project is considered relatively small. Manitoba Hydro will compensate landowners for the permanent loss of agricultural land at the valve sites through their compensation program. It is anticipated that the cumulative effects of the loss of agricultural land at the valve sites will not result in adverse environmental effects to agricultural land in the regional assessment area and therefore cumulative effects are rated as not significant.

9.1.3.2 Shelterbelts

The effect to shelterbelts consists of the permanent removal of a select number of trees in some areas where temporary work space is required for the proposed Project. The overall loss of shelterbelts is short term in duration, and small in magnitude for the regional assessment area and therefore cumulative effects are rated as not significant.

The potential cumulative effects of the proposed Project in combination with the effects of other projects and activities in the assessment area are evaluated below in Table 9-2. The rating of evaluation criteria are similar to those listed in Table 2-2 in Chapter 2.0.

Table 9-2: Summary of Cumulative Residual Environmental Effects

Potential Cumulative Effect Category	Cumulative Residual Environmental Effects Characteristics							Significance*
	Ecological Value	Societal Value	Magnitude	Geographic Extent	Frequency	Duration	Reversibility	
Agricultural land (valve sites)	Low	High	Low	Small	Continuous	Long	I	No
Shelterbelts	Low	High	Low	Small	Sporadic	Moderate	R	No

9.1.4 Identification of Mitigation

No additional mitigation measures are required for any potential cumulative environmental effects.

9.1.5 Evaluation of Significance

No significant cumulative environmental effects were identified for the proposed Project in combination with the environmental effects of other projects and activities in the assessment area currently or for the reasonably foreseeable future.

9.1.6 Follow-up

No additional follow-up is required for any potential cumulative environmental effects.

10.0 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The Project may be subject to damage from extreme weather events (e.g., flooding); grass fires, and high winds resulting in potential damage to the pipelines and valve sites. Climate change will increase the risk over time of extreme weather events and grass fires.

Flooding

Potential effects as a result of severe flooding are compromising the integrity of the pipeline and valve sites (Stantec Consulting Ltd, 2014d) and a loss of soil cover over the pipeline during construction and operation (Kelly WM Scott & Associates, 2011).

The majority of the Selkirk Planning District, is located adjacent to Lake Winnipeg and within the Red River Valley, both of which are subject to periodic flooding (Selkirk and District Planning Area Board, 2008). In the past, there have been large floods in the RM of St. Andrews. The RM can experience flooding of agricultural land during the growing season and when there are ice jams on the Red River. Natural drainage in the Planning Area is generally poor as a result of the clay soils with topography characterized as being flat. Even though artificial drains have been constructed to alleviate overland flooding from heavy and spring run-off, there is still the potential from overland flooding.

In the South Interlake Planning District, drainage problems exist in the RM of Rockwood and the northern portion of the RM of Rosser that are located in the project area and within the Netley-Grassmere Watershed, resulting in the potential for overland flooding. In the spring of 2005 and 2009, the South Interlake Region was inundated with extensive overland flooding (South Interlake Emergency Measures Board website, 2015).

Extreme flood events that occur during construction or operations, can result in a loss of soil cover over the pipeline

Mitigation measures proposed include burying the pipeline to a sufficient depth to minimize effects from flooding; adherence to Manitoba Hydro's environmental protection plan including erosion and sediment control planning, salvage of soils and vegetation; coordinating emergency procedures with the Planning Districts and Rural Municipalities of Rockwood; and preparing and maintaining an emergency response plan that includes extreme weather events and grass fires.

Follow-up identified includes regular updates of the emergency response plan and line patrols during operations to ensure integrity of the pipeline.

Residual effects identified include: minimal risk to the integrity of the pipeline and valve sites; minimal loss of soil cover over the pipeline during construction and operation; minimal delay in construction activities; and minimal risk to isolation valve sites from grass fires.

Residual effects were determined to be potentially moderate in magnitude, moderate in geographic area, sporadic, long-term and reversible. The probability of a significant adverse environmental effect from flooding is not anticipated to have any effect on the proposed Project.

Grass Fires

There is the potential for grass fires to occur in the road right-of-way ditches during seasonally dry weather. Causes of grass fires include natural causes such as lightning and human involvement including: machinery sparks, smoking, and controlled agricultural burns.

Potential effects of grassfires during construction include a delay in construction activities. During operations, grass fires are not a direct threat to buried pipelines but there is the potential to affect the above ground valves (Stantec Consulting Ltd, 2014d).

The probability of a significant adverse environmental effect from grass fires is not anticipated to have any effect on the proposed Project.

Extreme Weather

Heavy precipitation in the project area could result in a delay or suspension of construction activities such as topsoil handling; wet soil conditions that may create accessibility problems and soil erosion from runoff (loss of cover over pipeline) (Kelly WM Scott & Associates, 2011).

Heavy precipitation during operation is not expected to affect the buried pipeline or above ground valve sites.

Mitigation measures proposed for effects from the environment on the Project include ensuring the pipeline is buried to a sufficient depth to minimize effects from flooding; adherence to Manitoba Hydro's environmental protection plan including erosion and sediment control planning, coordinating emergency procedures with the Planning Districts and Rural Municipalities of Rockwood; and preparing and maintaining an emergency response plan that includes extreme weather events and grass fires. Follow-up identified includes regular updates of the emergency response plan and line patrols during operations to ensure integrity of the pipeline.

Adherence to the CEnvPP that will be developed for the project will minimize potential effects from the environment on the project and therefore no residual effects are anticipated. The probability of a significant adverse environment effect from high winds and extreme weather is not anticipated to have any effect on the proposed Project.

11.0 ENVIRONMENTAL PROTECTION

Mitigation measures identified in the effects assessment (Chapter 6) will be implemented through an Environmental Protection Program. Manitoba Hydro's Environmental Protection Program provides the framework for implementing, managing, and evaluating environmental protection measures consistent with regulatory requirements, corporate commitments, best practices and public expectations. Environmental protection plans will be prepared and implemented under the environmental protection framework to address environmental protection requirements in a responsible manner.

The purpose of this Environmental Protection chapter is to outline how Manitoba Hydro will implement, manage and report on environmental protection measures as well as regulatory and policy requirements and other commitments identified in the Project EA Report. The environmental protection program was developed in accordance with Manitoba Hydro's vision, goals and environmental policies.

The Corporate Vision is:

"To be the best utility in North America with respect to safety, rates, reliability, customer satisfaction, and environmental leadership, and to always be considerate of the needs of customers, employees, and stakeholders".

One of the corporation's goals is "To protect the environment in everything we do". This goal can only be achieved with the full commitment of Manitoba Hydro management, employees, consultants and contractors at all project stages from planning and design through the construction and operational phases. Manitoba Hydro's Corporate Environmental Management Policy states that:

"Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its business, thereby:

- Preventing or minimizing any adverse impacts, including pollution, on the environment, and enhancing positive impacts;
- Continually improving our Environmental Management System;
- Meeting or surpassing regulatory requirements and other commitments;
- Considering the interests and utilizing the knowledge of our customers, employees, communities and stakeholders who may be affected by our actions;
- Reviewing our environmental objectives and targets annually to ensure improvement in our environmental performance; and
- Documenting and reporting our activities and environmental performance.

11.1 Environmental Protection Program

11.1.1 Overview

Manitoba Hydro's Environmental Protection Program (EPP) provides the framework for the delivery, management and compliance of environmental and socio-economic protection measures that satisfy corporate policies and commitments, regulatory requirements, and environmental protection guidelines and best practices, and input from stakeholders and the Aboriginal community.

The EPP describes how Manitoba Hydro is organized and functions to deliver timely, effective and comprehensive solutions and mitigation measures to address potential environmental effects. Roles and responsibilities for Manitoba Hydro employees and contractors are defined, and management, communication and reporting structures are outlined. The EPP includes the what, where and how aspects of protecting the environment during the pre-construction, construction, operation and decommissioning of the Project.

11.1.2 Organization

The organization structure of the EPP includes senior Manitoba Hydro management, project management and implementation teams that work together to ensure timely and effective implementation of environmental protection measures identified in environmental protection plans (Figure 11-1).

Manitoba Hydro senior management is responsible for the overall EPP including resourcing, management and performance, and is accountable for regulatory compliance, policy adherence and stakeholder satisfaction. The Environmental Protection Management Team is composed of senior Manitoba Hydro staff and is responsible for the management of environmental protection plans including compliance with regulatory and other requirements, quality assurances and control, and engagement with regulators, stakeholders, local First Nations and the Metis, as necessary.

The management team is supported by environmental consultants and advisors. The Environmental Protection Implementation Team is composed of Manitoba Hydro operational field and office staff, and is responsible for the day-to-day implementation of environmental protection plans including inspecting and reporting. The implementation team works closely with other Manitoba Hydro staff on an as required basis.

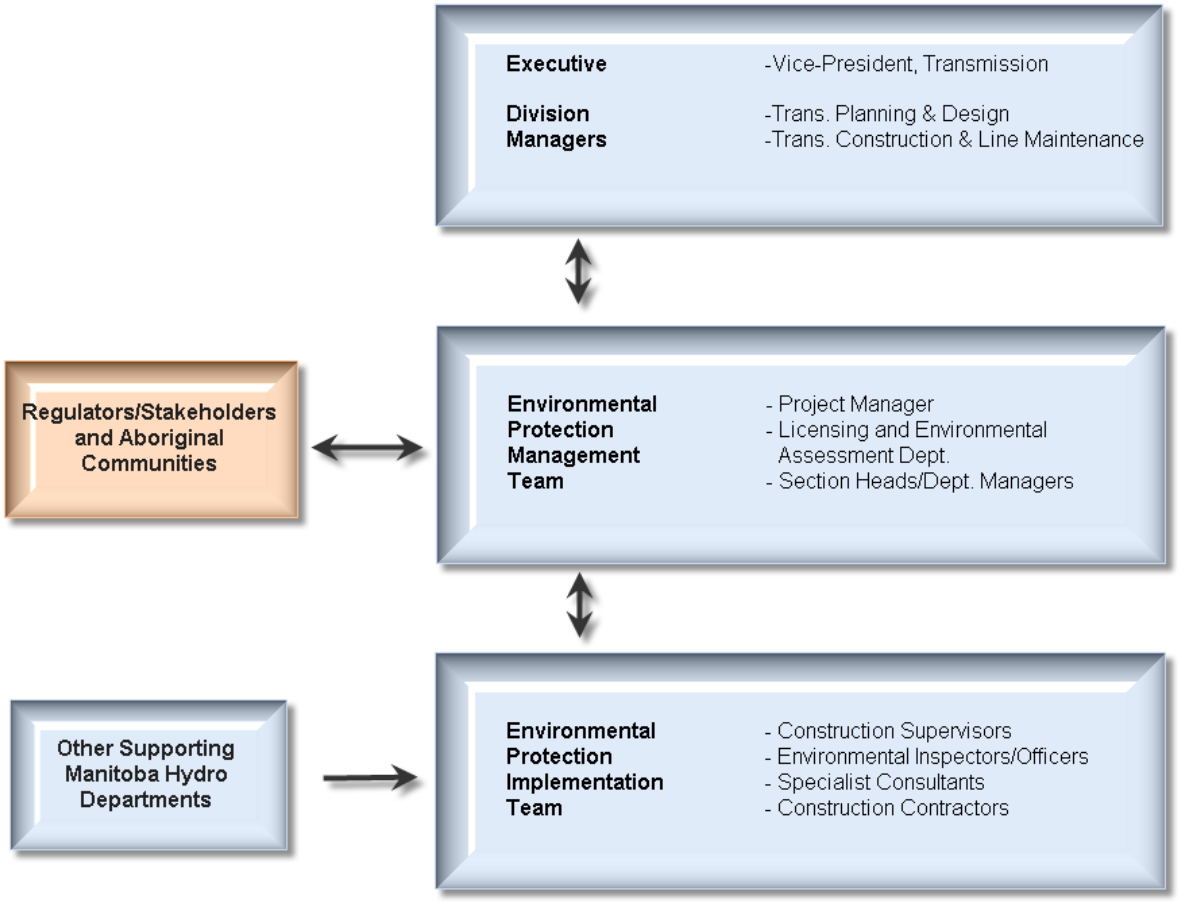


Figure 11-1: Environmental Protection Organizational Structure

11.1.3 Roles and Responsibilities

Roles and responsibilities for delivery of the Project and implementation of environmental protection measures are illustrated in general terms in Figure 11-2.

- The Construction Supervisor has overall responsibility for the implementation of the environmental protection plans and reports to a Section Head or Department Manager.
- The Senior Environmental Assessment Officer is responsible for implementation of the EnvPPs and reports to a Section Head or Department Manager.
- The Licensing and Environmental Assessment Department oversees the development of environmental protection documents, and associated inspection programs.
- The Construction Contractor is responsible for ensuring work adheres to the environmental protection plans and reports to the Construction Supervisor/Site Manager.
- Environmental Officers/Inspectors have the primary responsibility to confirm that environmental protection measures and specifications are implemented as per the EnvPPs, as well as provide information and advice to the Construction Supervisor.

- Manitoba Hydro Field Safety, Health and Emergency Response Officers are responsible for the development and execution of the safety program, and Occupational Health and Safety practices at the various construction sites.
- Other Manitoba Hydro employees including engineers and technicians provide information and advice to the Construction Supervisor.

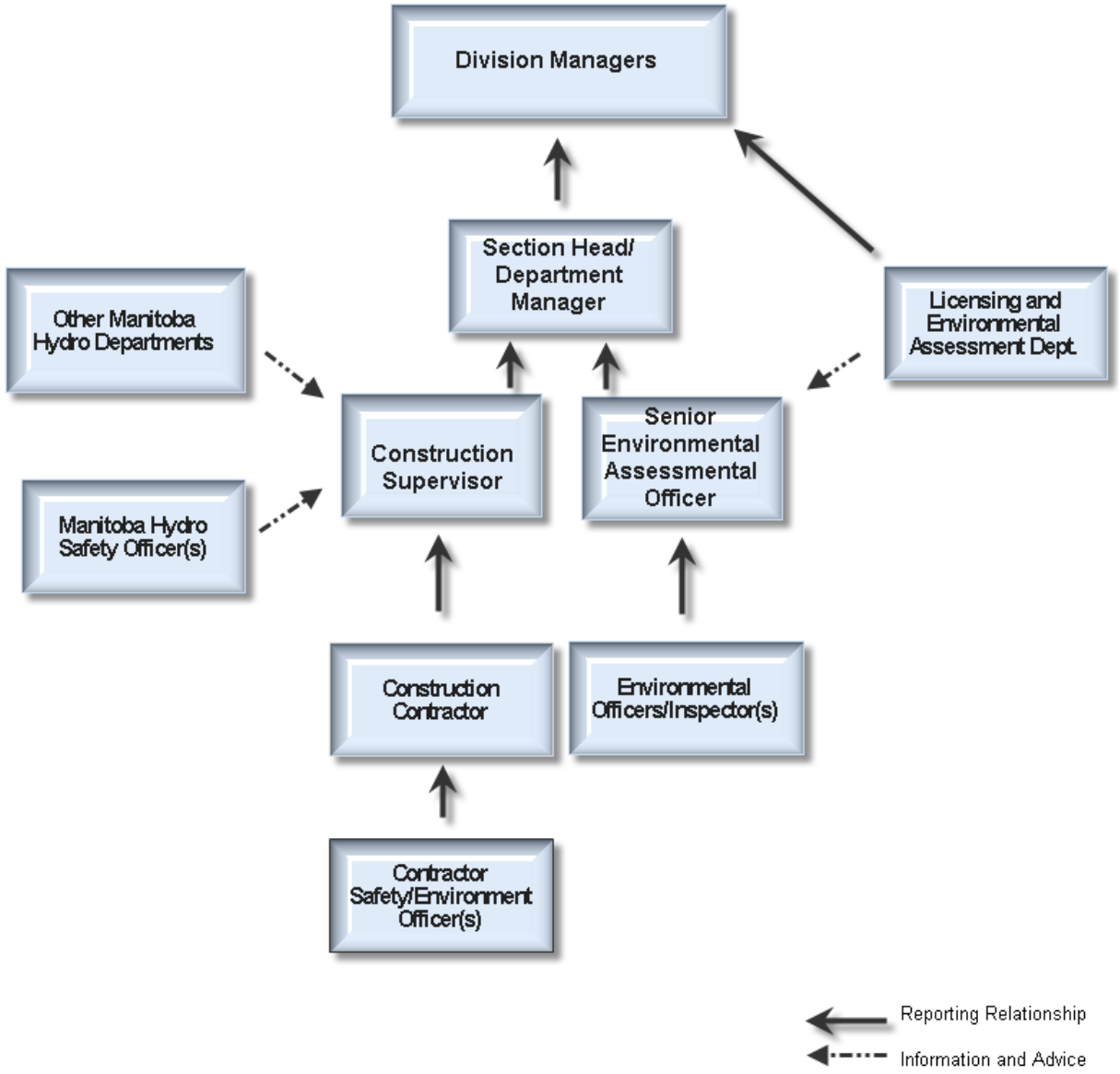


Figure 11-2: Typical Organizational Lines of Reporting and Communication

11.1.4 Resources

Ensuring that adequate resources are allocated to the environmental aspects of project planning, development, implementation and operation is key to successful implementation of environmental protection measures and other requirements. Manitoba Hydro commits resources early in the planning cycle to ensure effective environmental assessment and mitigation. Teams of engineers and environmental professionals develop preventative or avoidance mitigation measures that include design, routing and siting alternatives.

In addition, there are resource allocations for the delivery and implementation of specific environmental protection measures to meet corporate policy and government regulatory requirements. Manitoba Hydro is committed to staffing the EPP with sufficient Environmental Inspectors and providing required support including training, financial resources and equipment.

11.1.5 Environmental Management

Manitoba Hydro is certified under the International Standards Organization (ISO) 14001 Environmental Management System standard and is subject to requirements of the standard including annual audits to verify its environmental performance.

An Environmental Management System (EMS) is a framework for developing and applying its environmental policy and includes articulation of organizational structure, responsibilities, practices, processes and resources at all levels of the corporation. The EMS includes commitments to comply with legislation, licenses, permits and guidelines, conduct inspections and monitoring, and review the results for adherence to requirements. The ISO standard ensures quality, performance and continual improvement in the delivery of Manitoba Hydro's Environmental Protection Program.

11.1.6 Environmental Protection Documents

Several environmental protection planning documents are developed for different project phases, components and activities. The documents include environmental protection plans. The level of detail captured in the various plans increases as the project advances through planning, design, construction and operation phases, and the environmental assessment and licensing process (Figure 11-3).

Prior to the commencement of construction activities, a Construction Phase Environmental Protection Plan (EnvPP) will be prepared. The Construction Phase EnvPP will provide a high level of detail required to implement the general and specific environmental protection measures and will cover the construction period from beginning to end.

The Operation Phase EnvPP will be prepared prior to the completion of the Project and will cover the period from commissioning to the eventual decommissioning of the Project. A Decommissioning EnvPP would be prepared prior to the eventual decommissioning of the Project.

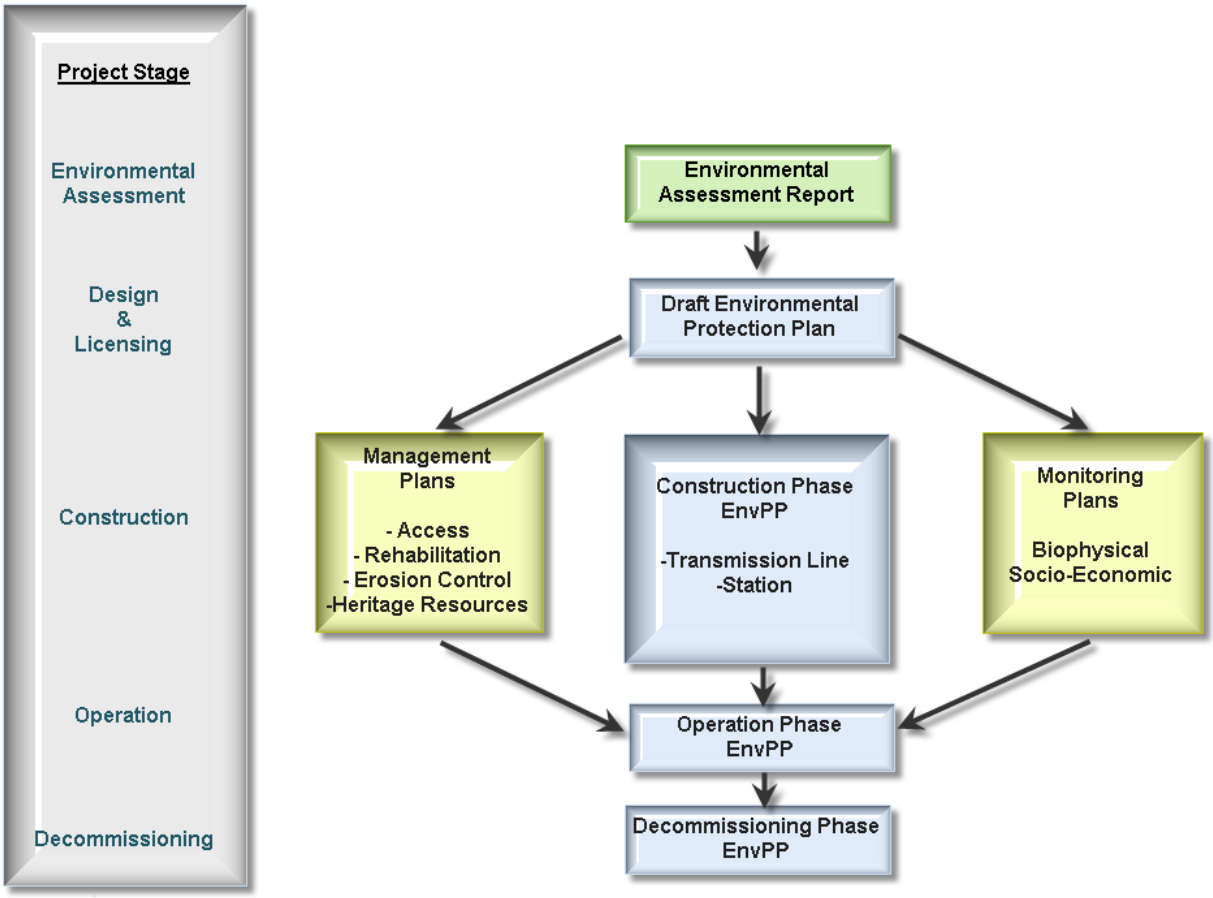


Figure 11-3: Typical Environmental Protection Documents

Management plans are prepared in response to specific environmental issues identified during the environmental assessment of the Project. Typical environmental issues include erosion control and emergency response. Management plans are structured documents that provide reasoned and approved courses of action to address environmental issues. Management plans are also prepared in response to regulatory requirements and responsible management practices.

Follow-up requirements include those actions implemented to confirm compliance with regulatory requirements and to assess the effectiveness of the environmental assessment. Example follow-up actions include invasive vegetation management, water quality protection, and the protection of fish and fish habitat.

11.1.7 Pre-Construction Activities

Manitoba Hydro will obtain all licenses, permits, authorizations and other approvals including property agreements, right-of-way easements and releases prior to commencement of construction of each individual project component or segment. Any additional terms and conditions of these approvals will be incorporated into the CEnvPP. Any additional approval requirements to be obtained by the Contractors will be identified and communicated to the successful bidders. Meetings will be held with the successful contractors to review the environmental protection requirements, establish roles and responsibilities, management and other plans, inspection and reporting requirements, and other submittals. Prior to the start of construction, contractor employees will be trained and/or oriented on environmental protection requirements. Manitoba Hydro and contract employees, project managers, consultants and others working on the Project will be required to attend orientation sessions.

11.1.8 Construction Activities

A number of activities occur during construction of the Project to implement environmental protection measures and ensure compliance with regulatory requirements. Such activities include meetings with contractors, working with regulators, inspection and compliance, work stoppage and emergency response.

The Project Manager, Construction Supervisor, Environmental Officer/Inspector, and Licensing and Environmental Assessment staff will meet with regulatory authority points of contact at the beginning of the Project to outline construction plans and schedules, and will request regular meetings to provide updates on project progress, environmental protection measure implementation and regulatory compliance.

Manitoba Hydro will fulfill all regulatory requirements for submission of inspection and other reports. Regulators will be notified immediately in case of emergency situations, environmental accidents or other incidents in accordance with regulatory requirements. Any proposed changes or alterations to the construction project or environmental protection measures will be reviewed with the appropriate regulatory authorities.

Manitoba Hydro will establish a comprehensive integrated environmental inspection program to comply with regulatory requirements, implement environmental protection measures and meet corporate environmental objectives.

11.1.9 Work Stoppage

The duty to stop work rests with everyone encountering situations where the environment, including biophysical, socio-economic and heritage resources, are threatened by an activity or occurrence that has not been previously identified, assessed and mitigated. Work stoppage is also to occur in the event of an environmental accident, extreme weather event or exposed human remains.

Individuals discovering such situations are to inform their supervisor who will report the matter to the Construction Supervisor immediately who will issue a stop work order. The Contractor is

also required to stop work voluntarily where construction activities are adversely affecting the environment or where mitigation measures are not effective in controlling environmental effects.

Remedial action plans or other environmental protection measures will be developed and implemented immediately after discussion and prior to the resumption of work if previously halted. Work is not to resume until the situation has been assessed and responded to, and the Construction Supervisor approves the resumption of work. All stop work orders will be documented, reported to regulatory authorities (if applicable) and reviewed at construction meetings.

11.1.10 Emergency and Contingency Response

Spills of hazardous substances, fires and explosions, environmental accidents, heritage resource discoveries and other emergency or contingency situations require immediate action and response in accordance with established response plans. Provincial, federal and municipal authorities, and Manitoba Hydro personnel are to be notified in accordance with regulations, and emergency and contingency response plans.

These plans provide names of emergency responders, up to date contact information and notification procedures. Contractors are also required to have emergency response plans outlining contacts and response measures to exigent situations including hazardous materials spills, heritage resource discoveries, environmental accidents and fires or explosions. Manitoba Hydro has emergency response coordinators to deal with spills of hazardous and other substances.

11.1.11 Tools and Resources

An Environmental Protection Information Management System (EPIMS) will be used as a central repository of environmental protection information including but not limited to:

- Environmental protection documents;
- Reference information such as regulations and guidelines;
- Daily, weekly and monthly inspection reports; and
- Environmental incident reports; and

The environmental inspection program will employ modern electronic recording, reporting and communications systems using field computers, geographic positioning systems and digital cameras. Electronic forms will be transferable to supervisors and project managers thereby enabling rapid communication and response to emerging situations. Field computers will have project and other reference information needed for effective implementation of environmental protection measures including regulations, licences, permits, engineering drawings, specifications, maps, reports and data.

The EPIMS will monitor and report on environmental protection implementation, regulatory compliance and incident reporting. The EPIMS will be the mechanism to provide reporting and

tracking of environmental protection performance, and the foundation of an auditable environmental protection program.

Manitoba Hydro personnel will maintain ongoing communications with Manitoba Conservation and Water Stewardship, other provincial and federal government departments, and local First Nations and Metis, as necessary, regarding implementation of the Project EnvPP. The Construction Supervisor/Site Manager and Environmental Officers/Inspectors will maintain ongoing communications with the Contractor and contract staff through daily tailboard meetings and weekly or otherwise scheduled construction meetings at the worksite.

11.2 ENVIRONMENTAL PROTECTION PLAN

11.2.1 Overview

EnvPP's are the main implementation instrument under the EPP. A Construction EnvPP (CEnvPP) will be developed subsequent to licensing and prior to construction. The CEnvPP will document the environmental protection measures to provide for compliance with regulatory and other requirements, and to achieve environmental protection goals consistent with corporate environmental policies.

Manitoba Hydro's environmental protection plans are designed as "user-friendly" reference documents that provide project managers, construction supervisors and contractors with detailed lists of environmental protection measures and other requirements to be implemented in the design, construction and operation phases of a project. Environmental protection measures are organized by construction component and activity, and environmental component and issue to assist project personnel in implementing measures for specific work sites and activities.

The CEnvPP is a key element in implementing effective environmental protection and minimizing the potential adverse environmental effects identified in the EA Report. It also outlines actions to identify unforeseen environmental effects and to implement adaptive management strategies to address them. An important component of a CEnvPP is inspection/compliance and updating which serves to ensure that environmental protection measures remain current and to provide for continual improvement of environmental performance.

11.2.2 General Environmental Protection Measures

General environmental protection measures for the Project include mitigation measures and follow-up actions identified in the EA Report including design mitigation, provincial and federal regulatory requirements, best practice guidelines, Manitoba Hydro environmental policies and commitments, and input from stakeholders, Aboriginal communities and the general public.

Table 11-1: General Mitigation Tables

Agricultural Areas (EC-1)

ID	Mitigation
EC-1.01	All fences and gates will be left in "as-found" condition.
EC-1.02	Any necessary access on agricultural lands will be discussed in advance with the landowner.
EC-1.03	Construction areas and sites will be assessed for compaction and if required will be deep ploughed by the contractor to mitigate any compaction prior to returning them to agricultural use.
EC-1.04	Erosion protection and sediment control measures will be established before construction work commences in agricultural areas where necessary.
EC-1.05	Excess construction materials (i.e. waste, granular fill; clay) will be removed from construction sites and areas located on agricultural lands. Area will be restored to pre-existing conditions.
EC-1.06	Existing access to agricultural lands will be utilized to the extent possible.
EC-1.07	Required travel off existing roads will be minimized and restricted to previously designated and approved routes.
EC-1.08	Vehicular travel on agricultural lands will follow existing roads, trails and paths to the extent possible.

Built-up and Populated Areas (EC-2)

ID	Mitigation
EC-2.01	Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations.
EC-2.02	Mud, dust and vehicle emissions will be managed in a manner that ensures safe and continuous public activities near construction sites where applicable.
EC-2.03	Noisy construction activities where noise and vibration may cause disturbance and stress in built-up areas will be limited to daylight hours.

Clearing (PA-3)

ID	Mitigation
PA-3.01	Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
PA-3.02	Access to clearing areas will utilize existing roads.
PA-3.03	All clearing and construction equipment is to remain within the bounds of access routes and the Project footprint identified.
PA-3.04	Areas identified for selective clearing (e.g., buffer zones, sensitive sites) will be flagged prior to clearing.
PA-3.05	Chipped or mulched material may be collected for use in construction areas and sediment/erosion control.
PA-3.07	Cleared trees and woody debris will not be pushed into or adjacent to standing timber, wetlands or waterbodies.
PA-3.09	Clearing and disturbance and equipment use will be limited to the project footprint and associated access routes.
PA-3.10	Clearing will not be permitted within established setbacks for bird nesting and rearing during established timing windows.
PA-3.11	Clearing within environmentally sensitive areas, not designated for organic removal will be carried out in a manner that minimizes disturbance to existing organic soil layer.
PA-3.12	Construction vehicles where possible will be wide-tracked or equipped with high floatation tires to

Clearing (PA-3)

	minimize rutting and limit damage and compaction to surface soils.
PA-3.13	Construction vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings.
PA-3.15	Environmentally sensitive sites, along the right-of-way will be clearly identified by signage.
PA-3.16	In locations where grubbing and vegetation stripping is not required, existing low growth vegetation such as grasses, forbs and shrubs will be maintained to the extent possible; disturbance to roots and adjacent soils will be minimized.
PA-3.17	Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using only "V" or "K-G" type blades, feller-bunchers and other means approved by the Construction Supervisor.
PA-3.18	Property limits, right-of-way boundaries, buffers and sensitive areas (where applicable) will be clearly marked with stakes and/or flagging tape prior to clearing.
PA-3.19	Selective clearing will be carried out in erosion prone areas. Low ground disturbance methods will be employed to minimize soil disturbance.
PA-3.20	Slash piles will be placed at least 15 m from forest stands.
PA-3.21	Slash piles will not be placed on the surface of frozen waterbodies and will not be located within established setbacks from waterbodies or within the ordinary high water mark.
PA-3.22	The Construction Supervisor will issue a stop work order if extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies.
PA-3.23	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
PA-3.24	Trees will be felled toward the middle of rights-of-way or cleared area to avoid damage to standing trees. Trees will not be felled into waterbodies.
PA-3.25	Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated at identified Environmentally Sensitive Sites.
PA-3.26	Where practical, merchantable timber will be salvaged and brought to market. As per Annual Harvest Plan, timber that is not salvaged will be piled and burned during frozen conditions in accordance with timing windows.

Demobilizing and Cleaning Up (PA-4)

ID	Mitigation
PA-4.01	Buildings, structures, trailers, equipment, utilities, waste materials, etc will be removed from construction areas and sites when work is completed.
PA-4.03	Construction areas and sites will be rehabilitated and re-vegetated as appropriate immediately after demobilizing and clean-up.
PA-4.04	Construction areas no longer required will be demobilized and rehabilitated in accordance with Rehabilitation and Vegetation Management Plan and/or provincial regulations.
PA-4.05	Petroleum product and other hazardous substances storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro guidelines.
PA-4.06	Stream crossings and drainages will be left free of obstructions so as not to impede natural runoff.

Draining (PA-5)

ID	Mitigation
PA-5.01	Blockage of natural drainage patterns by construction activities will be avoided.
PA-5.04	Drainage water from construction areas will be diverted through vegetated areas, existing drainage

Draining (PA-5)

	ditch(s) or a means of sediment control prior to entering a waterbody.
PA-5.05	Erosion protection and sediment control will be provided in accordance with the Erosion Protection and Sediment Control Plan.
PA-5.06	Existing, natural drainage patterns and flows will be maintained to the extent possible.
PA-5.07	No debris or slash is allowed to be placed in drainage channels/ditches

Drilling (PA-6)

ID	Mitigation
PA-6.01	Abandoned drill holes will be sealed with bentonite or other effective sealers to prevent interconnection and cross-contamination of ground and surface waters.
PA-6.03	Drilling equipment and machinery will not be serviced within 100 m of waterbodies or riparian areas.
PA-6.04	Drilling fluids and waste materials will not be allowed to drain into waterbodies, riparian areas or wetlands.
PA-6.05	Drilling in environmentally sensitive sites, features and areas will not be permitted unless approved in advance by Environmental Inspector and mitigation measures are implemented.
PA-6.07	Drilling will not be permitted within established buffer zones and setback distances from waterbodies.
PA-6.08	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	The drilling contractor will inspect drilling equipment and machinery for fuel and oil leaks prior to arrival at the project site, and will inspect for fuel and oil leaks and spills regularly.
PA-6.11	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.

Emergency Response (EI-2)

ID	Mitigation
EI-2.01	All fires will be reported in accordance with fire reporting procedures in the Emergency Preparedness and Response Plan.
EI-2.02	All spills at construction sites will be reported in accordance with provincial legislation and guidelines, and Manitoba Hydro Guidelines.
EI-2.03	All vehicles hauling petroleum products will carry spill containment and clean-up equipment.
EI-2.04	Clean-up and the disposal of contaminated materials will be managed in accordance with provincial guidelines and Manitoba Hydro guidelines.
EI-2.05	Emergency Preparedness and Response Plans and procedures will be communicated to all project staff and a copy will be made available at the project site.
EI-2.06	Emergency spill response and clean-up materials and equipment will be available at construction sites, marshalling yards, fuel storage facilities and standby locations.
EI-2.07	Fire extinguishers will be mounted on buildings at locations where they will be most readily accessible. Safety Officers will conduct annual inspections of fire extinguishers.
EI-2.08	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include emergency response awareness.
EI-2.09	Post audit assessments will be carried out for all major spills and fires reported to ensure that procedures are followed and plans remain effective.
EI-2.10	Project emergency response and evacuation procedures in the Emergency Preparedness and Response Plan will be adhered to in the event of forest fires.
EI-2.11	Reasonable precautions will be taken to prevent fuel, lubricant, fluids or other products from being spilled during equipment operation, fuelling and servicing.

Emergency Response (EI-2)

EI-2.12	Spill response and clean-up equipment will be capable of containing and recovering the largest release possible and be suitable for the site location.
EI-2.13	Temporary construction camps will have a designated fire marshall in accordance with the Emergency Preparedness and Response Plan.
EI-2.14	The Emergency Preparedness and Response Plan will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
EI-2.15	The Manitoba Hydro hazardous materials incident report form will be completed when reporting a spill.
EI-2.16	The on-site Emergency Spill Response Coordinator will be notified of hazardous substance releases immediately in accordance with the Emergency Preparedness and Response Plan.

Erosion Protection and Sediment Control (EI-3)

ID	Mitigation
EI-3.01	Accumulated sediment will be removed from silt fences and other barriers in accordance with the Erosion Protection and Sediment Control Plan to ensure proper functioning.
EI-3.02	Construction activities will be suspended during extreme wet weather events where erosion protection and sediment control measures are compromised.
EI-3.03	Contractor specific Erosion Protection and Sediment Control Plans will be prepared by the Contractor, accepted by Manitoba Hydro prior to construction and updated annually.
EI-3.04	Erosion protection and sediment control installations will only be removed after disturbed areas are protected and sediments are disposed of in accordance with Erosion Protection and Sediment Control Plan.
EI-3.05	Erosion protection and sediment control measures will be left in place and maintained until either natural vegetation or permanent measures are established.
EI-3.06	Erosion protection and sediment control measures will be put in place prior to commencement of construction activities and will remain intact for the duration of the project.
EI-3.07	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include erosion protection and sediment control techniques and procedures.
EI-3.08	The Contractor will be responsible for developing. implementing and maintaining Erosion Protection and Sediment Control Plans and procedures be put in place prior to commencement of construction activities.
EI-3.09	The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness.
EI-3.10	The Contractor will communicate erosion protection and sediment control information to all project staff and a copy will be made available at the project site.
EI-3.11	The Environmental Inspector will make regular inspections of erosion protection and sediment control measures to confirm implementation and continued effectiveness.

Fish Protection (EC-3)

ID	Mitigation
EC-3.01	Construction activities will not be carried out within established buffer zones and setback distances from waterbodies, wetlands and riparian areas without prior written notification of Department of Fisheries and Oceans.
EC-3.02	Disturbances to waterbodies, shorelines, riparian areas, etc. will be rehabilitated immediately upon completion of construction activities.
EC-3.03	Erosion protection and sediment control measures will be put in place at all project locations where surface drainage is likely to flow into fish bearing waters.
EC-3.04	Fish and fish habitat will be protected in accordance with federal legislation and federal and provincial guidelines.
EC-3.06	Project personnel will be prohibited from fishing at project locations or along rights-of-way

Grading (PA-7)

ID	Mitigation
PA-7.01	A thick gravel layer (1.2 m) or compacted snow layer (0.6 m) will be used in temporary workspaces or marshalling yards located in permafrost areas where required to prevent damage to surface materials.
PA-7.02	Grading for gravel pads for construction areas and access roads will be limited to areas where it is needed for the safe and efficient operation of vehicles, machinery and construction equipment.
PA-7.03	Grading for site rehabilitation and restoration will be in accordance with Rehabilitation and Vegetation Management Plan.
PA-7.04	Grading will not be permitted within established buffer zones and setback distances from waterbodies.
PA-7.05	Grading will only be permitted within rights-of-ways and construction areas.
PA-7.06	Gravel pads will be graded so the surface runoff is directed away from waterbodies, riparian areas and wetlands.
PA-7.07	Required erosion protection and sediment control measures will be put in place prior to grading in accordance with the Erosion Protection and Sediment Control Plan.

Grubbing (PA-8)

ID	Mitigation
PA-8.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-8.02	Construction areas requiring extensive grubbing will be stabilized as soon as possible to minimize erosion.
PA-8.03	Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils.
PA-8.04	Grubbing will not be permitted within 2 m of standing timber to prevent damage to root systems and to limit the occurrence of blow down.
PA-8.05	Grubbing will not be permitted within established buffer zones and setback distances from waterbodies.
PA-8.06	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.07	Unless required for the work, the extent of grubbing will be minimized to the extent possible.
PA-8.08	When not under frozen conditions, erosion protection and sediment control measures will be put in place prior to grubbing in accordance with the Erosion Protection and Sediment Control Plan.
PA-8.09	Windrows of grubbed materials will be piled at least 15 m from standing timber.

Hazardous Materials (EI-4)

ID	Mitigation
EI-4.01	A Contractor specific Hazardous Substances Management Plan will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
EI-4.02	Access to hazardous materials storage areas will be restricted to authorized and trained Contractor and Manitoba Hydro personnel.
EI-4.03	An inventory of WHMIS controlled substances will be prepared by the Contractor and maintained at each project site and updated as required by provincial legislation.
EI-4.04	Bulk waste oil will be stored in approved aboveground tanks provided with secondary containment in accordance with provincial legislation.
EI-4.05	Containers of hazardous substances stored outside will be labelled, weatherproof, placed on spill containment pallets and covered by a weatherproof tarp.
EI-4.06	Contractor personnel will be trained and certified in the handling of hazardous materials including emergency response procedures in accordance with provincial legislation.
EI-4.07	Contractor personnel will receive WHMIS training in accordance with provincial legislation.
EI-4.08	Controlled substances will be labelled in accordance with WHMIS requirements, required documentation

Hazardous Materials (EI-4)

	will be displayed and current Materials Safety Data Sheets will be available at each project site in accordance with the Hazardous Substances Management Plan
EI-4.09	Empty hazardous waste containers will be removed to a licensed or approved disposal site.
EI-4.10	Hazardous materials storage sites will be secured, and signs will be posted that include hazard warnings, contacts in case of a release, access restrictions and under whose authority the access is restricted.
EI-4.11	Hazardous materials will be adequately contained and will be protected from wind and rain to prevent entry of fine particles into streams through runoff of dust deposition.
EI-4.12	Hazardous substance and WHMIS inventories will be completed prior to construction. Inventories will be updated in accordance with regulatory requirements and Manitoba Hydro policies.
EI-4.13	Hazardous substances management procedures will be communicated to all project staff and a copy will be made available at the project site.
EI-4.14	Hazardous substances storage areas including coke materials for ground electrode facilities will be located a minimum of 100 m from the ordinary high water mark of a waterway and above the 100-year flood level.
EI-4.15	Hazardous substances will be transported, stored and handled according to the procedures prescribed by provincial legislation and at a minimum follow Manitoba Hydro policies.
EI-4.16	Hazardous waste substances will be segregated and stored by type.
EI-4.17	Indoor storage of flammable and combustible substances will be in fire resistant and vented enclosed storage area or building in accordance with national codes and standards.
EI-4.18	Manitoba Hydro will approve all hazardous materials that are used on the project prior to their arrival on-site.
EI-4.19	Non-hazardous products will be used in place of hazardous substances to the extent possible.
EI-4.20	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include hazardous substance awareness.
EI-4.21	Pesticide storage will be in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-4.22	The Contractor will be responsible for the safe use, handling, storage and disposal of hazardous substances including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-4.23	The Contractor will monitor containers of hazardous substance containers regularly for leaks and to ensure that labels are displayed.
EI-4.24	The Environmental Inspector will make routine inspections of hazardous substance storage sites to ensure that environmental protection measures are implemented and effective.
EI-4.25	Waste oil will be transported by licensed carriers to licensed or approved waste oil recycling facilities.
EI-4.26	Wet batteries will be stored and transported to licensed or approved waste recycling facilities.

Heritage Resources (EC-5)

ID	Mitigation
EC-5.01	All archaeological finds discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.
EC-5.02	Construction activities will not be carried out within established buffer zones for heritage resources except as approved by Project Archaeologist.
EC-5.03	Environmental protection measures for heritage resources will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-5.04	Orientation for project staff working in construction areas will include heritage resource awareness and training including the nature of heritage resources and the management of any resources encountered.
EC-5.05	Orientation information will include typical heritage resource materials and reporting procedures.
EC-5.06	The Contractor will report heritage resource materials immediately to the Construction Supervisor will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes

Heritage Resources (EC-5)

	instruction.
EC-5.08	The Environmental Inspector will inspect borrow pits and other excavations regularly for the presence of heritage resource materials.

Management Measures (MM)

ID	Mitigation
MM-01	All licenses, permits, contracts, project specifications, guidelines and other applicable documents will be in the possession of both the Contractor and Manitoba Hydro prior to commencement of work.
MM-02	All project participants will ensure that project activities are carried out in compliance with applicable legislation, guidelines contractual obligations and environmental protection plan provisions.
MM-03	Environmental concerns will be identified and discussed at planning meetings on an as required basis.
MM-04	Manitoba Hydro will contact First Nation and Aboriginal community representatives prior to project start-up.
MM-05	Manitoba Hydro will contact local municipal authorities prior to project start-up.
MM-06	Manitoba Hydro will contact local resource users, lodge operators, outfitters and recreational resource users and associations to the extent feasible and practical prior to project start-up.
MM-07	Manitoba Hydro will contact Manitoba Conservation and Forest Management Licence Holders prior to clearing regarding timber use opportunities.
MM-08	Manitoba Hydro will meet the Contractor at the beginning of each new contract to review environmental protection requirements including mitigation measures, inspections and reporting.
MM-09	Manitoba Hydro will notify trappers in advance of clearing and construction schedules in their trapline areas.
MM-10	Manitoba Hydro will provide the contractor with a stakeholders list with names, organizations and contact information for the purpose of contacting stakeholders as necessary.
MM-11	Project construction update meetings will be held weekly for the ongoing review of environmental and safety issues.
MM-12	Relevant documents including licenses, permits, approvals, legislation, guidelines, environmental protection plans, orthophotos maps, etc will be made available to all project participants.
MM-13	Response to enforcement actions by regulatory authorities will be in accordance with Manitoba Hydro policy P602.
MM-14	The Contractor will obtain all licenses, permits, contracts and approvals other than those that are Manitoba Hydro's responsibility prior to project start-up.
MM-15	The Contractor will review terms and conditions of all authorizations, contract specifications, agreements, etc prior to project start-up and will discuss any questions or concerns with Manitoba Hydro.

Marshalling Yards (PC-5)

ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.02	Emergency Preparedness and Response Plan and procedures for marshalling yards will be developed.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.04	Fire breaks will be established around marshalling yards in areas where there is a risk of fire.
PC-5.05	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved waste disposal site.
PC-5.06	Hazardous substances entering and leaving the marshalling yards will be inventoried and accounted for.

Marshalling Yards (PC-5)

PC-5.07	Hazardous substances will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Marshalling yards will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-5.09	Marshalling yards will be located in existing clearings or natural openings.
PC-5.10	Marshalling yards will be located, constructed, operated and decommissioned in accordance with contact specifications.
PC-5.11	Once marshalling yards are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.12	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.
PC-5.13	Petroleum products will only be stored, handled and dispensed in designated areas within marshalling yards in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within marshalling yards.
PC-5.15	Staging and work storage areas no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Vegetation Management Plan.
PC-5.16	Vegetation control at marshalling yards will be in accordance with Rehabilitation and Vegetation Management Plan.
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within marshalling yards.
PC-5.18	Waste hazardous substances, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste disposal facilities by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.

Petroleum Products (EI-5)

ID	Mitigation
EI-5.01	Aboveground tanks will be equipped with overfill protection and spill containment consisting of perimeter dykes or secondary containment in the tank design.
EI-5.02	All aboveground petroleum product tanks with a capacity greater than 5,000 L will be registered with Manitoba Conservation and Water Stewardship and have a valid operating permit.
EI-5.03	Construction, installation or removal of petroleum product storage tank systems will only occur under the supervision of a registered licensed petroleum technician.
EI-5.04	Containment measures, such as secondary containment (i.e., berms) will be used at all locations where stationary oil-filled equipment is used.
EI-5.05	Contractors will inspect all mobile and stationary equipment using petroleum products on a regular basis to ensure that measures are taken immediately to stop any leakage discovered.
EI-5.06	Fuelling of equipment or portable storage tanks will be a minimum of 100 m from the ordinary high water mark of any waterbody.
EI-5.07	Fuelling operations require the operator to be visually observing the process 100% of the time.
EI-5.08	If dykes are used, the containment areas will be dewatered after rainfall events and the containment water disposed of as specified in contract specifications.
EI-5.09	Once petroleum product storage areas are no longer required, a Phase I and II Environmental Site Assessment will be carried out to determine if remediation is required in accordance with national standards.
EI-5.10	Only approved aboveground petroleum storage tanks will be used during the construction phase of the project. No underground tanks will be permitted.
EI-5.11	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include petroleum product storage and handling awareness.

Petroleum Products (EI-5)

EI-5.12	Petroleum product dispensing systems will be secured and locked when not in use by authorized personnel.
EI-5.13	Petroleum product inventories will be taken weekly by the owner/operator on all aboveground tanks greater than 5,000 L and retained for inspection by Manitoba Hydro or Manitoba Conservation upon request.
EI-5.14	Petroleum product storage containers in excess of 230 L will be located on level ground and will incorporate secondary containment with a capacity of 110% of the largest container volume.
EI-5.15	Petroleum product storage sites and mobile transportation units will be equipped with fire suppressant equipment and products.
EI-5.16	Petroleum product storage tanks will be protected from vehicle collisions by concrete filled bollards.
EI-5.17	Petroleum product storage will be located a minimum of 100 m from the ordinary high water mark of waterbodies, riparian areas or wetlands.
EI-5.18	Petroleum products stored outside will be in waterproof and labelled containers, placed on spill containment pallets.
EI-5.19	Petroleum products will be transported and handled according to the procedures prescribed by provincial legislation.
EI-5.20	Petroleum products will display required signage, placards and labelling, and will be stored and handled in accordance with provincial legislation.
EI-5.21	Petroleum products will only be stored and handled within designated areas at construction camps and marshalling yards.
EI-5.22	Portable petroleum product storage containers will be placed on spill trays with a capacity of 110% of the largest container when not in use.
EI-5.23	Slip tanks and barrels will be securely fastened to the vehicle during transport and fuelling operations.
EI-5.24	Spill control and clean-up equipment and materials will be available at all petroleum product storage and dispensing locations.
EI-5.25	Spill trays will remain impervious at very low temperatures (-45 °C) and have accumulated precipitation removed regularly.
EI-5.26	The Contractor will be responsible for the safe use, handling, storage and disposal of petroleum products including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-5.27	The Contractor will inspect all petroleum product storage tanks and containers regularly for leaks, and product inventories will be recorded and retained for inspection by Manitoba Hydro and Manitoba Conservation and Water Stewardship.
EI-5.28	There will be no ignition sources in and adjacent to petroleum product storage areas.
EI-5.29	Transfer of petroleum products between storage areas and work sites not exceed daily requirements and will be in accordance with provincial legislation and guidelines.
EI-5.30	Used petroleum products (including empty containers) will be collected and transported to a licensed oil recycling facility in approved storage containers.
EI-5.31	Vehicles hauling petroleum products will carry equipment and materials for emergency spill containment and clean-up.
EI-5.32	Warning signs will be posted in visible locations around petroleum product storage areas. Signs will indicate hazard warning, contact in case of a spill, access restrictions and authority.

Rehabilitating and Re-vegetation (PA-9)

ID	Mitigation
PA-9.01	Construction areas no longer required will be re-contoured, stabilized, re-vegetated and restored to near natural conditions in accordance with Rehabilitation and Vegetation Management Plan
PA-9.02	Natural re-vegetation will be allowed to occur although active rehabilitation programs may be required at specific sites where erosion warrants seeding or planting
PA-9.03	Organic material, topsoil and subsoil stripped from construction areas will be stockpiled and protected to be used for future site rehabilitation.
PA-9.04	Rehabilitation of construction areas will incorporate erosion protection and sediment control measures in accordance with the Erosion and Sediment Control Plan as required.
PA-9.05	Rehabilitation Plans will include objectives for restoration of natural conditions, erosion protection, sediment control, non-native and invasive plant species management, wildlife habitat restoration and restoration of aesthetic values as required.
PA-9.06	Where appropriate, regional native grass mixtures will be used to assist re-vegetation of disturbed areas to control erosion or prevent invasion of non-native species. The mixtures will not contain non-native or invasive species.

Rights-of-Way (PC-8)

ID	Mitigation
PC-8.01	Access to transmission line rights-of-way for clearing and construction will utilize existing roads and trails to the extent possible.
PC-8.02	Access to transmission line rights-of-way will be closed, signed and/or controlled in accordance with an Access Management Plan.
PC-8.03	Additional clearing outside established rights-of-way will be approved by the Construction Supervisor/Site Manager prior to clearing and may require an amendment to contract specifications.
PC-8.04	Clearing and disturbance will be limited to defined rights-of-way and associated access routes to the extent possible.
PC-8.05	Clearing of rights-of-way will occur under frozen or dry ground conditions during established timing windows to minimize rutting and erosion where applicable.
PC-8.06	Construction vehicles will be wide-tracked or equipped with high floatation tires to minimize rutting and limit damage and compaction to surface soils.
PC-8.07	Disturbed areas along pipeline line rights-of-way will be rehabilitated in accordance with site Rehabilitation and Vegetation Management Plan.
PC-8.08	Environmentally sensitive sites, features and areas will be identified and mapped prior to clearing.
PC-8.09	In situations where the ROW doesn't have completely frozen or have dry ground conditions alternate products such as construction mats will be used.

Safety and Health (EI-6)

ID	Mitigation
EI-6.01	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include safety and health awareness.
EI-6.02	Safety and health information will be posted at each project location and made available to all project personnel.
EI-6.03	Workplace safety and health committees will be established and safety meetings will be held as required by provincial legislation and Manitoba Hydro guidelines at all project locations.

Soil Contamination (EI-7)

ID	Mitigation
EI-7.01	A closure report will be prepared for completed remediation projects in accordance with provincial and Manitoba Hydro guidelines.
EI-7.02	A Remediation Plan will be prepared by the Contractor for sites contaminated by project activities and will remediate soils according to provincial standards.
EI-7.03	All spills and releases reported will be responded to in accordance with provincial legislation and guidelines and Manitoba Hydro guidelines.
EI-7.04	Any contaminated soil treatment areas must be designed and constructed to contain surface runoff and prevent leaching to soil and groundwater.
EI-7.05	Contractor personnel will take all reasonable steps to prevent soil, groundwater and surface water contamination.
EI-7.06	If contamination is suspected or evident, a Phase II Environmental Site Assessment will be carried out on previously used construction sites following Manitoba Hydro procedures.
EI-7.07	If laboratory results show that the soil is contaminated the soil must be treated on-site or transported to an approved landfill or land farm for remediation in accordance with a Remediation Plan.
EI-7.08	If laboratory results show that the soil is not contaminated then the soils may be used in accordance with contact specifications.
EI-7.09	Remediation Plans will be prepared by the Contractor and approved by the Construction Supervisor/Site Manager prior to implementation if remediation of contaminated soils is determined to be required.
EI-7.10	The Contractor will assess previously used construction sites for potential contamination following Canadian Standards Association Environmental Site Assessment (CSA Z768- 01 and Z769-00) procedures.
EI-7.11	The Contractor will carry out a CSA Phase II Environmental Site Assessment (CSA Z769-00) at abandoned construction camps, marshalling yards, petroleum product storage and dispensing areas and hazardous substance storage areas if contamination is suspected
EI-7.12	The Environmental Inspector will inspect contaminated site assessment and remediation work regularly to ensure that environmental protection measures are implemented and effective.

Stream Crossings (PC-9)

ID	Mitigation
PC-9.03	Directional Drilling under stream crossings will follow the Fisheries and Oceans Canada Manitoba Operational Statement for High Pressure Directional Drilling.

Stripping (PA-10)

ID	Mitigation
PA-10.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-10.02	Erosion protection and sediment control measures will put be in place prior to stripping in accordance with the Erosion and Sediment Control Plan as required.
PA-10.03	In areas of known salinity, excavated or stripped soil will be stored on liners or in designated areas were possible.
PA-10.04	Mineral topsoils and surficial organic materials should be stripped separately from subsoils, segregated, and stockpiled for later use in backfilling, contouring and rehabilitation. Soils should be replaced in the reverse order to which they were removed.
PA-10.05	Stockpiled materials from stripping will not block natural drainage patterns.
PA-10.07	Stripping will not be permitted within established buffer zones and setback distances from waterbodies except where approved in work permits, authorizations or contract specifications.
PA-10.08	The Contractor will stabilize construction areas requiring extensive stripping as soon as possible to

Stream Crossings (PC-9)

	minimize erosion.

Vehicle and Equipment Maintenance (EI-9)

ID	Mitigation
EI-9.01	An Emergency Preparedness and Response Plan and spill control and clean-up equipment will be provided at all designated vehicle, equipment and machinery maintenance areas.
EI-9.02	Emergency vehicle, equipment and machinery maintenance repairs will contain waste fluids and will use drip trays and tarps.
EI-9.03	Unnecessary idling of vehicles, equipment and machinery will be avoided to the extent practical.
EI-9.04	Vehicle, equipment and machinery maintenance and repairs will be carried out in designated areas located at least 100 m from the ordinary high water mark of a waterbody, riparian area or wetland.
EI-9.05	Vehicle, equipment and machinery operators will perform a daily inspection for fuel, oil and fluid leaks and will immediately shutdown and repair any leaks found. All machinery working near watercourses will be kept clean and free of leaks.
EI-9.06	Vehicles transporting dangerous goods or hazardous products will display required placards and labelling in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-9.07	Vehicles, equipment and machinery must arrive on site in clean condition free of fluid leaks and weed seeds.
EI-9.08	Vehicles, equipment and machinery that carry fuel, hydraulic oil and other petroleum products will also carry spill control and clean-up equipment and materials.

Waste Management (EI-10)

ID	Mitigation
EI-10.01	A Contract specific Waste and Recycling Management Plan will be prepared by the Contractor, reviewed by the Construction Supervisor and Environmental Specialist prior to construction and updated annually.
EI-10.02	Bear-proof waste containers and/or electric fencing will be used in northern, remote and rural project locations.
EI-10.03	Construction sites will be kept tidy at all times and bins will be provided wherever solid wastes are generated.
EI-10.04	Indiscriminate burning, dumping, littering or abandonment will not be permitted.
EI-10.05	Kitchen wastes will be stored in closed containers to minimize wildlife interactions.
EI-10.06	Solid waste materials will be collected and transported to a licensed or approved waste disposal facility in accordance with the Solid Waste/Recycling Management Plan.
EI-10.07	Waste materials remaining at snow disposal sites after melting will be disposed of at a licensed or approved landfill.

Wetlands (EC-8)

ID	Mitigation
EC-8.01	Clearing wastes and other construction debris or waste will not be placed in wetland areas. Existing logs, snags and wood debris will be left in place.
EC-8.02	Environmental protection measures for working in and around wetlands will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-8.03	Natural vegetated buffer areas of 30 m will be established around wetlands and riparian zones will be maintained to the extent possible.

Wetlands (EC-8)

EC-8.04	Project activities will avoid wetland areas to the extent possible. If avoidance is not practical, tThe extent of disturbance will be minimized.

Wildlife Protection (EC-9)

ID	Mitigation
EC-9.01	Any wildlife killed or injured by vehicles will be reported to Manitoba Conservation and Water Stewardship.
EC-9.07	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
EC-9.11	No firearms will be permitted at construction sites.
EC-9.12	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for wildlife and wildlife habitat.
EC-9.13	Problem wildlife will be reported immediately to Manitoba Conservation and Water Stewardship.
EC-9.15	Trees containing large nests of sticks and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
EC-9.16	Vehicles will not exceed posted speed limits and wildlife warning signs may be installed in high density areas and at known crossings locations as a result of wildlife monitoring.
EC-9.18	Wildlife and wildlife habitat will be protected in accordance with provincial and federal legislation and provincial and federal guidelines.
EC-9.19	Wildlife will not be fed, befriended or harassed at construction areas.

11.2.3 Specific Environmental Protection Measures

Specific environmental protection measures will be provided for environmentally sensitive sites where general measures do not provide adequate mitigation of potential effects. Environmentally sensitive sites are locations, features, areas, activities or facilities along or immediately adjacent to the transmission line right of way and other project components that are determined to be ecologically, socially, economically or culturally important and sensitive to disturbance by the Project and, as a result, require site-specific mitigation measures. The sites may include sensitive or unique terrain features, waterbodies and wetlands, important mammal, bird, and amphibian habitats, protected species and areas, and heritage resources.

Manitoba Hydro has been working with aboriginal communities prior to the start of construction to identify and map sites and develop mitigation measures to minimize the effects of the project on them.

For the Construction and Operation Phase EnvPPs, orthophoto map sheets will provide Manitoba Hydro project managers, construction supervisors and employees, and contractors and contract employees detailed site-specific environmental protection information that can be implemented, managed, evaluated and reported on in the field. The orthophoto map sheets will be provided in paper and electronic formats which will be used by Manitoba Hydro, contractor and regulatory staff on laptop computers in field offices, vehicles and aircraft.

11.2.4 Follow-up Activities

Follow-up is an activity carried out to verify the accuracy of the environmental assessment of a project, assess the effectiveness of measures taken to mitigate adverse effects and determine compliance with regulatory requirements. Follow-up identified in Chapter 6.0 will be implemented through inspection, management and auditing actions.

Inspection

Inspection is the organized and routine examination or evaluation, including observations, measurements and sometimes tests, of a construction project or activity. Inspection results are compared to pre-defined requirements or standards to determine whether an activity conforms to these requirements. Inspection provides an essential function in environmental protection and implementation of mitigation measures. Much of the success in environmental protection will be attributable to how well environmental inspection is carried out during the construction phase of a project.

Manitoba Hydro is establishing a comprehensive and integrated environmental inspection program to ensure effective implementation of environmental protection measures, compliance with regulatory approvals and fulfillment of corporate environmental objectives. The inspection program includes hiring and training of Environmental Inspectors.

Trained inspectors visit work sites and inspect for compliance with license terms and conditions, and adherence to environmental protection measures. Inspection activities are recorded in journals and daily inspection forms that are submitted to the Construction Supervisor. Weekly and monthly summary reports are also submitted to the Manitoba Hydro Project Manager and senior management as required or requested.

Management

Management is the control of pre-defined environmental effects, issues and concerns through the implementation of reasoned and approved courses of action. Management plans will be prepared to address important management issues, regulatory requirements and corporate commitments identified in the EA Report. The management plans will describe the management actions, roles and responsibilities, evaluation mechanisms, updating requirements and reporting schedules.

12.0 SUMMARY AND CONCLUSION

Manitoba Hydro is proposing to construct the Project in the Rural Municipalities of Rosser, Rockwood and St. Andrews to provide needed transmission pipeline capacity north of the City of Winnipeg. The proposed project will also provide a redundant supply to the natural gas customers north of Winnipeg, provide redundant capacity to support the City of Winnipeg and provide operational flexibility in the Winnipeg transmission network. The proposed Project involves the construction of 8.5 km of 6 inch steel pipeline, 49.5 km of 12 inch steel pipeline and two valve sites.

The proposed Project requires a licence for a Class II development under *The Environment Act* (Manitoba). The environmental assessment was carried out based on information provided by Manitoba Hydro, Rural Municipalities of Rosser, Rockwood and St. Andrews, reference material from the South Interlake and Selkirk and District Planning Area, reference materials obtained from Manitoba Conservation and Water Stewardship and Manitoba Hydro, literature and internet searches, and personal reference collections.

Valued environmental components were identified as air quality, groundwater resources, agricultural land, shelterbelts, creeks and drains, wetlands, key species at risk and economy.

A public engagement process and First Nation and Metis Engagement Process was carried out for the proposed Project. The processes included of meetings with municipal officials, landowners and other stakeholders, project notification by mail, e-mail and newspapers, letters to property owners, First Nations and the MMF, notices to area residents, and three public open houses.

Environmental effects of the proposed Project on the VECs selected for the proposed project were identified and assessed, mitigation measures were identified and residual environmental effects were evaluated. The assessment also considered effects of accidents and malfunctions associated with the Project, effects of the environment on the Project, and cumulative environmental effects.

12.1 Conclusion

Based on the information contained in the environmental assessment report and the implementation of mitigation measures and follow-up actions under an environmental protection program, the proposed Project will not result in any significant adverse environmental effects.

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APPENDIX A

PROJECT DRAWINGS

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

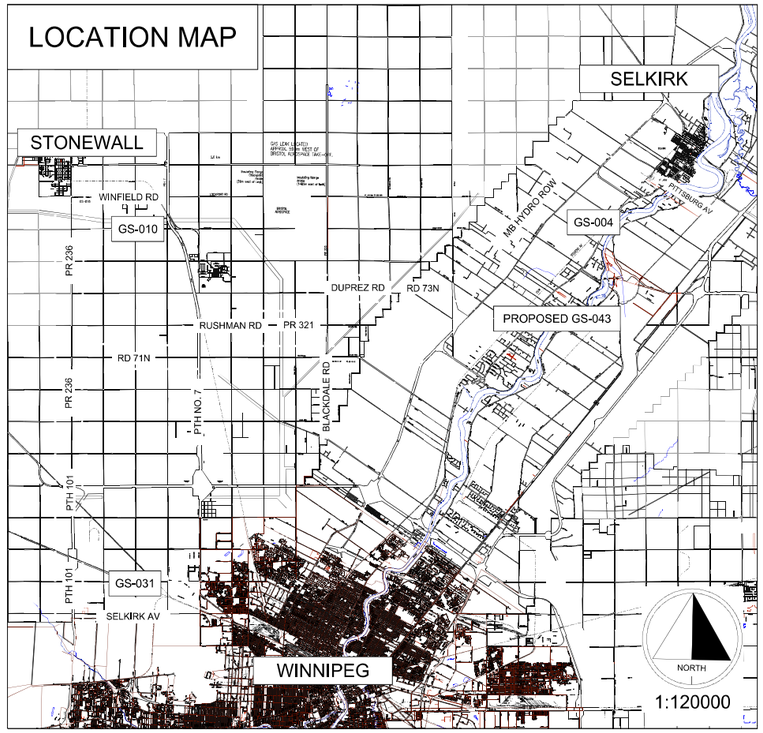
GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

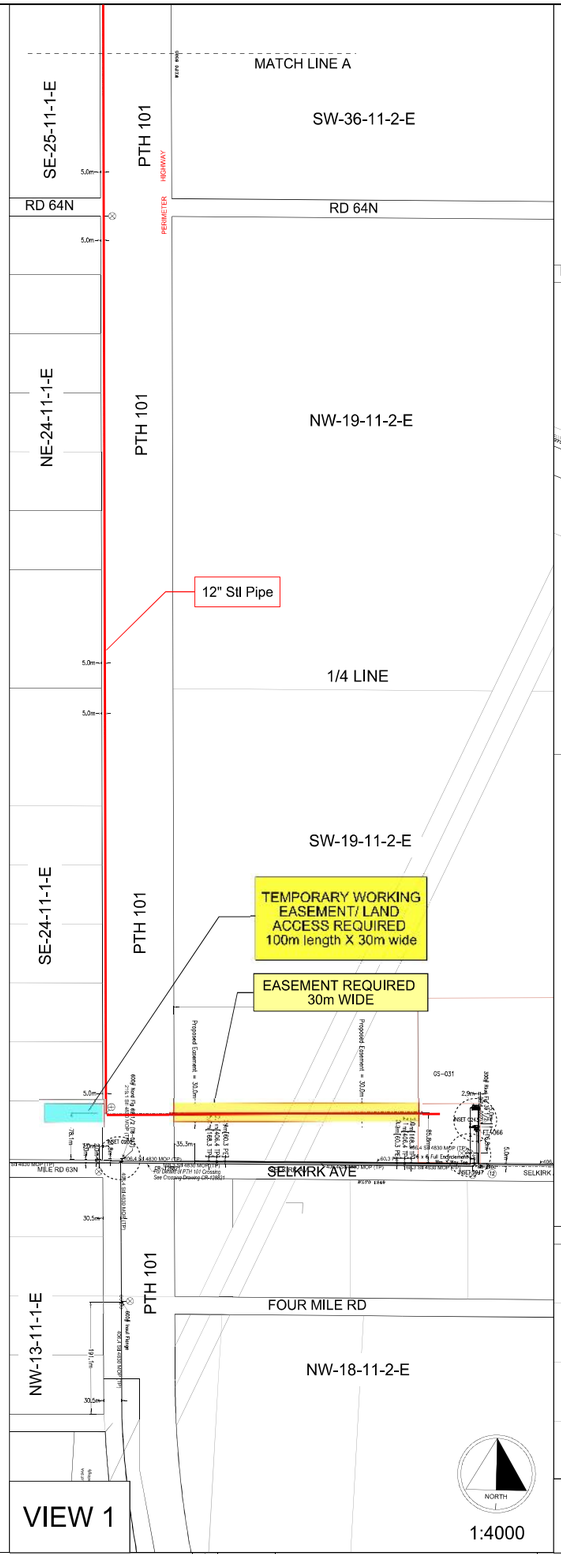
Comments/Notes

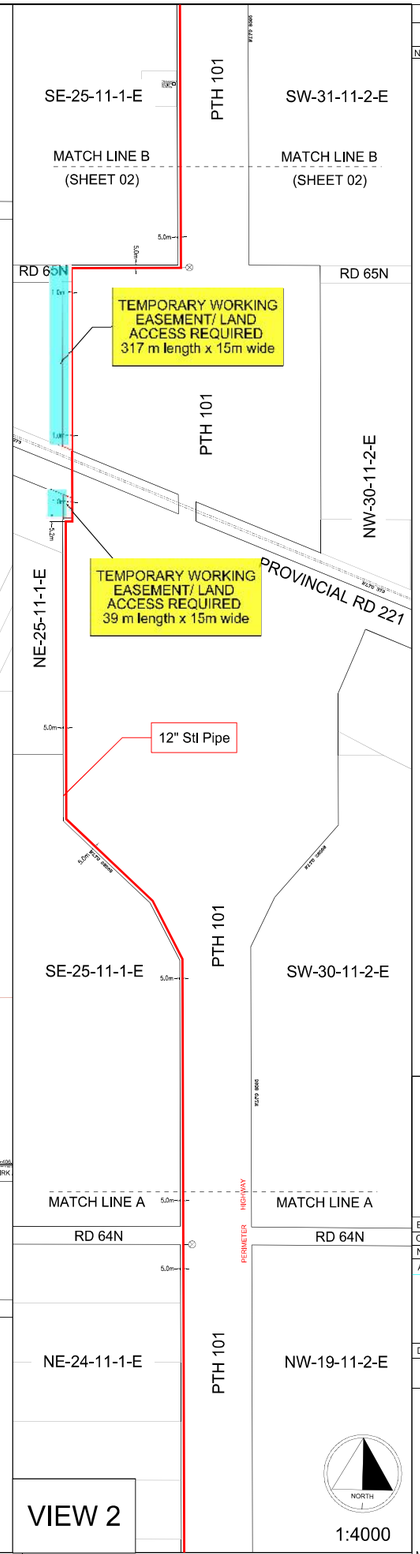
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:

LOCATION MAP



NOTE:
——— LINE REPRESENTS PRELIMINARY ROUTE





BILL OF MATERIAL		
No.	Qty	Description

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP: Gas Main 4830 kPa, Test Pressure: 6762 kPa; Farm Tap MOP: kPa, Test Pressure: kPa
2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.
3. Locate all existing above grade and below grade structures prior to commencing construction.
4. Contact the Gas Designer when Gas Main is installed and/or energized.
5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.
6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb,

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:	No.	Date	Revision	Appr.	Reference(s):
	Sealing Engineer:						
	Engineering:	Issued For Construction:					
		Easement: Yes ☐ No ☐					

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SHT	REV
01	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:

MATCH LINE C

MATCH LINE C

RD 66N

MOLLARD RD

5.0m

PTH 101

SE-36-11-1-E

SW-31-11-2-E

12" Stl Pipe

1/4 LINE

1/4 LINE

MATCH LINE D

MATCH LINE D

PTH 6

PTH 6

TEMPORARY WORKING EASEMENT/ LAND ACCESS REQUIRED
100 m length x 30m wide

NE-1-12-1-E

NW-6-12-2-E

PROVINCIAL ROUTE 236

CNR

PUBLIC ROAD

CNR

PUBLIC ROAD

12" Stl Pipe

1/4 LINE

1/4 LINE

MATCH LINE E
(SHEET 03)

MATCH LINE E
(SHEET 03)

GOV'T RD ALL'CE

RD 68N

NE-12-12-1-E

NW-7-12-2-E

PR 236

12" Stl Pipe

1/4 LINE

1/4 LINE

MATCH LINE B
(SHEET 01)

MATCH LINE B
(SHEET 01)

RD 65N

RD 65N

1.0m

SE-36-11-1-E

SW-31-11-2-E

PTH 101

VIEW 3

NORTH

1:3000

MATCH LINE C

MATCH LINE C

RD 66N

MOLLARD RD

SE-1-12-1-E

SW-6-12-2-E

PROVINCIAL TRUNK HWY 101

GOV'T RD ALL'CE

PTH 101

VIEW 4

NORTH

1:3000

MATCH LINE D

MATCH LINE D

PTH 6

PTH 6

SE-12-12-1-E

SW-7-12-2-E

PR 236

VIEW 5

NORTH

1:3000

BILL OF MATERIAL		
No.	Qty	Description

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes: Gas Main
1. MOP : 4830 kPa
Test Pressure : 6782 kPa

Farm Tap
MOP : kPa
Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.

3. Locate all existing above grade and below grade structures prior to commencing construction.

4. Contact the Gas Designer when Gas Main is installed and/or energized.

5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.

6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
2			
1			
0			

Reference(s):

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SH	SC
02	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
Manufacturer/Properties/Size:
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Line/Resin:
Manufacturer/Properties/Size:
SDR/Coil/Date Made:
Line/Resin:
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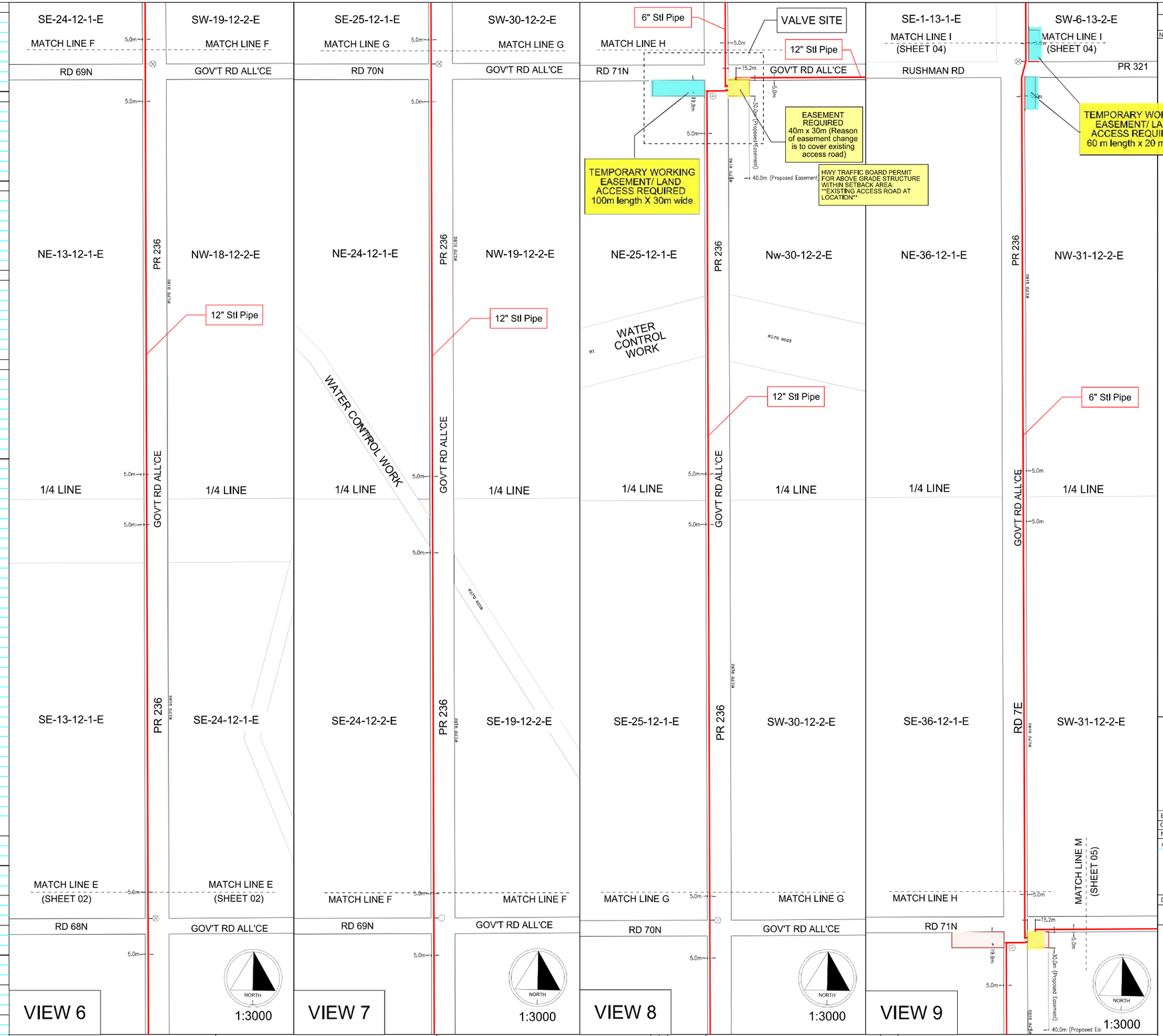
SDR/Coil/Date Made:
Line/Resin:



NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

BILL OF MATERIAL		
No.	Qty	Description

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes: Gas Main
1. MOP: 4830 kPa
Test Pressure : 6762 kPa
Farm Tap
MOP : kPa
Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.

3. Locate all existing above grade and below grade structures prior to commencing construction.

4. Contact the Gas Designer when Gas Main is installed and/or energized.

5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.

6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:
Cathodic Check:
Network: unset
Activity #'s

In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.

Drawn: rbanaag

Centra Gas Mb. Inc.
Winnipeg Mb.

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:					Reference(s):
	Sealing Engineer:						
	Engineering:	Issued For Construction:					
		Easement: Yes ☐ No ☐	No.	Date	Revision	Appr.	

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SHT	REV
03	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	

SE-12-13-1-E
MATCH LINE J
RD 73N
SW-7-13-2-E
MATCH LINE J
GOV'T RD ALL'CE
NE-1-13-1-E
NW-6-13-2-E
PR 236
6" Stl Pipe
GOV'T RD ALL'CE
1/4 LINE
1/4 LINE
5.0m
15.0m

SE-13-13-1-E
MATCH LINE K
RD 74N
Electrostatic
SW-18-13-2-E
MATCH LINE K
GRASSMERE CHURCH RD
NE-12-13-1-E
NW-7-13-2-E
PR 236
6" Stl Pipe
GOV'T RD ALL'CE
1/4 LINE
1/4 LINE

SE-24-13-1-E
MATCH LINE L
CKWOOD RD (RD 75N)
RD 75N
SW-19-13-2-E
MATCH LINE L
ROCKWOOD RD
NE-13-13-1-E
NW-18-13-2-E
PR 236
6" Stl Pipe
GOV'T RD ALL'CE
1/4 LINE
1/4 LINE

SW-30-13-2-E
RD 76N
WINFIELD RD
NE-24-13-1-E
NW-19-13-2-E
PR 226
SEE DRAWING B-132 FOR DEPARTMENT OF HIGHWAYS APPROVAL DETAILS
304.1m
EASEMENT REQUIRED
30m WIDE
RD 6E
1/4 LINE
1/4 LINE

SE-1-13-1-E
RD 6E
SW-6-13-2-E
MATCH LINE I
(SHEET 03)
RUSHMAN RD
PR 321
VIEW 10
NORTH
1:3000

SE-12-13-1-E
RD 6E
SW-7-13-2-E
MATCH LINE J
RD 73N
GOV'T RD ALL'CE
VIEW 11
NORTH
1:3000

SE-13-13-1-E
RD 6E
SW-18-13-2-E
MATCH LINE K
RD 74N
Electrostatic
GRASSMERE CHURCH RD
VIEW 12
NORTH
1:3000

SE-24-13-1-E
PR 236
SW-19-13-2-E
MATCH LINE L
RD 75N
ROCKWOOD RD
HYDRO TRANSMISSION LINE ROW
6" Stl Pipe
VIEW 13
NORTH
1:3000

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP : Gas Main 4830 kPa Test Pressure : 6782 kPa
Farm Tap MOP Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.

3. Locate all existing above grade and below grade structures prior to commencing construction.

4. Contact the Gas Designer when Gas Main is installed and/or energized.

5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.

6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

BILL OF MATERIAL

No.	Qty	Description

Rev	Rev
04	00

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
1			
2			
3			
4			

Reference(s):

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

Rev	Rev
04	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

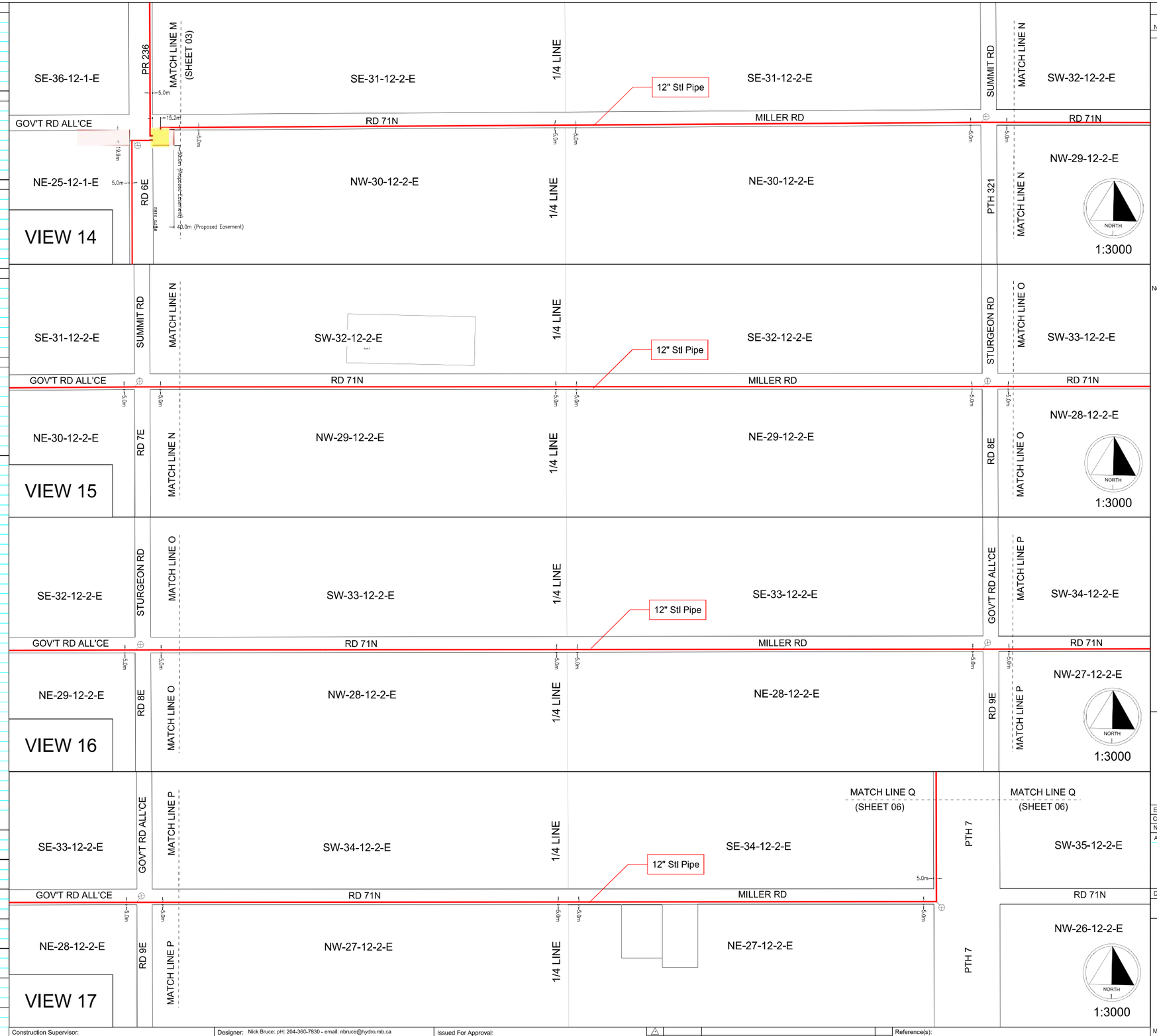
GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	



Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
1			
2			
3			

Reference(s):

BILL OF MATERIAL		
No.	Qty	Description

No.

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP : Gas Main 4830 kPa Test Pressure : 6762 kPa — Farm Tap MOP : kPa Test Pressure : kPa
2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.
3. Locate all existing above grade and below grade structures prior to commencing construction.
4. Contact the Gas Designer when Gas Main is installed and/or energized.
5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.
6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	

Drawn: rbanaag

Centra Gas Mb. Inc.
Winnipeg Mb.

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SHT	REV
05	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	

SE-3-13-2-E

SW-2-13-2-E

MATCH LINE R

RUSHMAN RD

PR 321

5.0m

PTH No. 7

NE-34-12-2-E

NW-35-12-2--E

12" Stl Pipe

1/4 LINE

MATCH LINE Q
(SHEET 05)

MILLER RD

RD 71N

SE-34-12-2-E

SW-35-12-2--E

NE-27-12-2-E

NW-26-12-2-E

VIEW 18

1:3500

SW-2-13-2-E

MATCH LINE R

TEMPORARY WORKING EASEMENT/ LAND ACCESS REQUIRED
136m X 30m wide
(PTH 7 to rail P/L)

12" Stl Pipe

1/4 LINE

SE-2-13-2-E

RD 11E

MATCH LINE S

SW-1-13-2-E

PTH No. 7

RUSHMAN RD

PR 321

NW-35-12-2--E

NE-35-12-2--E

KING EDWARD

NW-36-12-2-E

VIEW 19

1:3500

SW-1-13-2-E

RD 11E

MATCH LINE S

12" Stl Pipe

1/4 LINE

SE-1-13-2-E

RD 12E

MATCH LINE T

SW-6-13-3-E

KING EDWARD

NW-36-12-2-E

NE-36-12-2-E

GOV'T RD ALL'CE

NW-31-12-3-E

VIEW 20

1:3500

SW-6-13-3-E

RD 12E

MATCH LINE T

12" Stl Pipe

1/4 LINE

SE-6-13-3-E

PIPELINE RD

MATCH LINE U

SW-5-13-3-E

RUSHMAN RD

PR 321

GOV'T RD ALL'CE

NW-31-12-3-E

NE-31-12-3-E

VIEW 21

1:3500

SW-5-13-3-E

MATCH LINE U

12" Stl Pipe

1/4 LINE

SE-5-13-3-E

TEMPORARY WORKING EASEMENT/ LAND ACCESS REQUIRED
100m X 30m wide

MATCH LINE V
(SHEET 07)

PR 220

10.0m

20.0m (Proposed Easement)

4.0m

PIPELINE RD

NW-32-12-3-E

NE-32-12-3-E

EASEMENT REQUIRED
20m X 10m

HWY TRAFFIC BOARD PERMIT FOR ABOVE GRADE STRUCTURE WITHIN SETBACK AREA & ACCESS ROAD REQUIRED

BLACKDALE RD

VIEW 22

1:3500

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:	
	Sealing Engineer:		
	Engineering:	Issued For Construction:	
		Easement: Yes ☐ No ☐	

No.	Date	Revision	Appr.
1			
2			
3			

Reference(s):

	Rev.
06	00

BILL OF MATERIAL

No.	Qty	Description

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP : Gas Main 4830 kPa, Test Pressure : 6762 kPa; Farm Tap MOP : kPa, Test Pressure : kPa
2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.
3. Locate all existing above grade and below grade structures prior to commencing construction.
4. Contact the Gas Designer when Gas Main is installed and/or energized.
5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.
6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

Rev.	
06	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
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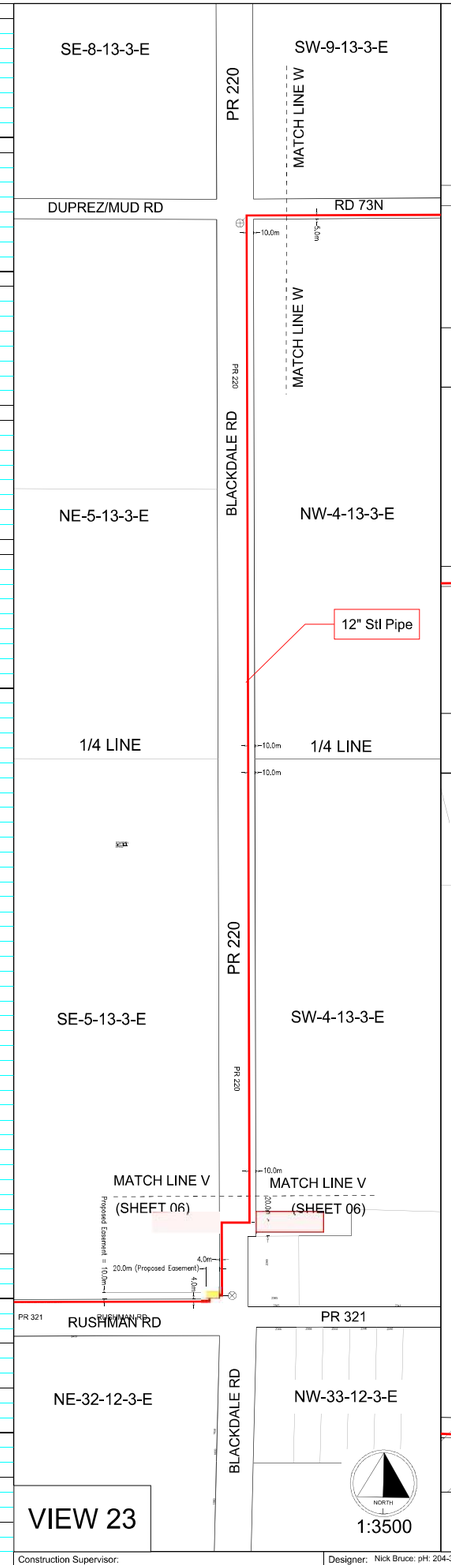
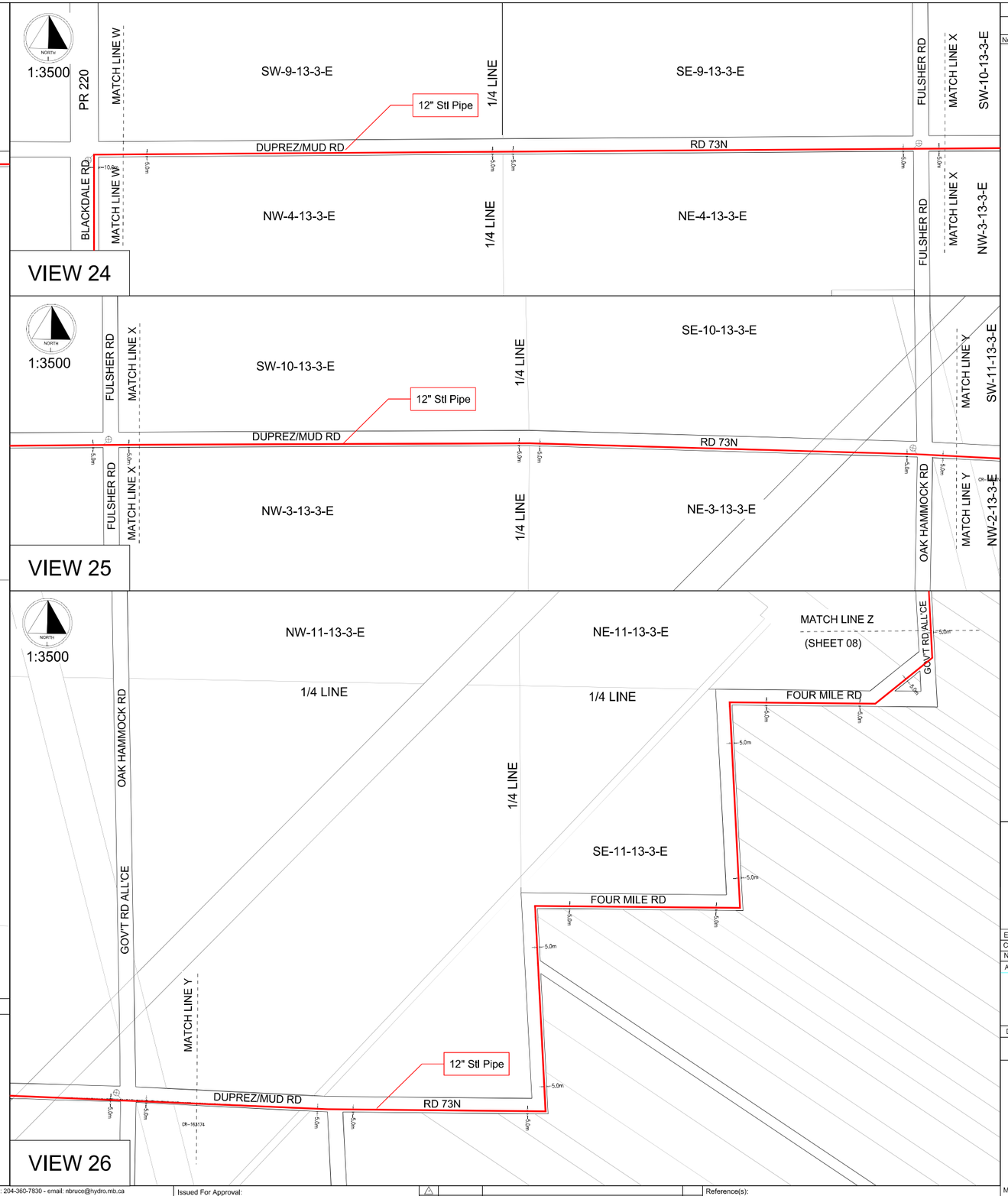
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	





BILL OF MATERIAL		
No.	Qty.	Description

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-built.

Notes:
1. MOP : Gas Main 4830 kPa Test Pressure : 6762 kPa
MOP : Farm Tap kPa Test Pressure : kPa
2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.
3. Locate all existing above grade and below grade structures prior to commencing construction.
4. Contact the Gas Designer when Gas Main is installed and/or energized.
5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.
6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:	
	Sealing Engineer:		
	Engineering:	Issued For Construction:	
		Easement: Yes ☐ No ☐	

No.	Date	Revision	Appr.
1			
2			
3			
4			

Reference(s):

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SHT	REV
07	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	

FOUR MILE RD

GOVT RD ALLYCE

MATCH LINE Z

(SHEET 07)

ADOT48

ADOT51

ADOT50

ADOT49

ADOT48

ADOT47

ADOT46

ADOT45

ADOT44

ADOT43

ADOT42

EASEMENT REQUIRED
30m WIDE

12" Stl Pipe

LISS RD

PTH 8

ADOT55

ADOT54

ADOT53

ADOT52

MANITOBA HYDRO ROW

BRUNEAU DRAIN

MATCH LINE AA

TEMPORARY WORKING
EASEMENT/ LAND
ACCESS REQUIRED
150m X 30m wide

TEMPORARY WORKING
EASEMENT/ LAND
ACCESS REQUIRED
100m X 30m wide

NORTH

1:3500

VIEW 27

ADOT43

ADOT44

PTH 8

ADOT45

ADOT46

ADOT47

ADOT48

ADOT49

ADOT50

ADOT51

LISS RD

MATCH LINE AA

12" Stl Pipe

KARABIN RD

BAY RD

MATCH LINE BB

POPLAR AV

MANITOBA HYDRO ROW

BRUNEAU DRAIN

CEDAR ST

Wpg NW TP UPGRADE
PHASE 1

NORTH

1:5000

VIEW 28

MATCH LINE BB

POPLAR AV

ROSSDALE RD

CHURCH RD

MANITOBA HYDRO ROW

CEDAR ST

Wpg NW TP UPGRADE
PHASE 1

SKAZYK RD

CHAMBERLAIN RD

MATCH LINE CC

(SHEET 09)

DUCHECK RD

DONALD RD

NORTH

1:5000

VIEW 29

NOTE: ALL EASEMENTS /
TEMPORARY EASEMENT
DIMENSIONS ARE IN EGIS.
PLEASE SEE EGIS
FOR EXACT LOCATIONS.

						08	00

BILL OF MATERIAL

No.	Qty	Description

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP : Gas Main 4830 kPa
Test Pressure : 6762 kPa
Farm Tap
MOP : kPa
Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.

3. Locate all existing above grade and below grade structures prior to commencing construction.

4. Contact the Gas Designer when Gas Main is installed and/or energized.

5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.

6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	
Cathodic Check:	
Network:	unset
Activity #'s	

In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.

Drawn: rbanaag

Centra Gas Mb. Inc.
Winnipeg Mb.

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
1			
2			
3			
4			

Reference(s):

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

		08	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
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Pressure Guage Calibration Date:			
Test Medium:			
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GAS MAIN TEST			
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Pressure Guage Calibration Date:			
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Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

Comments/Notes

Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
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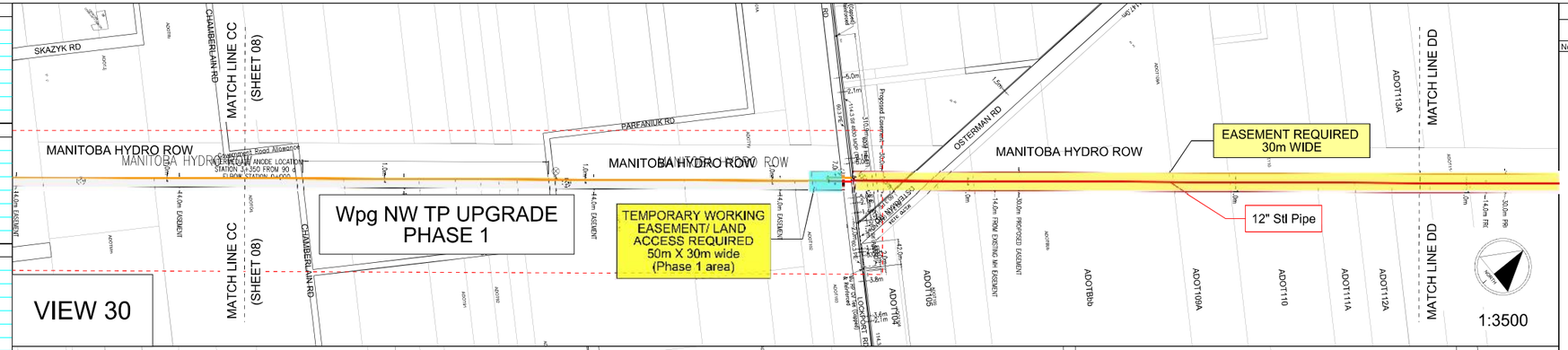
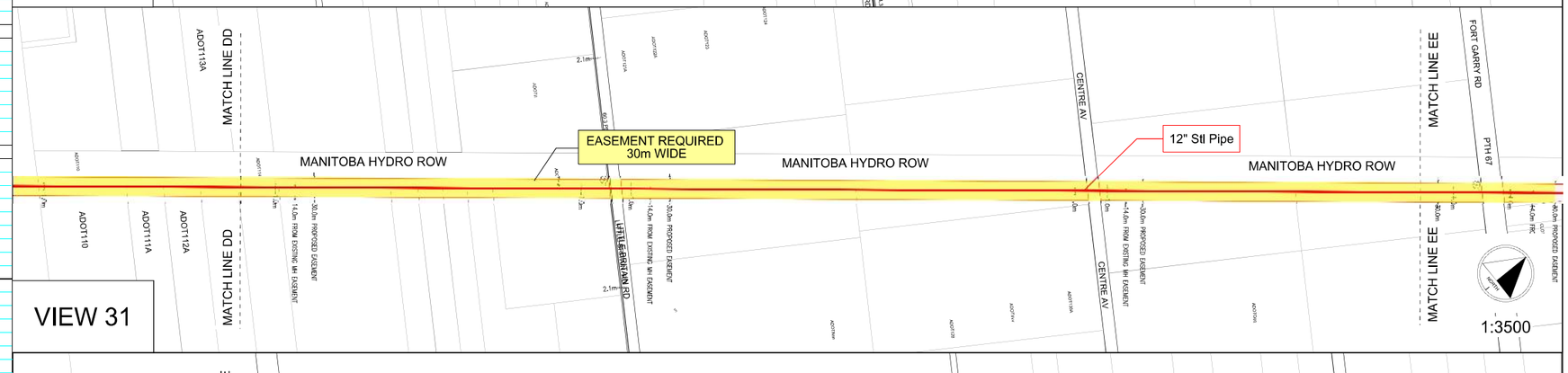
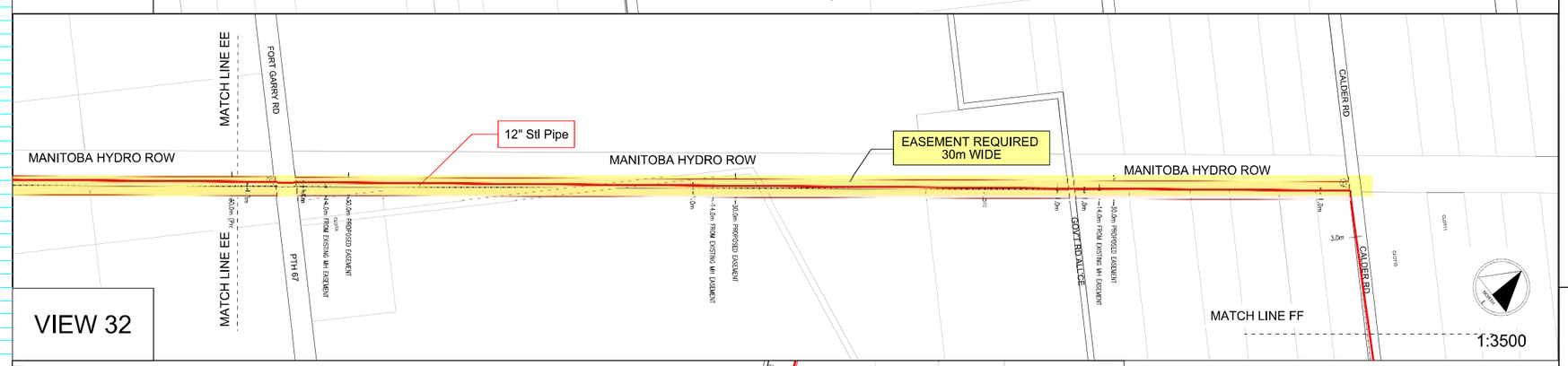
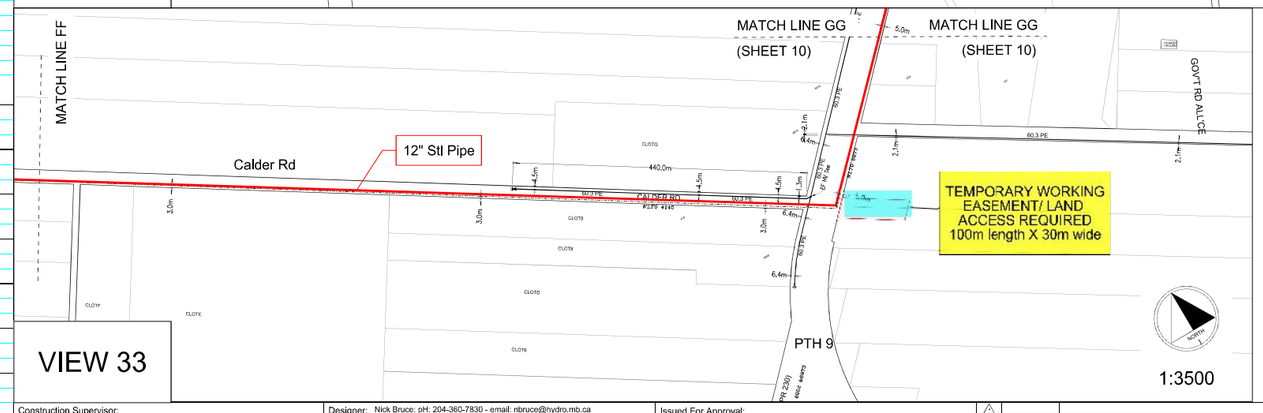
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	









Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
3			
2			
1			

Reference(s):

	REV
	09

BILL OF MATERIAL

No.	Qty	Description

NOTE: ALL EASEMENTS / TEMPORARY EASEMENT DIMENSIONS ARE IN EGIS. PLEASE SEE EGIS FOR EXACT LOCATIONS.

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes: Gas Main
1. MOP : 4830 kPa
Test Pressure : 6762 kPa

Farm Tap
MOP : kPa
Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.
3. Locate all existing above grade and below grade structures prior to commencing construction.
4. Contact the Gas Designer when Gas Main is installed and/or energized.
5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.
6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

SHT	REV
09	00

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
Contractor:			
Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
Test Medium:			
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Inspector:			
Remarks:			

GAS MAIN TEST			
Start Pressure:	Date:	Time:	Temperature:
End Pressure:	Date:	Time:	Temperature:
Pressure Guage Calibration Date:			
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Inspector:			
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GAS MAIN TEST			
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GAS MAIN TEST			
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End Pressure:	Date:	Time:	Temperature:
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Comments/Notes

Manufacturer/Properties/Size:	
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Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
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Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	
Manufacturer/Properties/Size:	
SDR/Coil/Date Made:	
Line/Resin:	

Construction Supervisor:	Designer: Nick Bruce: pH: 204-360-7830 - email: nbruce@hydro.mb.ca	Issued For Approval:
	Sealing Engineer:	
	Engineering:	Issued For Construction:
		Easement: Yes ☐ No ☐

No.	Date	Revision	Appr.
1			
2			
3			
4			

Reference(s):

	10 / 60

BILL OF MATERIAL

No.	Qty	Description

Notes:

1) Pipe to have a minimum 1100mm depth of cover.

2) Warning signs to be installed as per MH Standard 510.06

3) Field bends to be as-builted.

Notes:
1. MOP : Gas Main 4830 kPa
Test Pressure : 6762 kPa
Farm Tap
MOP kPa
Test Pressure : kPa

2. Perform all work on this drawing in accordance with the applicable standards, specifications and procedures.

3. Locate all existing above grade and below grade structures prior to commencing construction.

4. Contact the Gas Designer when Gas Main is installed and/or energized.

5. Maximum Operating Pressure (MOP) is 420 kpa unless otherwise noted.

6. Outside Diameter (O.D.) of pipe in millimeters unless otherwise noted.

Eng. Check:	In my opinion, the plans and specifications submitted are in accordance with CSA Z662-11 Oil and Gas Pipeline Systems and the facilities proposed herein will not endanger Public safety.
Cathodic Check:	
Network: unset	
Activity #'s	
Drawn: rbanaag	

Centra Gas Mb. Inc.
Winnipeg Mb.

Mun. Unit:

WBS #: P.23593
MER #: 2015-01001

DRAWING NUMBER: CD-17420

10	00

APPENDIX B

SITE PHOTOGRAPHS

Manitoba Hydro

Northwest Natural Gas Pipeline Project

Project Infrastructure
- Photograph Location and Direction
- Gate Station - Gas
- Preferred Route

Infrastructure
- Community
- Provincial Road
- Provincial Trunk Highway
- Existing Natural Gas Pipeline
- City / Town Boundary

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB
Date Created: May 15, 2015

N

0 2.5 5 Kilometres
0 1.5 3 Miles
1:115,000

Northwest Natural Gas Pipeline Project

Photo Locations

Draft: For Discussion Purposes Only

File Location:

Photograph 1. The proposed pipline will parallel the gravel road through the agricultural field surrounding Rosser Station.

Photograph 2. The proposed pipeline will travel along the ditch in front of the Purple Berry Orchard Saskatoon Berry Farm off the Perimeter Hwy.

Photograph 3. A. The proposed pipline will extend north down the the west access road allowence of the Perimeter Hwy, paralleling the forest edge.

Photograph 4. The proposed pipline will extend north down the west access road allowence of the Perimeter Hwy, paralleling the recently established shelterbelt.

Photograph 5. The proposed pipeline will travel adjacent to Omand's Creek through the agricultural field before crossing the creek and continuing north.

Photograph 6. The proposed pipline will extend north down the west access road allowence of the Perimeter Hwy, perpindicular to the shelterbelt.

Photograph 7. The proposed pipeline will travel along the road allowance of Hwy 236. Seeded grasses on fromer cultivated land extend from the road allowance.

Photograph 8. The proposed pipeline will cross Grassmere Creek perpendicularly at Hwy 236.

Photograph 9. The proposed pipeline will cross Grassmere Creek perpendicularly at Hwy 236. The photograph is oriented away from Hwy 236 to display grass mixture that occupies the creek's banks.

Photograph 10. The proposed pipeline will travel down the Hwy 236 road allowance, passing by the deciduous forest area and the mature spruce shelterbelt at the Road 73 N intersection.

Photograph 11. The proposed pipeline will extend east down the Road 71 N road allowance. Emerging crops surround the Road 71 N and Road 8 E intersection.

Photograph 12. The proposed pipeline will extend east down the Road 71 N road allowance. Emerging crops extend in all directions from the road.

Photograph 13. The proposed pipeline will cross Parks Creek perpendicularly. The photograph looks towards the proposed pipeline crossing located 1-mile south.

Photograph 14. The existing natural gas pipeline section extends down the transmission right-of-way to the right the steal lattice structures. The photograph looks northeastward from Liss Rd.

Photograph 15. The proposed pipeline will extend down the transmission right-of-way to the right of the steel lattice structures. The photograph looks northeastward at emerging crops from Church Rd.

Photograph 16. The proposed pipeline will extend down the transmission right-of-way to the right of the steel lattice structures. The photograph looks northeastward at wetland vegetation and shrubs from Calder Rd.

Photograph 17. The proposed pipeline will travel southeast down the Pittsburg Rd road allowance to Selkirk Station. A forested area is located behind the maintained grassland adjacent to Pittsburg Rd.

APPENDIX C

LAND USE TABLES

Table C-1: Land Ownership Table for the Northwest Winnipeg Natural Gas Pipeline Project					
Project Component (Six Inch Pipeline, 12 inch Pipeline, Valve Site	**Tenure Required**	**Property Description**	**Land Use**	**Property Owner**	**Rural Municipality**
Six Inch Pipeline	Not Required	SW-31-12-2- E	Existing Road RoW	Manitoba Infrastructure and Transportation (MIT)	RM of Rosser
Six Inch Pipeline	Not Required	NW-31-12-2-E	Existing Road RoW	MIT	RM of Rosser
Temporary Working Easement (60m x20 m)	Easement	NW-31-12-2-E	Agricultural	Privately Owned	RM of Rosser
Six Inch Pipeline	Not Required	NW-6-13-2- E	Existing Road RoW	MIT	RM of Rockwood
Six Inch Pipeline	Not Required	SW-6-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Temporary Working Easement (60m x20m)	Easement	SW-6-13-2-E	Agricultural	Privately Owned	RM of Rockwood
Six Inch Pipeline	Not Required	SW-7-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Six Inch Pipeline	Not Required	NW-7-13-2-E	Existing Road RoW	MIT	RM of Rockwood

Six Inch Pipeline	Not Required	SW-18-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Six Inch Pipeline	Not Required	NW-18-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Six Inch Pipeline	Not Required	SW-19-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Six Inch Pipeline	Easement	NW-19-13-2-E	Agricultural	Privately Owned	RM of Rockwood
Existing Valve site	Existing	NW 19-13-2 E	Existing Valve Site	Centra Gas Manitoba Inc c/o Manitoba Hydro Property Department	RM of Rockwood
Existing Valve Site	Existing	SW 19-11-2 E	Existing Valve Site	Centra Gas Manitoba Inc.	RM of Rosser
Twelve Inch Pipeline	Easement	SW 19-11-2 E	Agricultural	Privately Owned	RM of Rosser
Temporary Working Easement (100x30 m)	Easement	SE 24-11-1 E	Agricultural	Privately Owned	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 24-11-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 24-11-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 25-11-1 E	Existing Road RoW/	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 25-11-1 E	Omand's Creek	-	RM of Rosser

Twelve Inch Pipeline	Not Required	NE 25-11-1 E	Existing Road RoW/	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 25-11-1 E	Railway line	Canadian Pacific Railway	RM of Rosser
Temporary Working Easement (39 x15 m)	Easement	NE 25-11-1E	Agricultural/Existing Road RoW	Privately Owned and MIT	RM of Rosser
Temporary Working Easement (317 m x 15m)	Easement	SE 36-11-1E	Agricultural/Existing Road RoW	Privately Owned and MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 36-11-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 36-11-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 1-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 1-12-1 E	Existing Road RoW	MIT/ Manitoba Hydro/	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 1-12-1 E	Public Road	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 1-12-1 E	Rail line	CNR	RM of Rosser
Temporary Working Easement (100m x 30m)	Easement	NE 1-12-1 E	Agriculture/Existing Road RoW	Privately Owned/MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 12-12-1 E	Existing Road RoW	MIT	RM of Rosser

Temporary Working Easement (100m x 30m)	Easement	SE 12-12-1 E	Agriculture/Existing Road RoW	Privately Owned/MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 12-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 13-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 13-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 24-12-1 E	Existing Road RoW	MIT/	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 24-12-1 E	Water Control Work	Province of Manitoba	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 24-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 24-12-1 E	Water Control Work	Province of Manitoba	RM of Rosser
Twelve Inch Pipeline	Not Required	SE 25- 12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline/	Not Required	NE 25-12-1 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline/	Not Required	NE 25-12-1 E	Water control work – Grassmere Creek Drainage	Province of Manitoba	RM of Rosser
Temporary Working Easement (100m x30 m)	Easement	NE 25-12-1 E	Agricultural	Privately Owned	RM of Rosser
Permanent 40m x30 m easement for Valve Site	Easement	NW 30-12-2 E	Agricultural	Privately Owned	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 30-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NW 29-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser

Twelve Inch Pipeline	Not Required	NE 29-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NW 28-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 28-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NW 27-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	NE 27-12-2 E	Existing Road RoW	RM of Rosser	RM of Rosser
Twelve Inch Pipeline	Not Required	SW 34-12-2 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	NW 34-12-2 E	Existing Road RoW	MIT	RM of Rosser
Twelve Inch Pipeline	Not Required	SW 2-13-2 E	Existing Road RoW	MIT	RM of Rockwood
136m x 30 m temporary easement for Valve Site	Easement	SW 2-13-2 E	Agricultural	Privately Owned	RM of Rockwood
Twelve Inch Pipeline	Not Required	SE 2-13-2 E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	SW 1-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	SE 1-13-2-E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	SW 6-13-3 E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	SE 6-13-3 E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	SW 5-13-3 E	Agricultural	MIT	RM of Rockwood
20 x 10 m easement for Valve Site	Easement	SE 5-13-3 E	Agricultural	Privately Owned	RM of Rockwood
Temporary Working Easement (100m x30 m)	Easement	SE 5-13-3 E	Agricultural	Privately Owned	RM of Rockwood

Temporary Working Easement (100m x30 m)	Easement	SW 5-13-3 E	Agricultural	Privately Owned	RM of Rockwood
Twelve Inch Pipeline	Not Required	SW 4-13-3 E	Existing Road RoW	MIT	RM of Rockwood
Twelve Inch Pipeline	Not Required	NW 4-13-3 E	Existing Road RoW	MIT/ RM of Rockwood	RM of Rockwood
Twelve Inch Pipeline	Not Required	NE 4-13-3 E	Existing Road RoW	RM of Rockwood	RM of Rockwood
Twelve Inch Pipeline	Not Required	NW 3-13-3 E	Existing Road RoW	RM of St. Andrews	RM of St. Andrews
Twelve Inch Pipeline	Not Required	NE 3-13-3 E	Existing Road RoW	RM of St. Andrews	RM of St. Andrews
Twelve Inch Pipeline	Not Required	NW 2-13-3 E	Existing Road RoW	RM of St. Andrews	RM of St. Andrews
Twelve Inch Pipeline	Not Required	River Lots	Existing Road RoW	RM of St. Andrews	RM of St. Andrews
Twelve Inch Pipeline	Not Required	River Lots	Existing RoW	Manitoba Hydro	RM of St. Andrews
Twelve Inch Pipeline	Not Required	River Lots	Existing Road RoW	MIT	RM of St. Andrews
2 Temporary Working Easements (150m x 30 m) on either side of PTH 8	Easement	River Lots	Agricultural	Privately Owned	RM of St. Andrews
Temporary Working Easements (150m x 30 m) south of Liss Road	Easement	River Lots	Agricultural	Privately Owned	RM of St. Andrews
Temporary Working Easements (50m x 30 m)	Easement	River Lots	Agricultural	Privately Owned	RM of St. Andrews
Twelve Inch Pipeline	Not Required	River Lots	MB Hydro ROW	Manitoba Hydro	RM of St. Andrews

Twelve Inch Pipeline	Easement	River Lots	Manitoba Hydro RoW Agricultural, marsh wetland, rural residential	Manitoba Hydro	RM of St. Andrews
Twelve Inch Pipeline	Not Required	River Lots	Government Road Allowance	RM of St. Andrews	RM of St. Andrews
Temporary Working Easements (30m x 30 m)	Easement	River Lots	Agricultural	Privately Owned	RM of St. Andrews
Existing Valve Site	Not Required	Existing Valve Site	Manitoba Hydro existing valve tie-in, urban	Manitoba Hydro	City of Selkirk

APPENDIX D

PUBLIC ENGAGEMENT PROCESS SUMMARY REPORT

Northwest Winnipeg Natural Gas Pipeline
Manitoba Hydro Public Engagement Program
April 2015

1.0 Introduction

Manitoba Hydro is proposing to install a new transmission pressure natural gas pipeline located northwest of Winnipeg, Manitoba. The pipeline will extend the existing natural gas pipeline from the intersection of Selkirk Avenue and the Perimeter Highway, will run north to the town of Stonewall and then travel east to connect with an existing pipeline near Selkirk, Manitoba. The pipeline located from Provincial Road #321 to Stonewall will have a diameter of 6 inches and the remainder of the pipeline will have a diameter of 12 inches.

The proposed Northwest Winnipeg Natural Gas Project will provide a continual and reliable source of natural gas to customers located north of Winnipeg and operational flexibility in the Winnipeg transmission network.

A Project Map denoting the proposed route as well as the location of the above ground assemblies is provided as Appendix A.

As part of the environmental assessment process, Manitoba Hydro initiated a Public Engagement Program (PEP) to obtain feedback from the local municipalities, interested groups, landowners and the public.

2.0 Process

Manitoba Hydro undertook a public engagement program to achieve the following goals:

- inform the public regarding the project, timelines and proposed location;
- to gather feedback on the proposed location of the pipeline; and
- to provide an opportunity for the public to have questions answered and concerns addressed by Manitoba Hydro representatives.

As part of the PEP, Manitoba Hydro aimed to engage:

- Affected and adjacent landowners;
- Affected Municipalities
- Manitoba Infrastructure and Transportation;
- CentrePort Canada; and
- Members of the general public.

Manitoba Hydro organized and attended Municipal council meetings and meetings with interested stakeholders, provided a contact to all interested parties through a variety of notification methods and held three public open houses to allow the public and interested parties to discuss the Project with Manitoba Hydro representatives.

3.0 Notification Methods

Manitoba Hydro utilized three (4) notification methods to ensure that the public was aware of Manitoba Hydro's Project activities for the proposed Northwest Winnipeg Natural Gas Project in

the area which included direct mailings, unaddressed postcard campaign, newspaper advertisement and the Project website which are discussed in detail below.

3.1 Direct Mailings

Manitoba Hydro notified 194 landowners by direct letters dated January 14, 2015. These letters outlined the project details and need, regulatory requirements, and open house locations and dates, and provided Manitoba Hydro contact information. Individuals were encouraged to contact Manitoba Hydro or attend an open house to discuss any potential concerns with the Project. These direct mailings consisted of the following materials:

- Personalized letter;
- Project Newsletter; and
- Map of the proposed Project alignment.

Four (4) Rural Municipalities were notified of the Project by e-mail. The notification package contained the materials listed above and were sent to the Rural Municipalities of Rosser, St. Andrews, West St. Paul and Rockwood.

Two (2) Urban Municipality, the City of Selkirk and Town of Stonewall, were also notified of the project using the information package described above.

In addition to the local municipalities, Manitoba Infrastructure and Transportation Regions 1 and 2, Cartier Water and CentrePort Canada were also notified of the project using the information package described above.

3.2 Unaddressed Postcard Campaign

As part of the PEP, Manitoba Hydro sent unaddressed postcards to inform the general public of the proposed Project. A total of 19,006 individual mailers (both residential and commercial) were sent.

These mailers were 10” x 6” (color) and included a brief project summary, a simplified map of the proposed location of the Project as well as time, date and location of the public open house. A project email address and toll free phone line was also provided on each mailer.

3.3 Newspaper Advertising

Manitoba Hydro advertised in a number of newspaper outlets to notify the general public of the public open house. These advertisements included a brief project summary, a simplified map of the proposed location of the Project as well as time, date and location of the public open house. Manitoba Hydro contact information was also provided in the newspaper advertisement.

The public open houses were advertised in the following local newspapers:

- Winnipeg Free Press (issued January 24, 2015);
- Winnipeg Sun (issued January 25, 2015);
- Canstar Weeklies (issued January 21, 2015);
    - The Times (issued January 28, 2015);
- Selkirk Journal (issued January 22 and January 29, 2015);
- Selkirk Record (issued January 22 and January 29, 2015); and
- Stonewall Argus/Teulon Times (issued January 22 and 29, 2015).

3.4 Website

Manitoba Hydro developed a website where Project information was shared with the public and updated as needed. Website content included:

- Project description and schedule;
- Public engagement goals and information;
- Environmental Assessment information;
- Contact information; and
- Document library containing:
    - Open house materials;
    - Newsletter;
    - Postcard
    - Open house advertisements
    - Map of preferred route

The notification materials, including a copy of the direct letter, postcard, mailing receipt, newspaper advertisement, advertisement purchase, and screen shot of the Project website are provided in Appendix B.

4.0 Phone Line

Manitoba Hydro provided a 1-800 phone number in all direct mailings, materials and advertisements for stakeholders to use if they had questions or required additional information regarding the proposed project. In total 19 individuals or stakeholder groups contacted Manitoba Hydro by telephone to discuss the Project. Manitoba Hydro personnel responded to all calls within 24 hours of receiving them.

5.0 Meeting

As part of the PEP, Manitoba Hydro offered meetings to discuss the Project with local municipalities and other interested stakeholders. The following summarized the meetings that were completed as well as meetings which are still outstanding.

5.1 Rural Municipality of Rosser

The Rural Municipal Council of Rosser was notified of the Project by e-mail on August 20, 2014. This email briefly described the project and included a map of the proposed alignment. A meeting was held between representatives from the RM department of public works and Manitoba Hydro

to discuss the project on September 16, 2014. The project was introduced and feedback from the RM on the proposed routes was recorded. RM representatives at this meeting indicated that given the upcoming election, a meeting should be organized with the council following the election. On January 29, 2015 a representative from the RM contacted Manitoba Hydro to arrange a follow-up meeting. This meeting was held February 10, 2015 with the newly elected council.

At the council meeting, Manitoba Hydro provided copies of the newsletter and detailed map to the councillors. Extra maps, newsletters and comment sheets were left at the front desk for public use. The Manitoba Hydro representatives provided an outline of the Project, discussed project timelines, the need for the project and topics related to design and construction. Following this discussion, a question and answer period was offered to council members.

5.2 Rural Municipality of St. Andrews

The Rural Municipal Council of St. Andrews was notified of the Project by e-mail on August 20, 2014 and invited to meet to discuss the project in more detail.

A meeting between representatives from the RM of St. Andrews and Manitoba Hydro was subsequently held on August 26, 2014. At this meeting an overview of the Project was provided. The RM indicated that they had no concerns about the proposed alignment.

5.3 Rural Municipality of West St. Paul

The Rural Municipal Council of West St. Paul was notified of the Project by e-mail on August 20, 2014 and invited to meet to discuss the project in more detail.

Manitoba Hydro met with the RM of West St Paul on September 9, 2014 to discuss the project. During the meeting a Project overview was provided, followed by discussion regarding the proposed alignment.

Manitoba Hydro contacted the RM of West St Paul on January 27, 2015 to remind them about the open house dates and locations. The RM was provided with a link to the Project website and a copy of the letter that was sent to them January 14, 2015 notifying them of the scheduled open houses. The RM responded the same day indicating that one of their representatives would be attending an open house.

5.4. Rural Municipality of Rockwood

The Rural Municipal Council of Rockwood was notified of the Project by e-mail on August 20, 2014. This email briefly described the project and included a map of the proposed alignment. A representative from the RM responded to this email on August 25, 2014 indicating that the council had no concerns about the Project at the time.

On February 10, 2015, the Transportation Manager from the RM of Rockwood contacted Manitoba Hydro with questions about the project.

At the time of writing, a meeting had not been organized with The RM of Rockwood.

5.5 City of Selkirk

Manitoba Hydro contacted the City of Selkirk by email on August 28, 2014 to notify them of the Project and invite them to meet to discuss the Project in detail. A representative from the City responded the same day indicating that at that time they had no concerns, however would like to be engaged again when more Project details were released.

On January 26, 2015, a representative from the City contacted Manitoba Hydro by telephone to discuss the project and a number of questions that the City had regarding the proposed alignment.

5.6 CentrePort Canada

Manitoba Hydro contacted CentrePort by email on September 16, 2014 to notify them of the Project and invite them to meet to discuss the Project in detail. An email response was provided to Manitoba Hydro by a representative from CentrePort the same day and a meeting was subsequently scheduled for September 18, 2014.

Manitoba Hydro representatives described the project at the September 18, 2014 meeting and discussed alignment options in the CentrePort vicinity.

A representative from CentrePort contacted Manitoba Hydro by telephone on February 13, 2015. His call was returned by a Manitoba Hydro representative on February 17, 2015. During this conversation a number of infrastructure and design concerns were raised which Manitoba Hydro will investigate to determine if a change to the proposed alignment is necessary.

5.7 Manitoba Infrastructure and Transportation Region 1

MIT Region 1 was notified of the Project by e-mail on August 20, 2014. This email briefly described the project and included a map of the proposed alignment. MIT Region 1 was invited to respond with questions or concerns regarding the Project.

Manitoba Hydro sent a second email to a representative from MIT Region 1 on September 19, 2014 to provide information about the Project and request a meeting to discuss the proposed alignment options in detail.

A meeting between representatives of Manitoba Hydro and MIT was subsequently held October 2, 2014. During this meeting, Manitoba Hydro provided a Project overview followed by discussions regarding alignment options.

5.8 Manitoba Infrastructure and Transportation Region 2

Manitoba Infrastructure and Transportation Region 2 was notified of the Project by e-mail on August 20, 2014. This email briefly described the project and included a map of the proposed alignment. MIT Region 1 was invited to respond with questions or concerns regarding the Project.

To date, MIT Region 2 had not responded with any questions or concerns regarding the Project.

5.9 Concerned Landowners

Two landowners contacted Manitoba Hydro to express concerns regarding the proposed

alignment and requested to meet with Manitoba Hydro on site to identify potential risk and mitigations.

Topics discussed at these meetings are described in Section 8.0.

6.0 Public Open House

Three (3) public open houses were held to provide project information in the form of storyboards, mapping, a construction and remediation slideshow and tangibles.

The date and location of the public open houses are as follows:

Rosser/Grosse Isle	**Selkirk**	**Stonewall**
February 3, 2015	February 4, 2015	February 5, 2015
4 p.m. to 8 p.m.	4 p.m. to 8 p.m.	4 p.m. to 8 p.m.
Hitch n Post Ranch	Royal Canadian Legion	Parochial Hall
(Highway 6 at Ridge Road)	Selkirk Branch 42	(435 First Ave N)
	(403 Eveline St)	

The public could visit these venues to receive information on and discuss the Project with representatives from Manitoba Hydro. According to the open house sign-in sheets, a total of 72 people attended the open houses. A total of 27 people visited the Selkirk open house, 23 were present at the Stonewall open house and the Rosser/Gross Isle open house had a total of 22 visitors.

Manitoba Hydro focused the open houses on the following topics:

- Project description and project need;
- Pipeline safety and installation (through storyboards, construction material examples and a construction and remediation slideshow);
- Landowner compensation;
- Environmental assessment;
- Project Schedule; and
- Project Study Area topographic mapping (1:125,000 scale mapping – poster size and 11”x17”).

Participants were greeted by a Manitoba Hydro representative who toured them through the material. Comment sheets were provided to each participant as well as a Project newsletter and map.

Representatives from Manitoba Hydro were available to answer questions. Attendees from Manitoba Hydro included: staff from Licensing and Environmental Assessment, engineers related to the Project and property acquisition agents.

A comment sheet was developed for the Project to assist the Project team in collecting information from participants as well as allowing a method to track specific discussions.

Comments and concerns provided by the public were recorded on iPads during the open house sessions. Comments were also provided by the public on comment sheets. A summary and discussion of the comments and concerns received on the proposed project is provided in Section 8.0 of this report.

7.0 Materials Presented

Manitoba Hydro utilized a variety of materials to outline the Project to participants through the direct mailings and public open houses.

7.1 Newsletter

A newsletter was created for the Project that outlined the following topics:

- Project Description;
- Environmental Licensing;
- Project Schedule;
- Environmental Assessment and Public Notification;
- Design Details;
- Construction;
- Safely Living and Working Around Pipelines; and
- Maintenance and Operation

The newsletter was sent to all landowners with property in or adjacent to the RoW, stakeholders including affected municipalities, CentrePort and Manitoba Infrastructure and Transportation. The newsletter was provided to all participants who attended the public open house.

The newsletter contained a contact phone number and email address for a Manitoba Hydro representative to discuss any questions or concerns regarding the Project.

7.2 Mapping & Photography

Project mapping was an important piece to the PEP. Project mapping was provided in direct mailings, in public advertising and used as a central focus at the public open house.

Project maps overlaying aerial imagery with a scale of 1:125,000 were used to represent the project alignment. Poster sized (44”x36”) mapping was placed in the center of the open house venue and 11”x17” maps were available to participants. Maps were also available for participants to mark up on iPad devices. These maps allowed individuals to situate their landholdings in relation to the proposed location of the natural gas pipeline as well as provide commentary on specific sites along the proposed route.

Manitoba Hydro utilized a construction and remediation slideshow at the public open house that assisted participants in understanding what to expect if the proposed project were to be licensed and construction undertaken. The photographs included visual representation of the following steps: surveying, trenching, welding, installation and reclamation.

7.3 Project Tangibles

At the public open house, Manitoba Hydro had tangibles on display to assist participants in understanding the materials that would be required for this project. Natural gas pipeline segments of various sizes were on display along with safety and warning signs that would be utilized for the Project.

Open house materials including a copy of the newsletter, presentation and comment sheet are provided in Appendix C.

8.0 Participant Comments

In total, meetings were held with seven stakeholder groups, 72 individuals participated in the public open house, nine individuals contacted Manitoba Hydro by e-mail, 19 calls were received by Manitoba Hydro through the phone line, and 25 comment sheets were submitted to the Project Team.

The following provides a summary of the discussions which were held with participants, the concerns raised and questions that were asked.

8.1 Municipal and Stakeholder Group Comments

8.1.1 RM of St. Andrews

A meeting was held with the RM of St. Andrews council on August 26, 2014 to discuss project routing within the RM. The RM had no concerns with the Project, however expressed a preference for a routing option along the existing RoW.

8.1.2 RM of West St. Paul

A meeting was held with the RM of West St. Paul council on September 9, 2014 to discuss routing options within the RM. Manitoba Hydro informed the RM that there was one possible route through land in the RM of St Paul. This route would run along Rushman Road. The RM informed Manitoba Hydro, that Rushman Road is the boundary between The RM of West St. Paul and RM of Rockwood. If the Project occurs on the north side of Rushman Road, it will not occur within the RM of West St. Paul.

During the meeting, the RM of West St. Paul expressed concern regarding the potential for effects to groundwater along Provincial Route 321 from Stony Mountain. The RM was also concerned about a large number of houses along Lawson and Fulsher with the potential to be impacted by one of the Project's proposed alignment options.

8.1.3 RM of Rosser

The RM of Rosser department of Public Works met with Manitoba Hydro on September 16, 2014 to discuss routing options within the RM. Manitoba Hydro introduced three routing options with the pipeline paralleling Provincial Route 236, Summit Road and Sturgeon Road. At the time, paralleling Sturgeon Road was the preferred route. The RM informed Manitoba Hydro that CentrePort is responsible for the majority of the land within the Perimeter Highway. They discussed that a new fibre optic cable was installed along Provincial Route 236. The RM informed Manitoba Hydro that there are a number of homes along the west side of Summit Road so alignment along the east side of the road would be preferred if that route is selected. A new 20" water line was also proposed for the CentrePort area, however the route of the water line was still under discussion. The RM encouraged Manitoba Hydro to meet with Cartier Water Co-op regarding the routing.

The RM also informed Manitoba Hydro that they had an upcoming election and it would be preferred if the newly elected council was contacted regarding the Project following the election.

On February 10, 2015, Manitoba Hydro met with the newly elected RM of Rosser council to discuss the Project. Manitoba Hydro introduced the Project and offered to answer any questions the RM may have. Questions asked by the RM and Manitoba Hydro's responses are provided in the table below.

Q: In regards to the routing, why the zigzag at PTH 7?	A: There is electrical cable in the RoW in this area. The route selected was to avoid running along the RoW where the cable is located (for safety and space reasons).
Q: The RM often has problems with their ditches not being restored properly. What is Manitoba Hydro's protocol for this?	A: The tender and contract will require the contractor to restore all areas to pre-construction conditions within 1 year of construction. The RM should contact Manitoba Hydro if they are not satisfied and Manitoba Hydro will work with the contractor to improve restoration of the ditches.
Q: The RM is expecting a fair bit of development in the area around PTH 6 and the perimeter in relation to CentrePort development. Will gas be available for these developments because of this Project?	A: This project is for transmission purposes only and will not allow hook-ups directly. However, there is a separate project that is planned to provide gas for development directly related to CentrePort. There would likely be the ability to extend that to RM development in the area.
Q: Is there the possibility for landowners in the area to hookup to this line directly.	A: No, as this is a transmission line. However, because of this project the ability for future distribution to customers in the area is likely. The gas marketing group is aware of this project and will be marketing in the area likely in the next few years.

8.1.4 CentrePort

A meeting was held with CentrePort on September 18, 2015 to discuss routing options within the CentrePort area.

CentrePort disclosed their intent to develop an 8-12 line railway development near the intersection of Highways 221 and 101 in the vicinity of the proposed pipeline. This development has been considered in the design of the proposed alignment.

CentrePort also expressed concern regarding a number of interchange improvement initiatives and utility upgrades in the area and suggested that Manitoba Hydro contact MIT and Cartier Water Coop to discuss these proposed developments.

8.1.5 Manitoba Infrastructure and Transportation

Manitoba Hydro met with MIT Region 1 on October 2, 2014 to discuss routing along MIT properties. MIT suggested that Manitoba Hydro contact the Special Projects Team to discuss future plans and MIT Region 2 to discuss routing within Region 2.

MIT Region 1 expressed no concern with the alignment along the west side of the Perimeter Highway from Selkirk Avenue up to Provincial Route 236.

MIT informed Manitoba Hydro of their intent to add lanes to Provincial Trunk Highway 9. Manitoba Hydro will work with MIT to ensure that future highway development plans are not impacted by the Project.

8.2 Landowner and General Public Comments

8.2.1 Method of Notification

From feedback on the open house comment sheets, postcard, direct letter, word of mouth and newspaper notification methods were used by those in attendance. Direct mailings and the postcard campaign were the most common methods individuals noted had informed them of the Project and the location of the open house. The website was deemed as the least common method in which attendees were informed of the Project.

8.2.2 Protection of Trees

Concerns were raised over the conservation of mature trees with the potential to be damaged by excavation activities. Landowners have requested that the pipeline is rerouted to avoid specific treelines. Manitoba Hydro has considered all requests to reroute the pipeline around the trees and has changed the alignment where possible. The location of each area of concern and description of how each concern was addressed is provided in Section 9.0.

8.2.3 Potential for Natural Gas Distribution

Enquiries were made with Manitoba Hydro representatives about the possibility of further expansion of natural gas distribution opportunities in the area. Those who expressed interest in tapping into the proposed pipeline were informed that the Project is a transmission line and cannot be used for distribution purposes. . It was noted by Manitoba Hydro staff that this discussion was outside the scope of the activities being undertaken for this project; however, contact information was collected and in total four (4) individuals requested to be contacted by an appropriate Manitoba Hydro representative regarding the potential for natural gas distribution.

8.2.4 Agriculture & Compensation

Discussions were had regarding potential damages to crops during the construction phase. Potential damages discussed included loss of crop, soil disturbance, or loss of seed. It was noted that any damages caused by Manitoba Hydro activities would be compensated for (i.e., loss of seed, creation of ruts, crop damage, etc.).

Manitoba Hydro informed landowners that they will be paid 75% of market value for the easement expansion across private property as well as any potential construction related damages.

Enquiries were also made about the possibility to resume agricultural operations within the easement once the pipeline was installed.

8.2.5 Topsoil

Concerns were expressed regarding how topsoil would be stripped and restored in the Project area. Others expressed concern over soil quality and potential for erosion.

8.2.6 Access

Concerns were raised about the Project damaging or restricting access to approaches used to access homes and farm land. One individual was interested in developing a new approach to his property and was concerned that the Project may impact these plans.

8.2.7 Drainage

Concerns were raised about drainage in the easement and potential for the Project to result in further drainage issues in the area. Manitoba Hydro's plans to ensure proper drainage during construction and operation were also discussed as well as if Manitoba Hydro would be willing to assist with drainage solutions while installing the pipeline.

8.2.8 Utility Lines

Concerns were raised regarding the potential for the Project to conflict with underground utility lines within the easement. These included existing fibre optic cable, water, telephone and electrical lines.

8.2.9 Proposed Development

Concerns were discussed regarding plans to develop infrastructure in the area that may conflict with the Project. This infrastructure includes construction of a barn on private land which occurs within the proposed Project easement. .

8.2.10 Pipeline Design and Safety

Questions were asked about how the pipeline would be designed and concerns were expressed regarding the safety of the pipeline. The depth of the line was discussed to determine if it was safe for large equipment to pass over. Concerns about the risks associated with damage to the pipeline were also raised and monitoring the condition of the line frequently was suggested as a mitigation measure.

8.2.11 Environment and Climate Change

Concerns were expressed with regard to the role of the Project in the advancement of the use of natural gas which is consider to be unsustainable and harmful to the environment. The suggestion was made that the project not proceed.

8.2.12 Support for the Project

Many members of the public had no concerns regarding the project once they learned that the proposed alignment of the pipeline did not occur on their land. Many seemed surprised and relieved to learn that the pipeline would occur mostly within the existing municipal road easement.

9.0 Feedback Incorporation

Through public engagement activities to date, a number of concerns have been raised in regard to the alignment and route of the Project. Manitoba Hydro has considered all suggestions for realignment and has made changes to the design where possible. These suggestions and Manitoba Hydro's response to the suggestions are provided in Table 1.

Table 1 – Alignment Feedback

Suggested Realignment	Manitoba Response to Suggestion
Avoid shelter belt on the southeast quarter of section 1-12-1 E	Manitoba Hydro concluded that altering the alignment does not seem feasible for this property; however, to avoid shelterbelt damage the construction team will use directional drilling to minimize potential damage to the shelterbelt. The road crossings on the east side of this property, both north and south of the specified location, are double the width of the crossings on the west side, and are more complicated to bore across. It is anticipated that direction drilling the line in this area will reduce root damage, thereby reducing damage to the shelterbelt.
Avoid the shelter belt on sections 1 and 12-13-1-E.	Manitoba Hydro considered the possibility of moving the alignment from the west side of PR# 236 to the east side. It was determined by Manitoba Hydro that this option is feasible and that the line will be moved to the east side of PR 236.
Move the pipeline to the west side of the Highway on section 7-13-2-E	If the alignment is shifted from the west side of PR# 236 as suggested above, to the east side, then it would not be feasible to shift back to the

Suggested Realignment	Manitoba Response to Suggestion
	West side at this location. The pipeline must tie in at GS-010 which is on the east side of PR # 236. Avoiding this property would add two additional crossings of PR 236 to the design. Therefore the line will remain on the east side of PR 236.
Avoid shelter belt on section 25-11-1-E.	Manitoba Infrastructure and Transportation has plans for expanding the Perimeter Highway and Inkster intersection and has asked that utilities stay on the west limit of the Perimeter Highway. The current design has the proposed pipeline within the Highway right of way. Any trees that encroach onto the right of way may be affected.
Shift the line to the south side of Highway 321 to avoid interaction with homes.	This option is not preferred as it greatly reduces constructability and adds extra road crossings. Shifting the pipeline to the south side would mean positioning the pipeline closer to hydro lines which may promote corrosion. Manitoba Hydro has decided to stay on the north side of the PTH 321.
Shift pipeline to the north side of Liss Road to avoid interaction with driveways and shelter belts	The RM of St. Andrews has plans for a water main in this location, as such, the pipeline must remain on the south side of the road.
Avoid damage to shelter belt along Highway 220 in the southwest corner of 4-13-3 E. Be aware of buried water and telephone lines in this location.	Manitoba Hydro investigated the location of the existing buried water and telephone lines. The proposed pipeline, as designed, is currently 5 m from the shelter belt and construction should not impact the trees. A review of this option resulted in a redesign to avoid the shelterbelt. The route will head north before the property, then cross just north of the shelterbelt.

Concerns regarding access can be addressed in detail through the property acquisition phase once the project is approved, as well as with the contractor hired to undertake the installation of the pipeline. Manitoba Hydro will continue to ensure that local individuals and communities are informed about Manitoba Hydro's activities in relation to this Project.

Feedback collected through the public engagement program was also used to inform the environmental assessment process. Public feedback helped in the identification of environmental issues and was also helpful in the selection of valued ecosystem components.

Concerns regarding effects to tree lines, soil and groundwater were addressed in the environmental assessment.

10.0 Future Follow-Up Requirements

Manitoba Hydro will continue to engage with individuals who left their contact information to discuss the feasibility of distribution to their property.

Manitoba Hydro will also continue to answer questions related to the Project on the contact information provided on all Project materials.

As part of the public engagement program, Manitoba Hydro will notify the public and stakeholders, that the environmental assessment report has been submitted to regulatory authorities (Manitoba Conservation and Water Stewardship) and that the assessment is available for public review and comment.

11.0 Conclusions

Manitoba Hydro undertook a public engagement program, which began August 2014, to inform the public of the activities being proposed by Manitoba Hydro. Utilizing a variety of notification methods and engagement mechanisms to discuss the Project, Manitoba Hydro received feedback regarding the project and achieved the goals which were set forth at the onset of the program. At the time of report finalization, meetings with some communities were still outstanding and Manitoba Hydro will meet with the communities to discuss the Project where there is interest.

The public engagement program indicated that some stakeholders had concerns regarding the alignment, design and safety of the proposed pipeline. Many viewed the project as having long-term potential benefits (future distribution opportunities) with some short term potential inconveniences with regards to agricultural operations such as access, soil compaction and crop loss. A small number of stakeholders declared that they were not in support of the Project given the potential for risk to the environment. Overall, the majority of stakeholders are in support of the project assuming that mitigation measures are in place and the alignment is adjusted where possible to avoid destruction of shelterbelts and infrastructure.

APPENDIX A
Project Map

Manitoba Hydro

Northwest Natural Gas Pipeline Project

Project Infrastructure
- Proposed Natural Gas Gate Station
- Preferred Route (July 2015)
- Previous Route (January 2015)

Infrastructure
- Existing Natural Gas Gate Station
- Existing Natural Gas Pipeline

Landbase
- Provincial Road
- Provincial Trunk Highway
- City / Town Boundary
- Rural Municipality
- Waterbody

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB
Date Created: July 8, 2015

N

0 2.5 5 Kilometres
0 1.5 3 Miles
1:110,000

Proposed Route Modification

Draft: For Discussion Purposes Only

File Location:

APPENDIX B
Notification Materials

Manitoba Hydro

P.O. Box 7950 Stn Main, 820 Taylor Avenue • Winnipeg Manitoba Canada • R3C 0J1
Telephone / Nº de téléphone : 1-877-343-1631 • Fax / Nº de télécopieur : (204) 360-6176
email: LEAprojects@hydro.mb.ca

January 14, 2014

«Name»
«Address»
«town»
«Postal»

Dear Landowner:

Re: Proposed Northwest Winnipeg Natural Gas Pipeline Project

Manitoba Hydro would like to advise you of a proposed natural gas transmission pipeline project in your area.

To ensure a reliable and a continual source of natural gas to Manitoba Hydro customers north of Winnipeg, Manitoba Hydro is proposing to extend an existing pipeline that is located at Selkirk Avenue and the Perimeter Highway. This pipeline will travel north to increase supply in Stonewall and will then travel east to connect to an existing pipeline south of Selkirk. It is anticipated that this project will take advantage of road right-of-way and will require limited property acquisition. The proposed location of the pipeline is noted on the enclosed map.

This project requires a Class 2 Licence under *The Environment Act* (Manitoba) and an environmental assessment will be submitted to Manitoba Conservation and Water Stewardship (MCWS) as part of the approval process. Manitoba Hydro will adhere to all guidelines and licence conditions outlined by MCWS which will be specific to this project.

Manitoba Hydro will be holding drop-in Public Open Houses to share information and to address concerns with local residents. All are welcome to attend. Refreshments will be served.

Rosser/Grosse Isle
February 3, 2015
4 p.m. to 8 p.m.
Hitch n Post Ranch
(Highway 6 at Ridge Road)

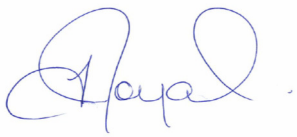
Selkirk
February 4, 2015
4 p.m. to 8 p.m.
Royal Canadian Legion Selkirk Branch 42
(403 Eveline St)

Stonewall
February 5, 2015
4 p.m. to 8 p.m.
Parochial Hall
(435 First Ave N)

Manitoba Hydro is interested in discussing the details of the Project with those in the vicinity of the proposed route. If you wish to ask any questions or would like to have your concerns or questions addressed please attend the open house or please contact me at 1-877-343-1631.

We look forward to discussing this Project with you.

Sincerely,



Trevor Joyal
Environmental Specialist
Licensing & Environmental Assessment Department

We want to hear from you.

Northwest Winnipeg Natural Gas Pipeline Open House

To ensure a reliable and continual source of natural gas to our customers, Manitoba Hydro is proposing to extend an existing pipeline located at Selkirk Avenue and the Perimeter Highway. The proposed pipeline will travel north to increase supply in Stonewall and then east to connect to an existing pipeline outside of Selkirk.

Manitoba Hydro will hold open houses to share information and gather feedback on the Northwest Winnipeg Natural Gas Pipeline. Feel free to drop in any time between 4 and 8 p.m. at the locations listed at right.

All are welcome to attend and refreshments will be served.

Rosser/ Grosse Isle

Tuesday, February 3
4 to 8 p.m.
Hitch 'n Post Ranch
Hwy. 6 at Ridge Road

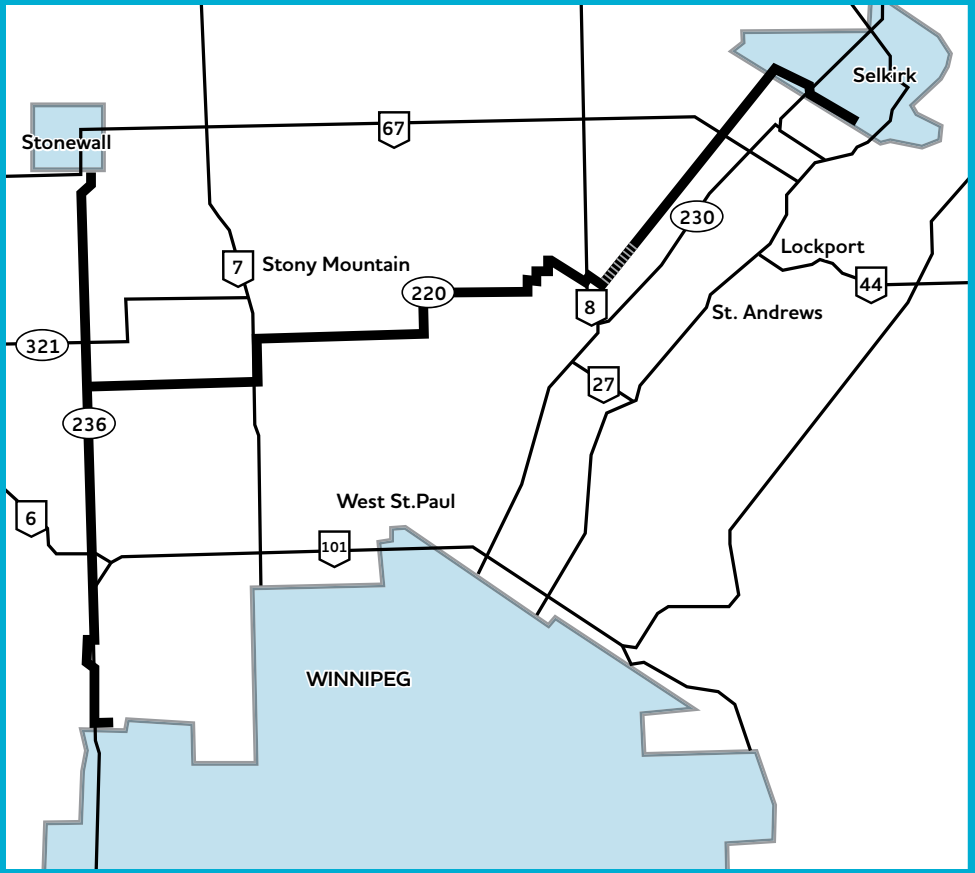
Stonewall

Thursday, February 5
4 to 8 p.m.
Parochial Hall
435 First Ave. N.

Selkirk

Wednesday, February 4
4 to 8 p.m.
Royal Canadian Legion
Selkirk Branch 42
403 Eveline St.

Manitoba Hydro



Northwest Natural Gas Pipeline Project

Project infrastructure

- Preferred route
- Existing natural gas pipeline
- Provincial trunk highway
- Community provincial road

For more project information or to provide feedback, call our toll-free project information line at **1-877-343-1631** or email **LEAprojects@hydro.mb.ca**

Manitoba Hydro

CANADA POSTES / POST CANADA

Unaddressed Admail - Fully Featured
Médiaposte sans adresse - Haut de gamme

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Reprint / Réimpression

R

Paid By Customer No. Nº du client/compte
2484803
Method of Payment Mode de paiement
Account / Porter au compte
Contract No. Nº de la convention
40064038

Transmitted/Transmis: 2015/01/21 13:52 EST

Reprint / Réimpression

Mailed By Customer Number Expédié par Nº du client: **4619013**

PROLIFIC GRAPHICS INC
150 WYATT RD
WINNIPEG MB R2X 2X6

KAREN BEILMAN
204-697-6979

Mailed on behalf of Expédié au nom de: **2484803 MANITOBA HYDRO ELECTRIC BOARD**
CIF ACMA: **No / Non**
Customer Reference Référence du client: **Dkt 172485-1**

Deposit Summary / Sommaire du dépôt

Location Name / Nom du bureau: NEW WINNIPEG RVU I329
1870 WELLINGTON AVE
WINNIPEG MB R3H 3H3

Deposit Date / Date du dépôt: **2015/01/21**
(The Induction Date may be different. / La date de dépôt pourrait être différente.)

ZRHH 33303 13531 49300 00000 0000

Acceptance and RTO Scans Required (CPC use only)
Balayage d'acceptation et RTO requis (À l'usage de SCP seulement)

Service Description / Description du service	Pieces Articles	Weight / Piece Poids / article
Unaddressed Admail - Standa / Médiaposte sans adresse std	19,006	8.00 g
	19,006	**152.048 kg**

Containers / Conteneurs (Customer estimate / Evaluation du client)	
CPC Supplied Hard-Sided Containers / Conteneurs à côtés rigides fournis par la SCP	19
Skids/Pallets / Palettes	1

Entire Mailing / Envoi complet

Product Produit	Cost Centre Reference Référence centre de coûts	Deposit Date Date du dépôt	Pieces Articles	Weight/Piece Poids/article	$ / Piece $ / article	$ / kg	Start Date de livr. $ / Piece $ / article	Transportation / Transport Pieces Articles	$ / Piece $ / article	Total Cost ($) Total des frais ($)
00005		2015/01/21	19,006	8.00 g	$0.11900			19,006	$0.0100	$2,451.78
	TOTAL		**19,006**	**152.05 kg**						**$2,451.78**

Deposit Type / Type de dépôt
Full Mailing - One Deposit / Dépôt entier - Un seul dépôt

Base Charges frais de base	**$2,261.72**
Option: Transport Fees Frais de transport	**$190.06**
Sub-total Before Taxes Total partiel avant les taxes	**$2,451.78**
GST/TPS $122.59 HST/TVH $0.00 PST/TVP $0.00	**$122.59**
Total Amount Due to CPC Montant total dû à la SCP	**$2,574.37**

The Customer warrants that this mailing does not contain dangerous goods and otherwise complies with the terms and conditions as agreed to.

Le client garantit que cet envoi ne contient pas de matières dangereuses et qu'il est conforme aux conditions acceptées.

Authorized Customer Signature / Signature autorisée du client:

X _____

CPC GST # Nº SCP TPS 119321495

Accepted and verified by Initials / Employee No.:
Accepté et vérifié par Initiales / Nº de l'employé: _____

Cheque No. Nº du chèque: _____

Cheque Amount Montant du chèque: _____

This document must accompany your mailing to the Accepting Location.
Ce document doit accompagner votre envoi au bureau de dépôt.

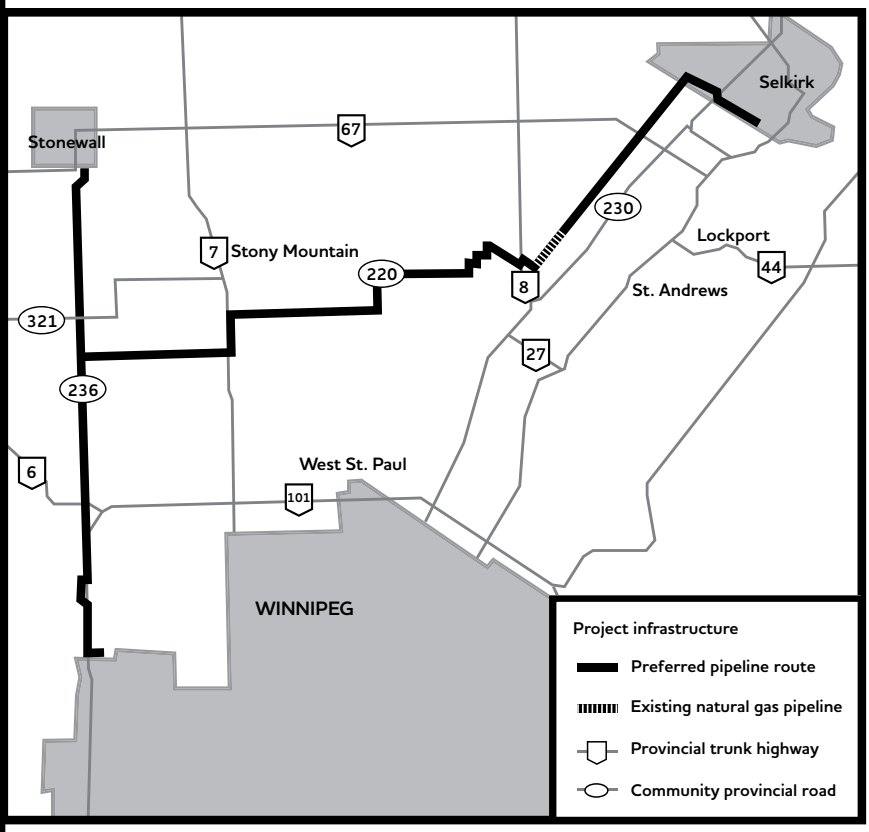
We want to hear from you.

Northwest Winnipeg Natural Gas Pipeline Open House

Manitoba Hydro is proposing to extend an existing pipeline located at Selkirk Avenue and the Perimeter Highway to ensure a reliable and continual source of natural gas to our customers. The proposed pipeline will travel north to increase supply in Stonewall and then east to connect to an existing pipeline outside of Selkirk.

Manitoba Hydro will hold open houses to share information and gather feedback on the Northwest Winnipeg Natural Gas Pipeline at the locations listed below.

All are welcome to attend and refreshments will be served.



Rosser/Grosse Isle
Tuesday, February 3
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Selkirk Branch 42
403 Eveline St.

Stonewall
Thursday, February 5
4 to 8 p.m.
Parochial Hall
435 First Ave. N.

For more project information or to provide feedback,
call our toll-free project information line at **1-877-343-1631**,
email **LEAprojects@hydro.mb.ca** or
visit **www.hydro.mb.ca/nwwinnipeg**

RE-POWERING Our Province

Manitoba Hydro

2015 PRINT MEDIA SUMMARY

CLIENT: Manitoba Hydro
DESCRIPTION: Northwest Winnipeg Natural Gas Pipeline Open Hours 2015

SUMMARY DATE: 13-Jan-15
REQUISITION: AC33637-109
4700002613

POSITION: well fwd news

CREATIVE STATUS: Manitoba Hydro - Print Design Services

PUBLICATION	ISSUE DATE	SIZE	DIMENSIONS	RATE	1x NET COST	No of ISSUES	NET TOTAL	PO #	MATERIAL DEADLINE	E-MAIL ADDRESS
DAILY NEWSPAPERS:		based on 7"w x 10"d								**QUOTE PO # IN SUBJECT WHEN E-MAILING**
Winnipeg Free Press	Sat. Jan. 24, 2015	6 x 140 = 840	6.875"w x 10"d	5.03 N	4,225.20	1	4,225.20	**4500911152**	**21/Jan/15**	ads@freepress.mb.ca Attn: Karen Land
Winnipeg Sun	Sun. Jan. 25, 2015	1/2 Page-b/w vertical	5.062"w x 11.428"d	1536.00 N	1,536.00	1	1,536.00	**4500911053**	**21/Jan/15**	katherine.page@sunmedia.ca Attn: Katherine Page
WEEKLY NEWSPAPERS:										
Canstar Weeklies (1 paper) **- The Times**	Wed. Jan. 21, 2015 Wed. Jan. 28, 2015	5 x 140 = 700	6.375"w x 10"d	0.99 N	693.00	2	1,386.00	**4500911054**	**14/Jan/15** **repeat**	marci.dybanowski@canstarnews.com Attn: Marci Dybanowski
M.C.N.A. (2 Members)										
Selkirk Journal	Thurs. Jan. 22, 2015 Thurs. Jan. 29, 2015	7 x 140 = 980	7.183"w x 10"d	1.09 G	780.85	2	1,561.71	**4500911155** **4500911156**	**14/Jan/15** **repeat**	anne@mcna.com Attn: Anne Belanger
Selkirk Record	Thurs. Jan. 22, 2015 Thurs. Jan. 29, 2015	5 x 140 = 700	6.437"w x 10"d	1.32 G	675.44	2	1,350.89	**4500911155** **4500911156**	**14/Jan/15** **repeat**	anne@mcna.com Attn: Anne Belanger
Stonewall Argus/Teulon Times	Thurs. Jan. 22, 2015 Thurs. Jan. 29, 2015	7 x 140 = 980	7.183"w x 10"d	0.87 G	623.25	2	1,246.50	**4500911155** **4500911156**	**14/Jan/15** **repeat**	anne@mcna.com Attn: Anne Belanger
				TOTAL MEDIA ESTIMATE:			**$ 11,306.30**			

cc: Krystyl Harland - Email: kharland@hydro.mb.ca
Brenda Comte - Email: Brenda.Comte@gov.mb.ca

Northwest Winnipeg Natural Gas Project – Project Website Home Page
http://www.hydro.mb.ca/projects/expansion/northwest_winnipeg/index.shtml

APPENDIX C
Open House Materials

Northwest Winnipeg Natural Gas Project

Newsletter

Project description

The proposed Northwest Winnipeg Natural Gas Project will supply a continual and reliable source of natural gas to customers located north of Winnipeg. It will also provide operational flexibility in the Winnipeg transmission network.

The Project will extend the existing natural gas pipeline at Selkirk Avenue and the Perimeter. It will then run north to Stonewall and travel east to connect with an existing pipeline near the community of Selkirk. The pipeline will run from Provincial Road 321 to Stonewall and will have a diameter of approximately 15 centimetres (cm) or six inches. The pipeline diameter for the rest of the project will be approximately 30 cm or 12 inches.

Environmental licensing

The Northwest Winnipeg Natural Gas Project will require a Class 2 Licence under *The Environment Act (Manitoba)*. An environmental assessment will be undertaken regarding the Project and will be submitted to regulators for review.

Manitoba Hydro will adhere to all legislation and guidelines that are relevant to this project. All environmentally sensitive areas will be crossed using construction techniques that minimize surface disruption.

What is natural gas?

Natural gas, also known as methane, is a colourless, odourless fuel that burns cleaner than most other fossil fuels, such as coal or oil. It is produced by drilling into pockets of raw gas trapped in the earth by layers of impermeable rock. The raw gas is pumped to the surface and the impurities are removed. What remains is a reliable and versatile fuel that can be used for everything from heating homes to drying clothes.

Environmental assessment & public notification

Manitoba Hydro will undertake an environmental assessment of the project for submittal to Manitoba Conservation and Water Stewardship. The environmental assessment will;

- Identify Project components and characterize the environment;
- Identify potential effects the Project may have on the environment;
- Seek input from the public, First Nations communities and Metis;
- Determine ways to avoid or reduce potential adverse effects;
- Develop mitigation and monitoring programs.

Manitoba Hydro

Anticipated project schedule

Preliminary Design	Public Engagement	Construction	In Service Date
Oct. 2014	Early 2015	Summer 2015 to Summer 2016	Fall 2016

We are here.

Design details

The design details, as listed below, will meet or exceed the requirements of the Manitoba Public Utilities Board, the CSA Z662-11 Oil and Gas Pipeline Systems Code and all applicable Manitoba Hydro Gas Standards.

- The pipe will be installed one metre (m) below grade. This depth will allow for adequate protection of the pipeline if farm equipment or other large machinery travels over the pipeline.
- Isolation valves will be installed at both ends of the new pipeline to control the natural gas flow.
- Above grade piping will be installed within Manitoba Hydro owned property and protected by bollards and fencing.
- The pipeline location will be marked at each mile road and in any location where the pipeline crosses waterways or other service roads.
- Corrosion on the pipeline will be controlled through a factory pipe coating and cathodic protection.

Natural gas distribution

Manitoba Hydro is the major natural gas distributor in Manitoba. Using a vast network of transmission and distribution pipelines, we deliver natural gas to 269,800 customers in nearly 100 communities across southern Manitoba.

In an average year, about 2.1 billion cubic metres of natural gas are delivered through our system. Nearly 100 per cent of that natural gas is brought in from Alberta by a main-line transmission pipeline owned by TransCanada Pipelines Limited (TCPL).

Transmission and distribution

As a distribution company, Manitoba Hydro purchases natural gas from suppliers and delivers it to consumers. In order to move the gas to where it is needed, the utility maintains 1,741 kilometres (km) of transmission pipeline.

Construction

The pipeline will be installed to meet industry standards and Manitoba Hydro representatives will be onsite to monitor construction and installation. It is our intent to construct the pipeline in the safest manner possible and best efforts will be made to minimize the disruption to land use operations during the project. Construction activities could include:

- **Survey:** the right-of-way and pipeline alignment will be staked to ensure that the pipeline is installed as designed.
- **Topsoil removal:** on agricultural land the topsoil will be pushed to the side of the right-of-way to prevent mixing of the topsoil with the subsoil and to minimize compaction.
- **Pipe welding:** the pipe will be welded in accordance with CSA Z662-11 and all welds will be non-destructively examined to confirm quality.
- **Trenching:** the pipeline will be installed in a trench approximately 46 to 61 cm or 18 to 24 inches wide and one metre or 3.3 ft. deep using track-hoes or a large trenching machine.
- **Directional drilling:** all waterways and environmentally sensitive areas will have piping installed by directional drilling to minimize potential impacts to these areas.
- **Lowering and tie-ins:** the majority of the pipeline will be welded above grade and lowered into place.
- **Pressure testing:** prior to putting the pipeline into service it will be pressure tested to confirm the pipeline's strength and to ensure there are no leaks.
- **Restoration/Clean-up:** After the pipeline is operational, the topsoil will be re-spread and leveled to allow regular land use to resume.

Safely living and working around pipelines

Landowners are strongly encouraged to phone Manitoba Hydro's Call Before You Dig line at 1-888-624-9376 prior to starting any activities such as fencing, installing drainage systems, auguring or other activities where there is a risk of impacting the pipeline.

Lighter than air, natural gas will rise and disperse into the atmosphere. Because it is odourless and colorless, Manitoba Hydro adds an odorant called mercaptan to our natural gas to give it a sulphurous odour, often described as a rotten egg smell.

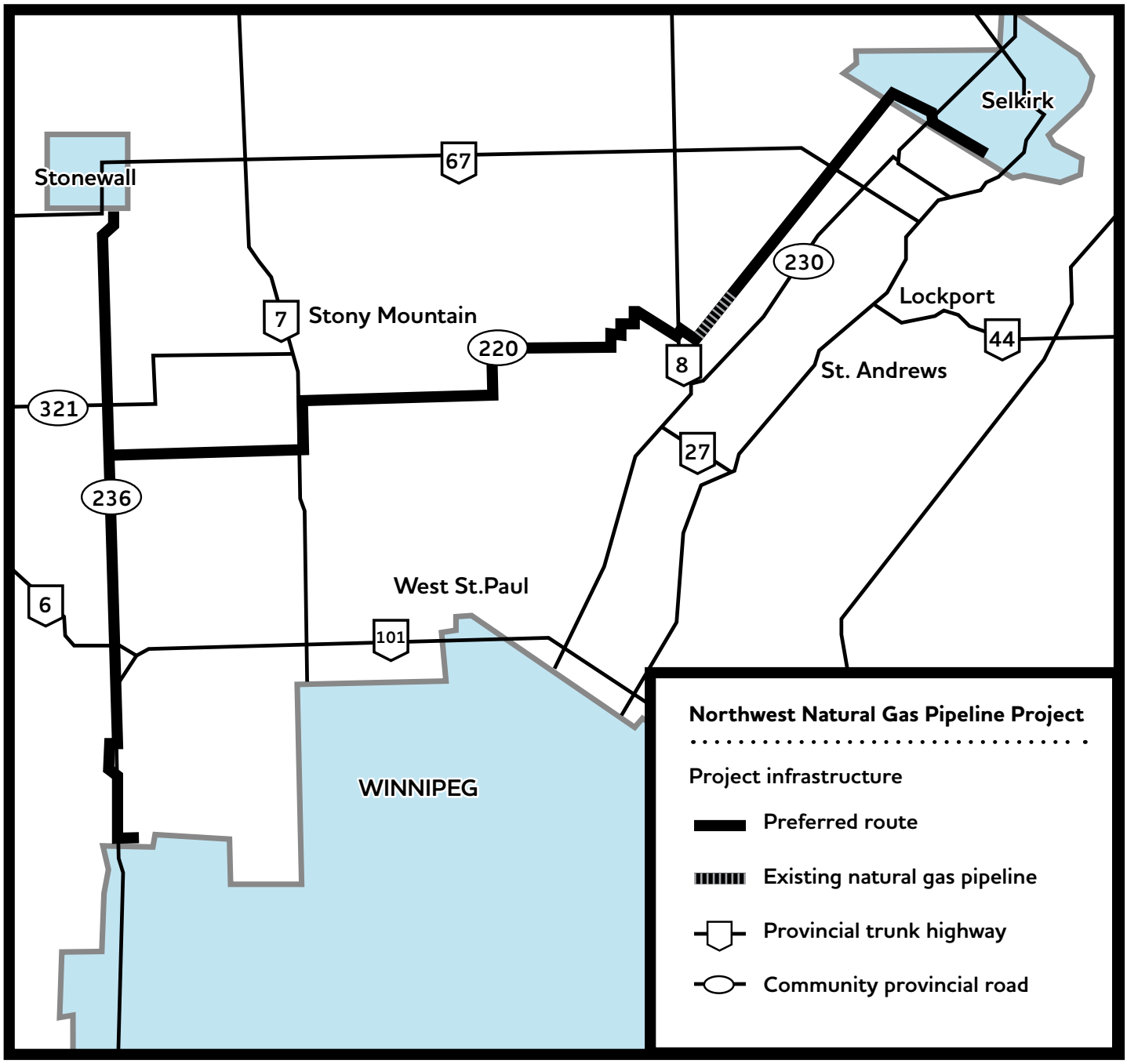
Permanent structures cannot be built within the easement at any time and, for safety reasons the landowner must notify Manitoba Hydro if there are going to be any activities within the easement other than agricultural operations.

Manitoba Hydro will adhere to all guidelines to ensure safety during construction and operation of this pipeline.

Maintenance and operation

Once operational, the pipeline will be maintained to ensure that it is operating safely. Manitoba Hydro has a formal Integrity Management Program that will assess potential risk to the pipeline and specify programs that will be used to monitor the condition of the pipeline. Examples of these maintenance programs include:

- Leak detection surveys - a gas detection device is used to inspect the entire length of the pipeline to detect any natural gas leaks.
- Right-of-way patrols - maintenance personnel will inspect the right-of-way for signs of damage or potential risks to the pipeline.
- Cathodic protection monitoring - qualified technicians will assess the condition of the cathodic protection that is applied to the pipeline.
- Depth of cover surveys - measurements of the depth of soil cover above the pipeline will be taken to ensure that the pipeline is adequately protected from potential damage.



We would like to hear from you.

Contact us with any questions, comments or concerns:

- **Toll-free project information line:** 1-877-343-1631
- **Email Address:** LEAprojects@hydro.mb.ca
- **Project Web page:** www.hydro.mb.ca/northwest

For more on Manitoba Hydro's development plan visit **www.hydro.mb.ca**.

Manitoba Hydro

Northwest Winnipeg Natural Gas Pipeline Project Public Open House

WELCOME

Manitoba Hydro

Project Description

- The Northwest Winnipeg Natural Gas Project will extend the existing natural gas pipeline at Selkirk Avenue and the Perimeter.
- The pipeline will run north to Stonewall and travel east to connect with an existing pipeline near the community of Selkirk.
- The section of the pipeline that will run from Provincial Road 321 to Stonewall will have a diameter of approximately 15 centimetres (cm) or six inches.
- The pipeline diameter for the rest of the project will be approximately 30 cm or 12 inches.

Manitoba Hydro

Project Description

If approved this project will:

- Provide additional gas capacity in the area to meet increased natural gas usage and community growth;
- Provide reliable service to existing natural gas customers;
- Meet future needs of the surrounding area.

Manitoba Hydro

Pipeline safety

- Pipe installation requires a minimum soil cover of 1.0 metres (3.3 feet) over the pipeline.
- This depth will allow for farm equipment operation over the pipeline and provide adequate protection.
- Manitoba Hydro will adhere to all guidelines to ensure the safety of the public during construction and operation of this pipeline.

Manitoba Hydro

Pipeline safety

- ***Standards*** – The pipeline design, installation and monitoring conform to all guidelines to ensure safety during construction and operation.
- ***Warning signs*** – Installed approximately every mile typically at road crossings.
- ***Protection*** – The pipe is cathodically protected to prevent corrosion and monitored for the life of the pipe.

Manitoba Hydro

Pipeline installation

- ***Monitoring*** – Yearly leak surveys are conducted along all transmission pipelines.
- ***Survey*** – Route is surveyed to ensure proper installation.
- ***Topsoil*** – Stripped, stockpiled and replaced following construction on all worked fields.
- ***String pipe*** – The pipe is placed along the route “stringing pipe”.

Manitoba Hydro

Pipeline installation

- ***Weld*** – The pipe joints are welded together and protected with a “sleeve”.
- ***Trench*** – A trench is excavated along the route.
- ***Drill*** – All sensitive areas such as waterways are horizontally directional drilled beneath the sensitive area (if any).

Manitoba Hydro

Pipeline installation

- ***Lowering*** – The pipe is lowered into the trench along the route.
- ***Tie-ins*** – The pipe is tied in at locations along the route.
- ***Testing*** – The pipe is pressure tested (hydrostatically) to a pressure much higher than operating pressures.
- ***Restoration*** – Backfill, compact and restore site.

Manitoba Hydro

Property Acquisition

- The project will be located predominantely in road right-of-way but where needed, Manitoba Hydro will enter into an easement agreement with affected landowners.
- The landowner retains property ownership of the land while the easement grants Manitoba Hydro rights to access the property to construct, maintain and operate the pipeline.

Manitoba Hydro

Property Acquisition

- Manitoba Hydro will pay affected landowners 75% of appraised market value for easement rights over land contained within the easement limits.
- Compensation will be paid to landowners for all construction related damages that occur during construction such as crop damage, fence damage or compaction.

Manitoba Hydro

Environmental Assessment Process

- The project is considered a Class 2 development under *The Environment Act* (Manitoba) and will require an environmental assessment report to be created and submitted to regulators.
- The Environmental Impact Statement (EIS) for the project will include:
  - Study area characterization;
  - Public engagement program;
  - Assessment of potential environmental and socio-economic effects;
  - Assessment of cumulative effects;
  - Mitigation measures and monitoring plans; and
  - An environmental protection program.

For more information, visit www.hydro.mb.ca/mmtp
or speak with a Manitoba Hydro representative.

Manitoba Hydro

Environmental Assessment Process

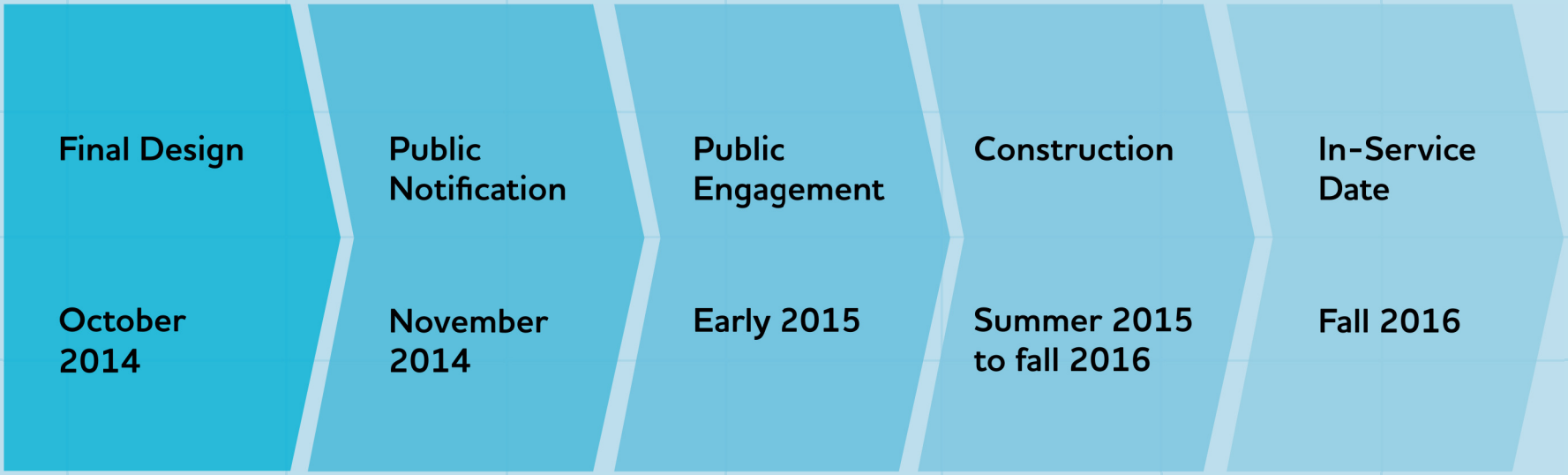
Envrionmental assessment generally consits of:

- Characterizing the environment.
- Identifying potential effects on people and the environment.
- Determining methods to avoid or reduce potential adverse effects while enhancing beneficial effects.

Manitoba Hydro

Anticipated Project Schedule

Manitoba Hydro will submit the Environmental Assessment Report in April 2015.



Manitoba Hydro

Thank you for your participation.

Please complete a comment sheet and leave it with a Manitoba Hydro representative.

Manitoba Hydro

Northwest Natural Gas Expansion Project
COMMENT SHEET

January 2015

How did you hear about this Open House?

☐ Postcard ☐ Letter ☐ Newspaper ☐ Word of Mouth ☐ Website ☐ Other: _____

Do you have any concerns regarding the location of the proposed pipeline?

_____

_____

_____

What are your predominant concerns regarding this Project? (Check all that apply)

☐ **Access**	☐ **Health/Safety**	☐ **Wetlands**
☐ **Aesthetics/Visual**	☐ **Location**	☐ **Wildlife:**
☐ **Agricultural**	☐ **Property**	☐ **Other:**
☐ **Construction**	☐ **Reclamation**	☐ **Other:**
☐ **Economic**	☐ **Vegetation**	☐ **Other:**

Explain:

_____

_____

_____

Are there any sensitive sites you believe Manitoba Hydro should be aware of during the installation of this pipeline? (Please feel free to attach a map to this comment sheet if necessary)

_____

_____

_____

Do you have recommendations for Manitoba Hydro on minimizing any potential effect of this project?

_____

_____

_____

_____

_____

Manitoba Hydro

Northwest Natural Gas Expansion Project
COMMENT SHEET

January 2015

Please provide any feedback regarding the project

Please return this completed comment sheet to a Manitoba Hydro representative at the Open House or please feel free to complete at home and fax or mail in your response:

If you would like to mail or fax this sheet to us, please send it to Trevor Joyal at:

Manitoba Hydro
820 Taylor (3)
PO Box 7950 Stn Main
Winnipeg, Manitoba R3C 0J1
Fax: 204-360-6176

If you wish to discuss the project any further please feel free to contact us at 1-877-343-1631 or by email: LEAprojects@hydro.mb.ca

Manitoba Hydro

APPENDIX D
Letter From the RM of St. Andrews

Rural Municipality of
ST. ANDREWS

Box 130, 500 Railway Avenue
Clandeboye, Manitoba R0C 0P0

Phone: 204-738-2264
1-866-738-2264 (toll free)
Fax: 204-738-2500
E-mail: mayor@rmofstandrews.com
Website: www.rmofstandrews.com

Office of the Mayor

July 20, 2015

Mr. Trevor Joyal
Licensing and Environmental Assessment Dept.
Manitoba Hydro

Dear Mr. Joyal,

The R.M. of St. Andrews would like to file a formal objection to the proposed changes to the Northwest Winnipeg Natural Gas Transmission Project. We prefer the original route. The new proposed alignment has the potential to cause the municipality problems with future ditching projects as the gas line would be in our ditch along Calder Road.

The original alignment would be preferable to the Municipality as it would only cross through Calder Road minimizing any future projects. We would also ask that the pipeline be installed under Calder Road with a minimum depth of cover of 1.5 meters when crossing the ditch.

Thank You,

George Pike

George Pike, Mayor
R.M. of St. Andrews

APPENDIX E

CLIMATE SUMMARIES

CANADIAN CLIMATE NORMALS FOR THE TOWN OF STONEWALL 1971-2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Temperature														
Daily Average (°C)	-18.4	-14.4	-6.8	4.1	12.5	16.9	19.3	18.1	12.3	5.2	-5.2	-15.3	2.4	D
Standard Deviation	4.1	4.1	3.5	2.4	2.6	1.9	1.4	1.9	1.4	1.2	3.4	3.9	2.3	D
Daily Maximum (°C)	-13.1	-9	-1.6	10.3	19.7	23.6	26	24.9	18.7	10.8	-0.9	-10.3	8.3	D
Daily Minimum (°C)	-23.5	-19.9	-12	-2.2	5.2	10.3	12.6	11.2	5.9	-0.4	-9.5	-20.4	-3.6	D
Extreme Maximum (°C)	6	6.7	18.3	35.5	38.5	37.2	37.8	38.5	39	28.9	24.4	8.9		
Date (yyyy/dd)	1986/11	1963/05	1963/31	1980/21	1980/22	1970/08	1963/23	1983/04	1983/02	1961/06	1975/05	1969/01		
Extreme Minimum (°C)	-41.7	-42.8	-41.1	-26.3	-13.3	-2.5	2.2	-2.8	-7.8	-20	-37.5	-38		
Date (yyyy/dd)	1966/28	1966/18	1962/01	1979/06	1966/01	1989/04	1972/03	1982/27	1961/28	1988/29	1985/29	1989/20		
Precipitation														
Rainfall (mm)	0	0	3.3	24.1	54.5	93.7	67.9	64.8	54.6	35.7	3.5	0.9	403.1	D
Snowfall (cm)	24	17.6	21	7.9	0.8	0	0	0	0.5	6	20.7	18	116.5	D
Precipitation (mm)	24	17.6	24.3	32	55.3	93.7	67.9	64.8	55.1	41.7	24.2	18.9	519.6	D
Extreme Daily Rainfall (mm)	2.5	0	15	27.2	44.5	71	124.5	98.8	40.4	31.6	15.7	12		
Date (yyyy/dd)	1968/24	1960/06	1983/06	1971/17	1962/29	1990/01	1968/29	1962/22	1973/24	1984/19	1973/12	1982/01		
Extreme Daily Snowfall (cm)	17	12.7	38.1	25.4	15.2	0	0	0	5	30.5	28	20.3		
Date (yyyy/dd)	1980/10	1961/13	1966/04	1966/27	1967/01	1960/01	1960/01	1960/01	1984/24	1971/30	1986/08	1965/30		
Extreme Daily Precipitation (mm)	17	12.7	38.1	27.2	44.5	71	124.5	98.8	40.4	31.6	28	20.3		
Date (yyyy/dd)	1980/10	1961/13	1966/04	1971/17	1962/29	1990/01	1968/29	1962/22	1973/24	1984/19	1986/08	1965/30		
Extreme Snow Depth (cm)	24	50	44	0		0	0	0	0			16		
Date (yyyy/dd)	1984/30	1987/28	1991/09	1991/01		1991/01	1991/01	1991/01	1991/01			1983/15		
Days with Rainfall														
>= 0.2 mm	0	0	0.79	4.4	8.8	11	9.5	8.4	8.3	6.8	0.95	0.11	59	D
>= 5 mm	0	0	0.32	1.7	3.8	5.6	3.9	3.2	3.2	2.4	0.26	0.11	24.5	D
>= 10 mm	0	0	0.11	0.8	1.5	3.1	2	2.1	1.9	1.1	0.05	0.05	12.5	D
>= 25 mm	0	0	0	0.05	0.29	0.81	0.38	0.48	0.37	0.28	0	0	2.7	D
Days With Snowfall														
>= 0.2 cm	7.5	6.2	5.4	2	0.33	0	0	0	0.14	1.3	5.7	6.7	35.3	D
>= 5 cm	1.9	1.5	1.8	0.65	0.05	0	0	0	0.05	0.44	1.2	1.4	8.9	D
>= 10 cm	0.33	0.29	0.43	0.2	0	0	0	0	0	0.11	0.53	0.1	2	D
>= 25 cm	0	0	0	0	0	0	0	0	0	0.06	0.05	0	0.11	D
Days with Precipitation														
>= 0.2 mm	7.5	6.2	5.8	5.9	8.9	11	9.5	8.4	8.4	7.9	6.7	6.7	92.9	D
>= 5 mm	1.9	1.5	2.2	2.5	3.8	5.6	3.9	3.2	3.3	2.8	1.6	1.5	33.6	D
>= 10 mm	0.33	0.29	0.63	0.95	1.6	3.1	2	2.1	1.9	1.2	0.61	0.16	14.7	D
>= 25 mm	0	0	0	0.1	0.29	0.81	0.38	0.48	0.37	0.33	0.06	0	2.8	D

CANADIAN CLIMATE NORMALS STONY MOUNTAIN 1971-2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Temperature														
Daily Average (°C)	-18	-13.8	-6.3	3.8	12.1	16.9	19.5	18.4	12.3	5.1	-5.3	-14.7	2.5	A
Standard Deviation	3.6	4.4	3.7	2.8	2.3	1.7	1.4	1.9	1.6	1.5	3.5	4.3	1.5	A
Daily Maximum (°C)	-12.8	-8.5	-1.2	9.8	19.1	23.3	25.9	25	18.4	10.5	-1.1	-9.8	8.2	A
Daily Minimum (°C)	-23.2	-19	-11.3	-2.2	5.1	10.5	13.1	11.8	6.2	-0.4	-9.5	-19.5	-3.2	A
Extreme Maximum (°C)	7	7	17	34	38	37.5	36.1	38.5	38.5	30	23.9	9		
Date (yyyy/dd)	1986/11	2000/22	2000/23	1980/21	1980/22	1988/07	1975/28	1988/06	1983/02	1992/01	1975/05	1999/01		
Extreme Minimum (°C)	-42.2	-42.5	-36.7	-27.2	-9	-2	2.2	0.6	-6.5	-20	-39	-39		
Date (yyyy/dd)	1974/01	1996/01	1974/24	1979/06	1989/06	1985/03	1972/02	1978/22	1985/26	1991/31	1985/29	1995/12		
Precipitation														
Rainfall (mm)	0	1.8	6.8	19.3	54.5	88.9	71.5	68.6	52.9	35.8	5.7	2	407.7	A
Snowfall (cm)	21.9	14	14	7.2	0.3	0	0	0	0.2	3.2	21.4	20.5	102.7	A
Precipitation (mm)	22	15.8	20.7	26.5	54.8	88.9	71.5	68.6	53.1	39	27.1	22.6	510.4	A
Extreme Daily Rainfall (mm)	0.6	20	16.4	33	48.8	58.3	105	90	46.2	82	20.6	15		
Date (yyyy/dd)	1990/10	2000/25	1983/06	1986/30	1974/19	1983/21	1993/25	1987/14	1977/08	1997/11	2000/01	1982/01		
Extreme Daily Snowfall (cm)	22	13.7	31	30	5.1	0	0	0	6	16	28	17.3		
Date (yyyy/dd)	1989/07	1979/13	1996/29	1997/05	1979/10	1972/01	1972/01	1972/01	1984/24	1988/26	1986/08	2001/05		
Extreme Daily Precipitation (mm)	22	20	31	39.6	48.8	58.3	105	90	46.2	82	28	17.3		
Date (yyyy/dd)	1989/07	2000/25	1996/29	1986/30	1974/19	1983/21	1993/25	1987/14	1977/08	1997/11	1986/08	2001/05		
Extreme Snow Depth (cm)		8	0	5	0	0	0	0	0	2	1	8		
Date (yyyy/dd)		1986/28	1999/31	1995/06	1992/01	1991/01	1991/01	1991/01	1991/01	1996/31	1981/29	1992/27		
Days with Maximum Temperature														
<= 0 °C	29.6	23.9	16.1	3.1	0	0	0	0	0	1.6	17.5	28.1	119.9	A
> 0 °C	1.4	4.4	14.9	26.9	31	30	31	31	30	29.4	12.5	2.9	245.3	A
> 10 °C	0	0	1.4	13.3	27.4	29.9	31	31	27.5	15.4	1.5	0	178.4	A
> 20 °C	0	0	0	2.9	13.6	21.4	28.6	26	11	2	0.04	0	105.5	A
> 30 °C	0	0	0	0.07	1.7	2.5	3.6	4.3	0.48	0	0	0	12.6	A
> 35 °C	0	0	0	0	0.07	0.31	0.07	0.37	0.1	0	0	0	0.92	A
Days with Minimum Temperature														
> 0 °C	0	0.17	1.3	9.5	24.3	29.8	31	31	26.5	13.8	1.5	0.1	168.9	A
<= 2 °C	31	28.3	30.8	25.1	10.2	0.79	0	0.37	6.2	21.3	29.4	31	214.3	A
<= 0 °C	31	28.1	29.7	20.5	6.7	0.24	0	0	3.5	17.2	28.5	30.9	196.3	A
< -2 °C	30.9	27.2	26.1	13	2.7	0	0	0	0.96	10	25.2	30.5	166.5	A
< -10 °C	28.5	22.7	14.9	2.2	0	0	0	0	0	1	11.9	25	106.2	A
< -20 °C	19.9	13.4	5.5	0.33	0	0	0	0	0	0	3	14.9	56.9	A
< - 30 °C	7.2	3.8	0.52	0	0	0	0	0	0	0	0.37	3.7	15.5	A
Days with Rainfall														
>= 0.2 mm	0.04	0.28	1.6	3.6	9.4	11.7	10.6	9.4	9.8	6.6	0.96	0.45	64.4	A
>= 5 mm	0	0.14	0.5	1.3	3.3	5.3	4.2	3.9	3.2	1.8	0.36	0.21	24.2	A
>= 10 mm	0	0.07	0.27	0.64	1.6	3	1.9	2.3	1.7	1	0.18	0.03	12.7	A
>= 25 mm	0	0	0	0.07	0.34	0.59	0.68	0.48	0.41	0.21	0	0	2.8	A
Days With Snowfall														
>= 0.2 cm	7.6	4.7	4	1.3	0.17	0	0	0	0.03	0.71	4.8	6.1	29.4	A
>= 5 cm	1.5	0.86	0.96	0.46	0.03	0	0	0	0.03	0.18	1.6	1.4	7.1	A
>= 10 cm	0.26	0.21	0.37	0.25	0	0	0	0	0	0.11	0.59	0.38	2.2	A
>= 25 cm	0	0	0.04	0.04	0	0	0	0	0	0	0.04	0	0.12	A
Days with Precipitation														
>= 0.2 mm	7.6	4.9	5.3	4.8	9.5	11.7	10.6	9.4	9.8	7.1	5.6	6.5	92.6	A
>= 5 mm	1.5	1	1.5	1.6	3.4	5.3	4.2	3.9	3.3	2.1	2	1.6	31.3	A
>= 10 mm	0.26	0.29	0.65	0.93	1.6	3	1.9	2.3	1.7	1.1	0.78	0.41	15	A
>= 25 mm	0	0	0.04	0.11	0.34	0.59	0.68	0.48	0.41	0.21	0.04	0	2.9	A
Degree Days														
Above 24 °C	0	0	0	0	0.6	2.1	2.9	2.7	0.4	0	0	0	8.8	A
Above 18 °C	0	0	0	0.4	13.1	35.9	66.6	54.2	7.3	0.1	0	0	177.7	A
Above 15 °C	0	0	0	2.4	33.4	84	143.3	117.8	23.6	1.1	0	0	405.6	A
Above 10 °C	0	0	0	14.6	107.1	209.8	295.4	260.3	96	12.4	0.2	0	995.8	A
Above 5 °C	0	0	1.8	54.9	226.8	357.8	450.4	415	221.8	62.2	3.5	0	1794.2	A
Above 0 °C	0.1	1.7	19.8	144.3	375.5	507.8	605.4	570	369.2	171.7	21.3	0.8	2787.5	A
Below 0 °C	557.5	390.8	212.1	31.6	0.3	0	0	0	0	14.1	178.3	455.8	1840.2	A
Below 5 °C	712.3	530.4	349.1	92.2	6.6	0	0	0	2.7	59.6	310.5	610	2673.2	A
Below 10 °C	867.3	671.8	502.3	201.9	41.9	2	0	0.3	26.9	164.7	457.2	765	3701.2	A
Below 15 °C	1022.3	813.2	657.3	339.7	123.2	26.2	2.9	12.8	104.4	308.4	607	920	4937.4	A
Below 18 °C	1115.3	898	750.3	427.7	195.9	68.2	19.3	42.2	178.2	400.4	697	1013	5805.2	A

CANADIAN CLIMATE NORMALS CITY OF SELKIRK 1971-2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Temperature														
Daily Average (°C)	-17.5	-13.3	-5.9	4.1	12.4	17.3	19.8	18.7	12.5	5.5	-4.9	-14.1	2.9	A
Standard Deviation	3.7	4.3	3.1	2.7	2.4	1.8	1.5	1.9	1.5	1.6	3.2	4.1	2.1	A
Daily Maximum (°C)	-12.8	-8.4	-1.1	9.7	18.5	22.9	25.5	24.6	18	10.3	-1.2	-9.8	8	A
Daily Minimum (°C)	-22.1	-18.2	-10.7	-1.5	6.2	11.6	14.1	12.8	7	0.7	-8.5	-18.5	-2.3	A
Extreme Maximum (°C)	6.1	8.5	17.5	34	36.5	38.5	36.1	38	37.5	28	22.2	9		
Date (yyyy/dd)	1973/24	1999/26	2000/23	1980/21	1980/22	1995/17	1975/30	1983/04	1983/02	1992/01	1975/05	1999/01		
Extreme Minimum (°C)	-41.1	-45.6	-33.3	-23.9	-10	-2.2	2.8	2	-6.7	-18	-35	-37.8		
Date (yyyy/dd)	1966/07	1966/18	1974/23	1979/06	1967/02	1964/01	1972/03	1992/26	1965/25	1991/31	1985/29	1967/31		
Precipitation														
Rainfall (mm)	0	1.4	3.9	22.1	56.2	93	79.6	74.5	57.4	33.7	7.5	0.1	429.3	D
Snowfall (cm)	16	9.8	17.9	4	0.4	0	0	0	0.1	1.9	16.3	14.7	81.1	D
Precipitation (mm)	16	11.3	21.8	26	56.6	93	79.6	74.5	57.5	35.6	23.7	14.7	510.4	D
Extreme Daily Rainfall (mm)	12.7	23	16	26	61.5	105.4	130	62.2	88.2	38	24.8	3.8		
Date (yyyy/dd)	1968/23	2000/25	1983/06	1991/29	1974/19	1991/25	1993/25	1968/23	1996/04	1994/06	2000/06	1967/17		
Extreme Daily Snowfall (cm)	19.1	14	30.5	25.4	12.7	0	0	0	2.6	21.6	22	27.9		
Date (yyyy/dd)	1975/24	1977/24	1964/23	1966/27	1967/01	1964/01	1964/01	1964/01	1984/24	1971/30	1985/21	1965/30		
Extreme Daily Precipitation (mm)	19.1	25	30.5	26	61.5	105.4	130	62.2	88.2	38	24.8	27.9		
Date (yyyy/dd)	1975/24	2000/25	1964/23	1991/29	1974/19	1991/25	1993/25	1968/23	1996/04	1994/06	2000/06	1965/30		
Extreme Snow Depth (cm)	37	50	53	23	0	0	0	0	0	2	30	31		
Date (yyyy/dd)	1996/16	1997/17	1997/01	1999/02	1984/01	1984/01	1984/01	1984/01	1984/01	2001/25	1985/26	1996/12		
Days with Maximum Temperature														
<= 0 °C	29.6	23.9	16.6	3.3	0.04	0	0	0	0	1.6	17.1	28	120.1	A
> 0 °C	1.4	4.4	14.4	26.7	31	30	31	31	30	29.4	12.9	3	245.2	A
> 10 °C	0	0	1.3	13.7	26.8	29.8	31	31	27.2	14.9	1.5	0	177.1	A
> 20 °C	0	0	0	2.7	12.8	20.7	28	25.3	10.2	1.8	0.03	0	101.5	A
> 30 °C	0	0	0	0.03	1.4	2.2	3.5	3.9	0.44	0	0	0	11.4	A
> 35 °C	0	0	0	0	0.07	0.25	0.04	0.29	0.04	0	0	0	0.69	A
Days with Minimum Temperature														
> 0 °C	0	0.14	2.2	11	26	29.9	31	31	27.4	15.9	2.2	0.07	176.9	A
<= 2 °C	31	28.2	30.6	22.8	7.4	0.59	0	0.03	4.6	20	28.8	31	205.1	A
<= 0 °C	31	28.1	28.8	19	5	0.07	0	0	2.1	15	27.8	30.9	187.8	A
< -2 °C	30.9	27.1	25.3	11.9	1.9	0	0	0	0.28	7.2	24.2	30.4	159.2	A
< -10 °C	27.5	22	14.8	2.1	0	0	0	0	0	0.78	10.6	24	101.8	A
< -20 °C	18.7	12.6	4.5	0.31	0	0	0	0	0	0	2.2	13.6	52	A
< - 30 °C	5.6	2.7	0.15	0	0	0	0	0	0	0	0.17	2.7	11.3	A
Days with Rainfall														
>= 0.2 mm	0	0.11	0.43	3.6	9.4	12.1	11.5	10.3	10.5	7.3	1	0.07	66.4	C
>= 5 mm	0	0.04	0.33	1.5	3.8	5.5	4.2	4.2	3.5	1.8	0.5	0	25.3	C
>= 10 mm	0	0.04	0.05	0.75	1.7	2.6	2.3	2.3	1.7	1	0.21	0	12.7	C
>= 25 mm	0	0	0	0.08	0.29	0.66	0.69	0.62	0.28	0.22	0	0	2.8	C
Days With Snowfall														
>= 0.2 cm	5	3.5	3.4	0.86	0.11	0	0	0	0.03	0.4	3.1	4.7	21	D
>= 5 cm	0.93	0.65	1.4	0.24	0.07	0	0	0	0	0.08	1.1	1.1	5.5	D
>= 10 cm	0.2	0.12	0.41	0.14	0	0	0	0	0	0.04	0.67	0.39	2	D
>= 25 cm	0	0	0.06	0	0	0	0	0	0	0	0	0	0.06	D
Days with Precipitation														
>= 0.2 mm	5	3.5	4.1	4.5	9.4	12.1	11.5	10.3	10.5	7.8	4.3	4.8	87.8	D
>= 5 mm	0.93	0.71	1.9	1.9	3.9	5.5	4.2	4.2	3.5	2	1.7	1.1	31.4	D
>= 10 mm	0.2	0.18	0.5	0.9	1.7	2.6	2.3	2.3	1.7	1.1	1	0.39	14.9	D
>= 25 mm	0	0.06	0.06	0.1	0.29	0.66	0.69	0.62	0.28	0.24	0	0	3	D
Degree Days														
Above 24 °C	0	0	0	0	1	3.1	4	3.8	0.4	0	0	0	12.3	A
Above 18 °C	0	0	0	0.8	16.1	41.5	73.4	60	7.8	0.3	0	0	199.9	A
Above 15 °C	0	0	0	3.4	39.1	92.9	151.8	126.2	25.1	1.8	0	0	440.3	A
Above 10 °C	0	0	0	17.8	117.6	220.4	304.5	270.8	98.9	15.3	0.4	0	1045.7	A
Above 5 °C	0	0	2.1	62.2	238.7	368.3	459.5	425.6	225.7	68.7	4.8	0	1855.7	A
Above 0 °C	0	2.4	22.1	154.3	386.8	518.3	614.5	580.6	373.4	180.5	24.2	0.9	2858.2	A
Below 0 °C	543	377.9	206.5	30.8	0.4	0	0	0	0	12	169.3	436.6	1776.6	A
Below 5 °C	698	517	341.4	88.7	7.3	0	0	0	2.3	55.2	300	590.7	2600.5	A
Below 10 °C	853	658.5	494.3	194.3	41.2	2.1	0	0.2	25.4	156.8	445.6	745.7	3617	A
Below 15 °C	1008	800	649.3	329.9	117.7	24.5	2.3	10.6	101.7	298.3	595.2	900.7	4838.1	A
Below 18 °C	1101	884.8	742.3	417.3	187.7	63.2	16.8	37.4	174.3	389.8	685.2	993.7	5693.5	A

APPENDIX F

FIELD SUMMARY REPORT

Reference: Field Program Summary – *Northwest Gas Transmission Project / Spring 2015 /Amphibian Visual Encounter Survey* - DRAFT

OBJECTIVE

The primary objective was to conduct a visual encounter survey for amphibians along the preferred Northwest Winnipeg Natural Gas transmission route. This survey will help support the development of an environmental impact assessment and provide important information on the presence of amphibians and other wildlife along the proposed route. This survey occurred along the entire preferred route (where road accessible). Acquiring data on the distribution of amphibian species will assist in predicting the potential environmental effects and help guide mitigation, where needed, in the environmental protection plan.

METHODS

STUDY DESIGN

An amphibian visual encounter survey route was developed to document the presence of various amphibian species along the road accessible portions of the preferred route. At each site a 5 minute visual encounter survey was made for the presence of calling frogs, egg masses, tadpoles, or adults. A biologist and field technician slowly walked along the water edge and slowly scanned the area for evidence of amphibians.

DATA COLLECTION

A road based survey was conducted on June 4th, 2015 from 9:00am to 1:00pm using and an adapted survey protocol (GoS 2014). Conditions were sunny and the temperatures were approximately 21 C with light north winds. The survey began at the northwest Winnipeg valve site, extended to the Stonewall valve site, and ended at the Selkirk valve site. A crew consisting of one biologist, and one field assistant (summer student) drove slowly along the entire preferred route, and stopped at all major water crossings and wetland sites (approximately twelve sites). All occurrences were recorded on an Ipad with ArcGis *Collector*. Photos and videos of amphibians were also taken to provide supporting evidence and documentation. Incidental information regarding other wildlife species, shelterbelts, notable vegetation, new developments, and memorial locations were also recorded, as they were encountered along the route on ArcGis *Collector*.

PRELIMINARY RESULTS

Evidence of amphibians was documented at all wetland sites visited along the preferred route (See map). Wood frogs (*Lithobates sylvaticus*) were the most common species encountered (calling, tadpoles, egg masses, adults) and appeared very abundant. At one location American toads (*Anaxyrus Americana)* were also encountered (calling, tadpoles and adults).

The timing of this survey (daytime, late spring), precluded the ability of documenting all possible amphibian species along the preferred route. Very little frog calling was detected. The presence of egg masses and tadpoles at most wetland site provided strong evidence that these wetlands provide breeding habitat for amphibians. The Manitoba Herp Atlas (www.naturenorth.com) provides a more comprehensive documentation of all the possible amphibian and wetland species that could occur in the region including the Leopard frog, a species of special concern under the *Species at Risk Act*.

More information is available in Map 1. Photos 1 – XX also –provide additional information.

DRAFT

NOTABLE INFORMATION AND RECOMMENDATIONS

Amphibians appear common and abundant at watercourses and wetlands along the route. Although Leopard frogs (*Lithobates pipens*), a species of Special Concern under *Species at Risk Act*, were not detected, they are known to occur in the region. It is recommended that the following mitigation measures be considered for this project:

- Deep trenches, especially when left open for an extended period of time, can become a trap for large numbers of adults amphibians, including leopard frogs. Where feasible, conduct a visual survey of trenches near wetland areas before backfilling to search for any trapped amphibians. If necessary, conduct amphibian salvage.

- Avoid dewatering wetland areas (even temporarily) to prevent the mortality to egg masses and tadpoles.

Various bird related concerns were identified along portions of the route. Please consider the following to prevent conflicts with the *Migratory Bird Convention Act (MBCA), Species at Risk Ac (SARA),* and *Wildlife Act(WA).*

- At numerous locations along the[preferred route trees and shrubs have encroached into the right-of-way. The probability of bird nesting in these areas within the general nesting window (April 21 to August 15) is high (EC 2014a). It is recommended that all required right-of-way clearing activities be done outside this breeding bird window to prevent conflicts with *MBCA* and EC.

- If construction crews identify a bird nest along the route, an environmental inspector should be contacted to identify the nesting species and determine if a construction buffer needs to be applied in order to prevent conflicts with EC regarding legally protected bird species. For example, at one occasion we witnessed a male Bobolink (*Dolichonyx oryzivorus,)* listed as threatened by the Committee of the Status of Endangered Wildlife in Canada (*COSEWIC*), that appeared to be nesting adjacent to the right-of-way at UTM 14U 628210 5547247. A temporary buffer may need to be applied in the unlikely event that such a species is found nesting directly on the right-of-way during construction. Red-winged black birds and common grackles are the only birds likely to be found nesting directly along the route (in cattails). These species are not protected by any Provincial and Federal legislation. No mitigation needs to be considered for these species.

- Three artificial nest boxes, affixed to fence posts at the edge of the right-of-way, were occupied by nesting tree swallows (*Tachycineta bicolour*) along PTH #9, near UTM 14U 626688 5546387, (See map and photos). As a general mitigation measure it is recommended that those areas be treated as environmentally sensitive sites, and that construction activity be minimized around those sites. Environment Canada recommends a buffer of 1 – 50m for songbird nests, depending on the intensity of noise and disturbance (EC 2014b). Although this particular bird species can tolerate short periods of noise, prolonged construction activity during the general nesting window should be avoided.

- Barn swallows (*Hirundo rustica*) a migratory species listed as threatened by COSEWIC, were found nesting under two roadway bridge sites along the route (UTM 14U 620504 5534613and UTM and 14U 620173 5544865 see map and photos). As a general mitigation measure it is recommended that those areas be treated as environmentally sensitive sites, and that construction activity be minimized around those sites. Environment Canada recommends a buffer of 10 – 50m for swallow colonies, depending on the intensity of noise and disturbance (EC 2014b). Although this bird species can tolerate short periods of noise, prolonged construction activity during the general nesting window should be avoided.

- A series of loud repeated calls indicated that a pair of sandhill cranes (*Grus canadensis*) may be nesting near a wetland site at UTM 14U 645695 5556491. As a general mitigation measure it is recommended that if sandhill cranes are found to be nesting there during construction that this area be treated as an environmentally sensitive site, and that

nearby construction activity be minimized. Environment Canada recommends a buffer of 100 – 1000m for sandhill crane nests, depending on the intensity of noise and disturbance (EC 2014b). Although this bird species can tolerate short periods of noise, prolonged construction activity during the general nesting window should be avoided.

A number of landowner and heritage concern was also identified.

- A new shelterbelt was planted over the right of way at UTM 14U 620435 5534882 (see photo). This landowner should be contacted to ensure they are aware that trees located in the right of way may be affected.

- A memorial cross is located on the right of way near PTH 6 at UTM 14U 620435 5538534 (see photo). This memorial may need to be moved during construction. A heritage or memorial expert may need to be consulted, possibly from Manitoba Infrastructure and Transportation.

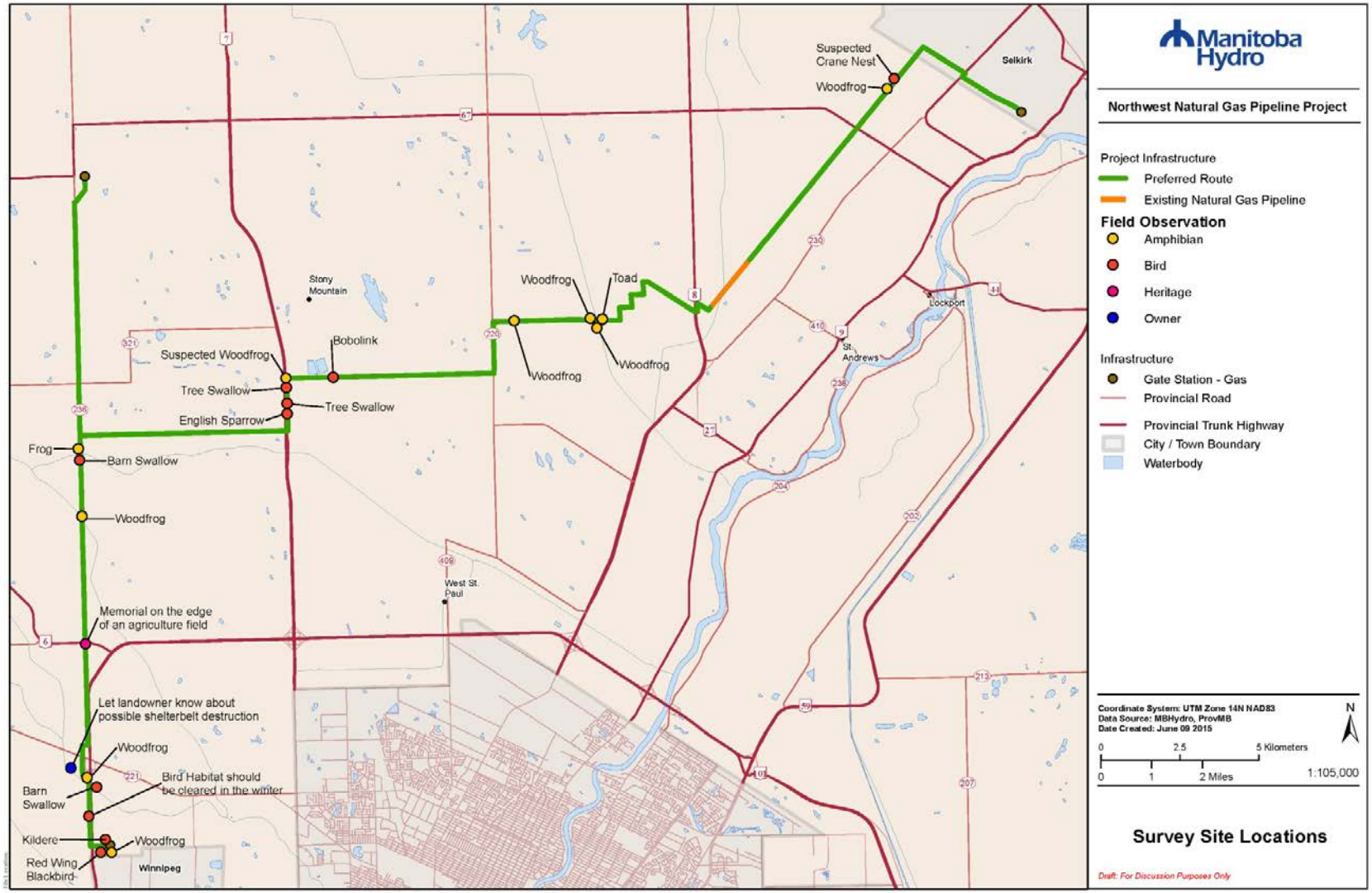
REFERENCES

Environment Canada. 2014a. Migratory Bird Convention Act - General Nesting Periods.. https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1

Environment Canada. 2014b. Migratory Bird Convention Act - Avoidance Guidelines. http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1

Species Detection Survey Protocols – Amphibian Auditory Survey. 2014. Fish and Wildlife Branch Technical Report No. 2014-1.0.Government of Saskatchewan.

MAPS


Manitoba Hydro
Northwest Natural Gas Pipeline Project
Project Infrastructure
Preferred Route
Existing Natural Gas Pipeline
Field Observation
Amphibian
Bird
Heritage
Owner
Infrastructure
Gate Station - Gas
Provincial Road
Provincial Trunk Highway
City / Town Boundary
Waterbody
Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, ProvMB
Date Created: June 09 2015
N
0 2.5 5 Kilometers
0 1 2 Miles
1:105,000
Survey Site Locations
Draft: For Discussion Purposes Only
Suspected Crane Nest
Woodfrog
Selkirk
Stony Mountain
Woodfrog
Toad
Woodfrog
Woodfrog
Lockport
St. Andrews
Bobolink
Suspected Woodfrog
Tree Swallow
Tree Swallow
English Sparrow
Frog
Barn Swallow
Woodfrog
West St. Paul
Memorial on the edge of an agriculture field
Let landowner know about possible shelterbelt destruction
Woodfrog
Bird Habitat should be cleared in the winter
Barn Swallow
Kildere
Woodfrog
Red Wing Blackbird
Winnipeg

PHOTOS

A cluster of woodfrog eggmasses situated on a tributary of Omand's Creek

A Barn swallow nest situated underneath a bridge of a Perimeter Highway access road.

A woodfrog resting on dried marsh grasses at the edge of stagnant water

An American toad and woodfrog situated on the edge of the Parks Creek.

A memorial at the edge of an agricultural field South of Provincial Highway #6.

An Tree Swallow sits adjacent to a birdhouse on a fence.

A developing shelterbelt runs adjacent to an access road.

APPENDIX G

SPECIES OF CONSERVATION CONCERN – INTERLAKE PLAIN AND MANITOBA PLAIN ECOREGIONS

Species of Concern for the Interlake Plain Ecoregion

Scientific Name	Common Name	MBCDC Rank
Animal Assemblage		
Bat Colony		SNR
Gull Colony		SNR
Snake Hibernaculum		SNR
Tern Colony		SNR
Invertebrate Animal		
Erynnis martialis	Mottled Dusky Wing	S2
Hesperia dacotae	Dakota Skipper	S2
Lasmigona costata	Flutedshell	SNR
Ligumia recta	Black Sandshell	SNR
Oarisma powesheik	Powesheik Skipper	S2
Orconectes immunis	Calico Crayfish	SNR
Quadrula quadrula	Mapleleaf Mussel	S2
Strophitus undulatus	Creeper	SNR
Vascular Plant		
Achnatherum richardsonii	Richardson Needle Grass	S1S2
Agalinis aspera	Rough Purple False-foxglove	S1S2
Agalinis tenuifolia	Narrow-leaved Gerardia	S2S3
Agrimonia gryposepala	Common Agrimony	S1S2
Alisma gramineum	Narrow-leaved Water-plantain	S1
Amorpha fruticosa	False Indigo	S1S2
Arabis lyrata	Lyre-leaved Rock Cress	S2?
Aralia racemosa	Spikenard	S2
Arethusa bulbosa	Arethusa	S2
Asarum canadense	Wild Ginger	S3S4
Asclepias verticillata	Whorled Milkweed	S3
Astragalus australis	Indian milkvetch	S1?
Astragalus neglectus	Milkvetch	S1
Astragalus pectinatus	Narrow-leaved Milkvetch	S2S3
Boltonia asteroides var. recognita	White Boltonia	S2S3
Botrychium campestre	Prairie Moonwort	S1
Botrychium lunaria	Common Moonwort	S3S4
Botrychium matricariifolium	Daisy-leaf Moonwort	S1?
Botrychium multifidum	Leathery Grape-fern	S3
Bouteloua curtipendula	Side-oats Grama	S2S3
Bromus porteri	Porter's Chess	S3?
Bromus pubescens	Canada Brome Grass	SNA
Calopogon tuberosus	Swamp-pink	S2
Canadanthus modestus	Large Northern Aster	S2
Cardamine bulbosa	Spring Cress	SH
Carex conoidea	Field Sedge	S1
Carex douglasii	Douglas Sedge	S3?
Carex flava	Yellow Sedge	S2S3

Carex hystericina	Porcupine Sedge	S3?
Carex livida	Livid Sedge	S3
Carex parryana	Parry's Sedge	S3?
Carex pedunculata	Stalked Sedge	S3?
Carex sterilis	Dioecious Sedge	S2
Carex supina var. spaniocarpa	Weak Sedge	S2?
Carex tetanica	Rigid Sedge	S2
Carex vulpinoidea	Fox Sedge	S3?
Caulophyllum thalictroides	Papoose-root	S2
Ceanothus herbaceus	New Jersey Tea	S3
Chrysosplenium iowense	Iowa Golden-saxifrage	S1?
Cladium mariscoides	Twig Rush	S2
Clematis ligusticifolia	Western Virgin's-bower	S1
Clematis virginiana	Virgin's-bower	S2
Corallorhiza striata	Striped Coralroot	S3S4
Corispermum villosum	Hairy Bugseed	S1S2
Cornus alternifolia	Alternate-leaved Dogwood	S3
Cyperus erythrorhizos	Red-root Flatsedge	S1
Cyperus houghtonii	Houghton's Umbrella-sedge	S2
Cypripedium arietinum	Ram's Head Lady's-slipper	S2S3
Cypripedium candidum	Small White Lady's-slipper	S2
Desmodium canadense	Beggar's-lice	S2
Drosera anglica	Oblong-leaved Sundew	S3
Festuca hallii	Plains Rough Fescue	S3
Fraxinus nigra	Black Ash	S3
Gentiana rubricaulis	Closed Gentian	S2S3
Geranium maculatum	Wild Crane's-bill	S1
Helianthus pauciflorus ssp. pauciflorus	Stiff Sunflower	SU
Hudsonia tomentosa	False Heather	S3
Hypoxis hirsuta	Yellow Stargrass	S4
Krigia biflora	Cynthia	S2
Lactuca floridana	Woodland Lettuce	SH
Lechea intermedia	Pinweed	S1
Leucophysalis grandiflora	Large White-flowered Ground-cherry	S3
Linum sulcatum	Grooved Yellow Flax	S3
Liparis loeselii	Yellow Twayblade	S3S4
Lomatium foeniculaceum	Hairy-fruited Parsley	S3
Lomatium macrocarpum	Long-fruited Parsley	S3
Lysimachia quadriflora	Whorled Loosestrife	S2
Malaxis monophyllos	White Adder's-mouth	S2?
Malaxis paludosa	Bog Adder's-mouth	S1
Malaxis unifolia	Green Adder's-mouth	S2?
Muhlenbergia andina	Foxtail Muhly	S1
Nassella viridula	Green Needle Grass	S3
Oenothera perennis	Sundrops	S1S2
Onoclea sensibilis	Sensitive Fern	S3S4
Ophioglossum pusillum	Northern Adder's-tongue	S1

Orobanche ludoviciana	Louisiana Broom-rape	S2
Osmunda claytoniana	Interrupted Fern	S3
Oxytropis lambertii	Purple Locoweed	S3S4
Parnassia palustris var. parviflora	Small Grass-of-parnassus	S1
Pellaea gastonyi	Gastony's Cliffbrake	S1
Pellaea glabella ssp. occidentalis	Cliff-brake	S2
Penthorum sedoides	Ditch-stonecrop	S1S2
Physostegia virginiana	False Dragonhead	SU
Platanthera hookeri	Hooker's Orchid	S2
Platanthera orbiculata	Round-leaved Bog Orchid	S3
Platanthera praeclara	Western Prairie Fringed Orchid	S1
Polygala verticillata	Whorled Milkwort	S2
Pyrola americana	Round-leaved Pyrola	S2
Ranunculus hispidus var. caricetorum	Bristly Buttercup	S2
Rhynchospora alba	White Beakrush	S3?
Rhynchospora capillacea	Horned Beakrush	S2
Selaginella densa	Prairie Spike-moss	S3
Selaginella selaginoides	Northern Spike-moss	S4
Sisyrinchium campestre	White-eyed Grass	SU
Solidago juncea	Sharp-toothed Goldenrod	S2
Solidago riddellii	Riddell's Goldenrod	S2
Spiranthes magnicamporum	Great Plains Ladies'-tresses	S1S2
Symphyotrichum ericoides var. ericoides	White heath aster	S3?
Symphyotrichum sericeum	Western Silvery Aster	S2S3
Taxus canadensis	Canada Yew	S3
Teucrium canadense	American Germander	S3S4
Thalictrum revolutum	Waxleaf Meadow-rue	S1
Utricularia cornuta	Horned Bladderwort	S3
Utricularia minor	Lesser Bladderwort	S3
Vaccinium caespitosum	Dwarf Bilberry	S3
Veronicastrum virginicum	Culver's-root	S1
Viola conspersa	Dog Violet	S3?
Vitis riparia	Riverbank Grape	S3S4
Vertebrate Animal		
Accipiter cooperii	Cooper's Hawk	S4S5B
Aechmophorus occidentalis	Western Grebe	S4B
Ambystoma laterale	Blue-spotted Salamander	S3S4
Ambystoma tigrinum tigrinum	Eastern Tiger Salamander	S2
Ammodramus savannarum	Grasshopper Sparrow	S2B
Ardea herodias	Great Blue Heron	S4S5B
Bos bison athabascae	Wood Bison	SNA
Caprimulgus vociferus	Whip-poor-will	S3B
Chaetura pelagica	Chimney Swift	S2B
Charadrius melodus	Piping Plover	S1B
Chlidonias niger	Black Tern	S4B
Chordeiles minor	Common Nighthawk	S3B
Contopus cooperi	Olive-sided Flycatcher	S3S4B

Coregonus zenithicus	Shortjaw Cisco	S3
Coturnicops noveboracensis	Yellow Rail	S3S4B
Cygnus buccinator	Trumpeter Swan	S1S2B
Dolichonyx oryzivorus	Bobolink	S4B
Geomys bursarius	Plains Pocket Gopher	S3
Hirundo rustica	Barn Swallow	S4B
Ichthyomyzon castaneus	Chestnut Lamprey	S3S4
Ixobrychus exilis	Least Bittern	S2S3B
Lanius ludovicianus migrans	Loggerhead Shrike	S1B
Liochlorophis vernalis	Smooth Green Snake	S3S4
Liochlorophis vernalis	Smooth Green Snake	S3S4
Lithobates pipiens	Northern Leopard Frog	S4
Macrhybopsis storeriana	Silver Chub	S3
Melanerpes erythrocephalus	Red-headed Woodpecker	S2B
Myotis lucifugus	Little Brown Myotis	S2N
Notropis dorsalis	Bigmouth Shiner	S3
Nycticorax nycticorax	Black-crowned Night-heron	S3S4B
Pelecanus erythrorhynchos	American White Pelican	S3S4B
Phalacrocorax auritus	Double-crested Cormorant	S5B
Pipilo erythrophthalmus	Eastern Towhee	S4B
Podiceps auritus	Horned Grebe	S3B
Podiceps nigricollis	Eared Grebe	S4S5B
Rangifer tarandus caribou	Caribou	S2S3
Sterna caspia	Caspian Tern	S3S4B
Sterna forsteri	Forster's Tern	S4B
Strix varia	Barred Owl	S4B
Thamnophis radix haydenii	Western Plains Garter Snake	S4
Thamnophis sirtalis	Red-sided Garter Snake	S4
Thamnophis sirtalis parietalis	Red-sided Garter Snake	S4
Vermivora chrysoptera	Golden-winged Warbler	S3B
Wilsonia canadensis	Canada Warbler	S4B

Note: Provincial (S) rank range from 1 to 5 (MBCDC).

1. Very rare throughout its range or in the province (5 or fewer occurrences, or very few remaining individuals). May be especially vulnerable to extirpation.
2. Rare throughout its range or in the province (6 to 20 occurrences). May be vulnerable to extirpation.
3. Uncommon throughout its range or in the province (21 to 100 occurrences).
4. Widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, but the element is of long-term concern (> 100 occurrences).
5. Demonstrably widespread, abundant, and secure throughout its range or in the province, and essentially irradicable under present conditions.

SNR A species not ranked. A rank has not yet assigned or the species has not been evaluated.
SU Possibly in peril, but status uncertain; more information needed.
T Rank for subspecific taxon (subspecies, variety, or population); appended to the global rank for the full species, e.g. G4T3.
Q Taxonomic questions or problems involved, more information needed; appended to the global rank.
B Breeding status of a migratory species.
? Inexact or uncertain; for numeric ranks, denotes inexactness.

Source: Manitoba Conservation Data Centre. 2013.

Species of Concern for the Lake Manitoba Plain Ecoregion

Scientific Name	Common Name	MBCDC Rank
Animal Assemblage		
Gull Colony		SNR
Snake Hibernaculum		SNR
Tern Colony		SNR
Invertebrate Animal		
Hesperia dacotae	Dakota Skipper	S2
Ligumia recta	Black Sandshell	SNR
Orconectes immunis	Calico Crayfish	SNR
Quadrula quadrula	Mapleleaf Mussel	S2
Strophitus undulatus	Creeper	SNR
Stylurus amnicola		SNR
Vascular Plant		
Agalinis aspera	Rough Purple False-foxglove	S1S2
Agalinis gattingeri	Gattinger's Agalinis	S1
Agalinis tenuifolia	Narrow-leaved Gerardia	S2S3
Agrimonia gryposepala	Common Agrimony	S1S2
Alisma gramineum	Narrow-leaved Water-plantain	S1
Ambrosia acanthicarpa	Sandbur	S1S2
Amorpha fruticosa	False Indigo	S1S2
Antennaria plantaginifolia	Plantain-leaved Everlasting	S1S2
Arisaema triphyllum ssp. triphyllum	Jack-in-the-pulpit	S2
Asclepias verticillata	Whorled Milkweed	S3
Astragalus neglectus	Milkvetch	S1
Atriplex argentea	Saltbrush	S2
Blysmopsis rufa	Red Bulrush	S2
Boltonia asteroides var. recognita	White Boltonia	S2S3
Botrychium pallidum	Pale Moonwort	SH
Bouteloua curtipendula	Side-oats Grama	S2S3
Bromus porteri	Porter's Chess	S3?
Bromus pubescens	Canada Brome Grass	SNA
Calamagrostis montanensis	Plains Reed Grass	S3
Cardamine bulbosa	Spring Cress	SH
Carex albicans var. albicans	Bellow-beaked Sedge	SNA
Carex bicknellii	Bicknell's Sedge	SH
Carex crawei	Crawe's Sedge	S3S4
Carex cristatella	Crested Sedge	S2
Carex douglasii	Douglas Sedge	S3?
Carex emoryi	Emory's Sedge	S2?
Carex hallii	Hall's Sedge	S3
Carex hystericina	Porcupine Sedge	S3?
Carex livida	Livid Sedge	S3
Carex parryana	Parry's Sedge	S3?
Carex pedunculata	Stalked Sedge	S3?

Carex prairea	Prairie Sedge	S4?
Carex projecta	Necklace Sedge	S2?
Carex sterilis	Dioecious Sedge	S2
Carex supina var. spaniocarpa	Weak Sedge	S2?
Carex tetanica	Rigid Sedge	S2
Carex tribuloides	Prickly Sedge	SNA
Carex vulpinoidea	Fox Sedge	S3?
Celtis occidentalis	Hackberry	S1
Chamaesyce geyeri	Prostrate Spurge	S1
Circaea lutetiana ssp. canadensis	Large Enchanter's-nightshade	S2
Cirsium discolor	Field Thistle	S1
Clematis ligusticifolia	Western Virgin's-bower	S1
Clematis virginiana	Virgin's-bower	S2
Corispermum americanum var. americanum	American Bugseed	S2S3
Corispermum villosum	Hairy Bugseed	S1S2
Cornus alternifolia	Alternate-leaved Dogwood	S3
Cryptotaenia canadensis	Honewort	S2
Cuscuta pentagona var. pentagona	Dodder	SU
Cyperus erythrorhizos	Red-root Flatsedge	S1
Cyperus houghtonii	Houghton's Umbrella-sedge	S2
Cyperus schweinitzii	Schweinitz's Flatsedge	S2
Cypripedium candidum	Small White Lady's-slipper	S2
Dalea villosa var. villosa	Silky Prairie-clover	S2S3
Desmodium canadense	Beggar's-lice	S2
Dichanthelium linearifolium	White-haired Panic-grass	S2
Draba reptans	Creeping Whitlow-grass	SU
Elatine americana	mud-purslane	S1
Elodea nuttallii	Waterweed	S1
Elymus diversiglumis	Various-glumed Wild Rye	S2?
Elymus hystrix	Bottle-brush Grass	S2
Eragrostis hypnoides	Creeping Teal Love Grass	S4
Festuca hallii	Plains Rough Fescue	S3
Festuca subverticillata	Nodding Fescue	S1
Fraxinus nigra	Black Ash	S3
Galium aparine	Cleavers	SU
Gentiana puberulenta	Downy Gentian	S2
Helianthus nuttallii ssp. rydbergii	Tuberous-rooted Sunflower	S2
Helianthus pauciflorus ssp. pauciflorus	Stiff Sunflower	SU
Heteranthera dubia	Water Star-grass	S2
Hudsonia tomentosa	False Heather	S3
Hypoxis hirsuta	Yellow Stargrass	S4
Krigia biflora	Cynthia	S2
Lactuca floridana	Woodland Lettuce	SH
Lechea intermedia	Pinweed	S1
Leersia oryzoides	Rice Cutgrass	S3?
Leucophysalis grandiflora	Large White-flowered Ground-cherry	S3
Linum sulcatum	Grooved Yellow Flax	S3

Lotus unifoliolatus	prarie trefoil	S2S3
Lysimachia quadriflora	Whorled Loosestrife	S2
Menispermum canadense	Moonseed	S3
Muhlenbergia andina	Foxtail Muhly	S1
Musineon divaricatum	Leafy Musineon	S2
Nassella viridula	Green Needle Grass	S3
Oenothera perennis	Sundrops	S1S2
Orobanche ludoviciana	Louisiana Broom-rape	S2
Orobanche uniflora	One-flowered Broom-rape	SU
Osmorhiza claytonii	Wooly or Hairy Sweet Cicely	S2
Osmorhiza depauperata	Blunt-fruited Sweet Cicely	S2
Ostrya virginiana	Hop-hornbeam	S2
Parietaria pensylvanica	American Pellitory	S4
Pellaea glabella ssp. occidentalis	Cliff-brake	S2
Penthorum sedoides	Ditch-stonecrop	S1S2
Phryma leptostachya	Lopseed	S3
Platanthera orbiculata	Round-leaved Bog Orchid	S3
Polygala verticillata	Whorled Milkwort	S2
Polygala verticillata var. isocycla	Whorled Milkwort	S2
Potamogeton illinoensis	Illinois Pondweed	S2
Ranunculus cymbalaria var. saximontanus	Seaside Crowfoot	S1S2
Sanguinaria canadensis	Blood-root	S2
Shinnersoseris rostrata	Annual Skeletonweed	S1S2
Sisyrinchium campestre	White-eyed Grass	SU
Solidago riddellii	Riddell's Goldenrod	S2
Sporobolus compositus	tall dropseed	S1
Sporobolus neglectus	Annual Dropseed	S3?
Symphyotrichum sericeum	Western Silvery Aster	S2S3
Townsendia exscapa	Silky Townsend-daisy	S2
Verbena bracteata	Bracted Vervain	S3
Vernonia fasciculata ssp. corymbosa	Western Ironweed	S1
Veronicastrum virginicum	Culver's-root	S1
Viola conspersa	Dog Violet	S3?
Vertebrate Animal		
Accipiter cooperii	Cooper's Hawk	S4S5B
Aechmophorus occidentalis	Western Grebe	S4B
Ammodramus bairdii	Baird's Sparrow	S1B
Ammodramus savannarum	Grasshopper Sparrow	S2B
Anthus spragueii	Sprague's Pipit	S2B
Ardea herodias	Great Blue Heron	S4S5B
Asio flammeus	Short-eared Owl	S2S3B
Athene cunicularia	Burrowing Owl	S1B
Calcarius ornatus	Chestnut-collared Longspur	S1S2B
Caprimulgus vociferus	Whip-poor-will	S3B
Cardinalis cardinalis	Northern Cardinal	S1B
Chaetura pelagica	Chimney Swift	S2B
Charadrius melodus	Piping Plover	S1B

Chelydra serpentina serpentina	Common Snapping Turtle	S3
Chordeiles minor	Common Nighthawk	S3B
Coturnicops noveboracensis	Yellow Rail	S3S4B
Dolichonyx oryzivorus	Bobolink	S4B
Eumeces septentrionalis	Northern Prairie Skink	S1
Falco peregrinus anatum	Peregrine Falcon	S1B
Geomys bursarius	Plains Pocket Gopher	S3
Hirundo rustica	Barn Swallow	S4B
Ichthyomyzon castaneus	Chestnut Lamprey	S3S4
Ixobrychus exilis	Least Bittern	S2S3B
Lanius ludovicianus excubitorides	Loggerhead Shrike	S2B
Lanius ludovicianus migrans	Loggerhead Shrike	S1B
Lithobates pipiens	Northern Leopard Frog	S4
Macrhybopsis storeriana	Silver Chub	S3
Margariscus margarita	Pearl Dace	S5
Melanerpes erythrocephalus	Red-headed Woodpecker	S2B
Numenius borealis	Eskimo Curlew	SNA
Nycticorax nycticorax	Black-crowned Night-heron	S3S4B
Pelecanus erythrorhynchos	American White Pelican	S3S4B
Phalacrocorax auritus	Double-crested Cormorant	S5B
Podiceps auritus	Horned Grebe	S3B
Podiceps nigricollis	Eared Grebe	S4S5B
Spea bombifrons	Plains Spadefoot Toad	S2S3
Sterna caspia	Caspian Tern	S3S4B
Sterna forsteri	Forster's Tern	S4B
Strix varia	Barred Owl	S4B
Thamnophis sirtalis parietalis	Red-sided Garter Snake	S4
Vermivora chrysoptera	Golden-winged Warbler	S3B

Note: Provincial (S) rank range from 1 to 5 (MBCDC).

1. Very rare throughout its range or in the province (5 or fewer occurrences, or very few remaining individuals). May be especially vulnerable to extirpation.
2. Rare throughout its range or in the province (6 to 20 occurrences). May be vulnerable to extirpation.
3. Uncommon throughout its range or in the province (21 to 100 occurrences).
4. Widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, but the element is of long-term concern (> 100 occurrences).
5. Demonstrably widespread, abundant, and secure throughout its range or in the province, and essentially irradicable under present conditions.

SNR A species not ranked. A rank has not yet assigned or the species has not been evaluated.
SU Possibly in peril, but status uncertain; more information needed.
T Rank for subspecific taxon (subspecies, variety, or population); appended to the global rank for the full species, e.g. G4T3.
Q Taxonomic questions or problems involved, more information needed; appended to the global rank.
B Breeding status of a migratory species.
? Inexact or uncertain; for numeric ranks, denotes inexactness.

Source: Manitoba Conservation Data Centre. 2013

APPENDIX H

ENVIRONMENTAL EFFECTS SUMMARY TABLE

Table H-1: Northwest Winnipeg Natural Gas Pipeline Project VEC Environmental Effects Summary Table				
Valued Environmental Component (VEC)	**Environmental Effects**	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
Air Quality	Increased fugitive dust level from heavy equipment use and vehicle traffic during construction and operation and Increased greenhouse emissions from vehicular traffic and heavy equipment	• Routine maintenance of vehicles and heavy equipment • Limit unnecessary idling • Apply dust control measures as necessary such as water or an approved dust suppressant • Minimize construction activities during high wind events that increase airborne dust levels • Restrict speed of work vehicles and equipment as required	No Residual Effects	N/A
	Increased emissions of VOCs from vehicles and equipment and storage and release of fuels and hazardous substances during construction and operation	• Limit unnecessary vehicle and equipment idling • Comply with provincial regulations, guidelines and licenses for hazardous substances • Construction, installation and removal of petroleum product storage to occur under the supervision of a licenced technician • Contractors and workers to prevent the release of fuels and hazardous substances • Spills will be reported to Manitoba Hydro and local Conservation Officer and cleaned up immediately	No Residual Effects	N/A
	Release of natural gas into the atmosphere as a result of leaks from pipelines and/or isolation valve fittings and equipment	• Conduct annual maintenance and inspections of the pipeline and isolation valves to reduce the potential for leaks	No Residual Effects	N/A
Groundwater	Impairment to groundwater quality from the release of drilling fluids during direction drilling of creeks and drains	• Adhere to Manitoba Hydro's emergency frac-out plan • Directional drilling will be conducted in accordance with DFO Manitoba *Operational Statement for High Pressure Directional Drilling* (version 3.0) Install pressure relief wells to minimize potential frac-outs	No Residual Effects	N/A
	Impaired groundwater quality from the release of fuel and hazardous substances during construction and operation	• Locate fuel and hazardous substance storage 100 m from drainage ditch • Comply with provincial regulations, guidelines and licenses for hazardous substances • Construction, installation and removal of petroleum product storage to occur under the supervision of a licenced technician • Dedicated petroleum storage areas to be provided with spill containment • Contractors and workers to prevent the release of fuels and hazardous substances	No Residual Effects	N/A

Table H-1: Northwest Winnipeg Natural Gas Pipeline Project VEC Environmental Effects Summary Table				
Valued Environmental Component (VEC)	**Environmental Effects**	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
		• When servicing equipment, waste products such as oil and antifreeze to be drained into approved containers and removed to a licensed disposal ground Spills to be reported to Manitoba Hydro and Manitoba Conservation and Water Stewardship and cleaned up immediately		
	Impaired groundwater quality from the release of water during hydrostatic testing.	• Hydrostatic testing will be conducted in accordance with the *Manitoba Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines* (MWS 2007). • Hydrostatic water will be tested prior to release. All approvals and/or permits required for the release of hydrostatic test water will be obtained prior to release.	No Residual Effects	N/A
Creeks and Drains	Impaired surface water quality from the accidental release of drilling fluid during a frac-out from directional drilling of creeks and drains	• Adhere to Manitoba Hydro's emergency frac-out plan • Directional drilling will be conducted in accordance with DFO Manitoba *Operational Statement for High Pressure Directional Drilling* (version 3.0) • If required, install pressure relief wells to minimize potential frac-outs	No Residual Effects	N/A
	Impaired surface water quality as a result of hydrostatic test water releases.	• Hydrostatic testing will be conducted in accordance with the *Manitoba Natural Gas and Petroleum Liquid Pipeline Hydrostatic Test Discharge Guidelines* (MWS 2007). • All approvals and/or permits required for the release of hydrostatic test water will be obtained prior to release. • Ensure hydrostatic test water is released on a grassed surface away from surface water and is tested prior to release.	No Residual Effects	N/A
	Impaired surface water quality from release of hazardous substances during construction and maintenance	• Dedicated petroleum storage areas to be provided with spill containment • Locate fuel and hazardous substance storage 100 m from drainage ditch and creeks • Ensure vehicles and equipment are free of fuel and fluid leaks • Equipment waste products to be drained into approved containers and removed to a licenced disposal ground • Contractors to prevent fuel, lubricants or compounds from being released on the ground	No Residual Effects	N/A

Table H-1: Northwest Winnipeg Natural Gas Pipeline Project VEC Environmental Effects Summary Table				
Valued Environmental Component (VEC)	**Environmental Effects**	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
		• When servicing equipment, waste products such as oil and antifreeze to be drained into approved containers and removed to a licensed disposal ground • Spills to be reported to Manitoba Hydro and Manitoba Conservation and Water Stewardship and cleaned up immediately		
Wetlands	Temporary disturbance to marsh wetland vegetation during construction activities	• Horizontally Directional Drill wetland areas • Minimize clearing and disturbance to wetlands if horizontal directional drilling is not feasible	No Residual Effects	N/A
	Temporary disturbance and displacement of amphibians and and reptiles	• Horizontally Directional Drill wetland areas • If direction drilling of wetlands is not feasible, inspect the trench before backfilling to ensure no frogs are being buried	No Residual Effects	N/A
	Potential for soil compaction, rutting and admixing of saturated soils	• Horizontally Directional Drill wetland areas • In situations where the RoW does not have dry ground conditions alternate products such as construction mats will be used.	No Residual Effects	N/A
Shelterbelts/Trees	Loss of shelterbelts/treed areas as a result of construction activities	• Modifying the route to avoid/minimize potential effects to shelterbelts • Horizontally Directional Drill Shelterbelt/Treed Area where possible	No Residual Effects	N/A
	Loss of trees at temporary work areas	• minimize the amount of trees removed for temporary work areas where possible	Minimal loss of trees	Low adversity, low ecological value, high societal value; low magnitude, small geographic extent, occurs once, moderate term and reversible
	Disturbance to wildlife habitat (nests) as a result of construction activities	• Horizontally Directional Drill Shelterbelt/Treed Area where possible • conduct any clearing activities that are required outside of breeding bird activity windows (April 21 to August 15) if possible • If a bird nest is encountered along the route during construction contact an environmental inspector	No Residual Effects	N/A

Table H-1: Northwest Winnipeg Natural Gas Pipeline Project VEC Environmental Effects Summary Table				
Valued Environmental Component (VEC)	**Environmental Effects**	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
		immediately to determine nesting species and recommended buffers		
	Introduction of non-native and invasive species	• Use construction materials from clean sources (i.e weed free) • Wash construction equipment prior to site visits • Adhere to Manitoba Hydro's Biosecurity Policy	No Residual Effects	N/A
Species of Conservation Concern	Displacement and disruption to bird species of concern during construction and operation activities	• Conduct a pre-construction bird survey for species of conservation concern • Horizontal Directional Drilling of wetland area and shelterbelts were feasible • If directional drilling of wetlands is not feasible, inspect the trench before backfilling to ensure no frogs are being buried. • Maintain appropriate buffers for species of conservation concern if found nesting prior to construction activities • Ensure construction activities are contained in the project area, which is primarily outside of natural areas.	• No Residual Effect	N/A
	Loss of habitat for species of conservation concern	• Horizontal Directional Drilling of Shelterbelts/Treed Area • Minimize tree removal at temporary work areas	• No Residual Effect	N/A
Agricultural Land	Loss of agricultural land at the locations of the isolation valve sites.	• Compensate property owners in accordance with Manitoba Hydro policies	Permanent decrease in agricultural production	Low adversity, low societal value; moderate magnitude, small geographic extent, occurs once, long term and irreversible
	Temporary disturbance to agricultural land at the locations of the temporary work site and easements	• Negotiate easements with property owners • Notify landowners of the intended construction activities to reduce effects to agricultural operations • Complete reclamation of all disturbed agricultural land following construction	No Residual Effects	N/A
	Disturbance and/or compaction of soils at work areas	• Following construction, ensure all project material is removed from the site and the site restored to pre-disturbance conditions. • Avoid construction activities on saturated soils.	No Residual Effects	N/A
	Increased soil erosion during construction	• Establish erosion control measures for topsoil piles prior to construction activities	No Residual Effects	N/A

Table H-1: Northwest Winnipeg Natural Gas Pipeline Project VEC Environmental Effects Summary Table				
Valued Environmental Component (VEC)	**Environmental Effects**	**Mitigation Measures**	**Residual Environmental Effects**	**Evaluation**
		• Erosion and sedimentation control measures will be implemented to dissipate hydrostatic test water discharge • Ensure topsoil piles are replaced and re-seeding of ditches conducted immediately following construction activities • Minimize surface extent of soil disturbance		
	Impaired soil quality from accidental releases of hazardous substances during construction and operation	• Locate fuel and hazardous substance storage 100 m from drainage ditch • Comply with provincial regulations, guidelines and licenses for hazardous substances • Construction, installation and removal of hazardous product storage to occur under the supervision of a licenced technician • Dedicated petroleum storage areas to be provided with spill containment • Contractors and workers to prevent the release of fuels and hazardous substances • When servicing equipment, waste products such as oil and antifreeze to be drained into approved containers and removed to an licensed disposal ground • Spills will be cleaned up immediately and reported to Manitoba Hydro and local Conservation Officer	No Residual Effects	N/A
Economy	Contract opportunities for pipeline construction	• Give preference for local sub-contractors	• N/A	Beneficial
	Employment opportunities for pipeline construction	• Hire locally to the extent possible	• N/A	Beneficial
	Regional revenue from purchase of equipment and supplies	• Purchase equipment and supplies locally to the extent possible	• N/A	Beneficial

APPENDIX I

MANITOBA HYDRO FRAC-OUT CONTINGENCY PLAN AND HORIZONTAL DIRECTIONAL DRILLING EXECUTION PLAN

Frac-Out Contingency Plan for Horizontal Direction Drilling

Frac-Out, or inadvertent return of drilling lubricant, is a potential concern when Horizontal Directional Drilling (HDD) is used under sensitive habitats, waterways, and areas of concern for cultural resources. The HDD procedure uses bentonite slurry, a fine clay material as a drilling lubricant. The bentonite is non-toxic and commonly used in farming practices, but benthic invertebrates, aquatic plants and fish and their eggs can be smothered by the fine particles if bentonite were discharged to waterways.

The purpose of a Contingency Plan or "Frac-out" plan is to:

- Minimize the potential for a frac-out associated with horizontal directional drilling activities
- Provide for the timely detection of frac-outs
- Protect areas that are considered environmentally sensitive (streams, wetlands, other biological resources, cultural resources)
- Ensure an organized, timely, and "minimum-impact" response in the event a frac-out and release of drilling mud occur

Contingency Response

- Once a frac-out is identified:All work stops, including the recycling of drilling mud/lubricant
- Determine the location and extent of the frac-out

If a frac-out occurs, isolate the area with sand bags, or silt fencing to surround and contain the drilling mud. Use vacuum trucks if necessary for clean-up. If the spill affects an area that is vegetated, the area will be seeded and/or replanted using species similar to those in the adjacent area, or allowed to re-grow from existing vegetation. After frac-out is stabilized and any required removal is completed, document post-cleanup conditions with photographs and prepare a frac-out incident report describing time, place, actions taken to remediate frac-out and measures implemented to prevent recurrence.

If a frac-out occurs in the River and has been monitored by our assigned personnel the drilling will stop.

If an abnormal loss of fluid, drop in pressure, or visible plume is observed indicating a frac-out or possible frac-out, drilling is to stop immediately and appropriate containment measures as needed to contain and recover the lost drilling fluids will be carried out as follows:

- Where conditions warrant and permit (i.e., readily accessible by a vacuum truck, shallow depth, clear water, not a potentially sensitive habitat, and low water velocity) and where a frac-out has been visually detected in a watercourse, attempts will be made to isolate the fluid release using a large diameter stand-pipe such as a 45 gallon drum with both ends cut out, or a short piece of culvert.

- If the frac-out occurs on ground it will be contained using appropriate methods as proposed by the contractor.

The contractor will inform the Manitoba Hydro construction supervisor of the frac-out condition or potential condition, and jointly decide on the appropriate action as follows:

- Assign a person to monitor (visual or using a turbidity meter) for the presence of a muddy plume;
- Make adjustments to the mud mixture (e.g., add lost circulation material to the drilling fluid in an attempt to prevent further loss of fluid to the ground formation and/or the watercourse);
- Prior to commencing any pumping to deliver the lost circulation material to plug the fracture, have the vacuum truck in position to recover any fluids that otherwise may escape to the watercourse.

The Manitoba Hydro construction supervisor will make the final decision on the next course of action, but the discussions will be a joint effort between the contractor and Manitoba Hydro.

- Under circumstances where a frac-out has occurred, has been confirmed visually, and where conditions do not permit containment and the prevention of drilling fluids release to the watercourse, attempts to plug the fracture by pumping lost circulation material are not to continue for more than 10 minutes of pumping time.
- If the frac-out is not contained within this time, the Manitoba Hydro construction supervisor will halt any further attempts until a course of action (either abandon directional drilling or continue following consultation with the Manitoba Hydro Project engineer) is decided upon.

Any recovered drilling fluids will be recycled or disposed of at a stable upland location at least 100 m from any wetland, watercourse or waterbody or at a disposal facility.

Horizontal Directional Drilling - Execution Plan

Note: This form shall be used on all HDD watercourse crossings (including rivers, sloughs, public drains or as required to meet the DFO Operational Statement on HDD)

Date:		Location:	
Foreman:		MH Inspector:	
Drill Fluid:		Drill Equipment & Condition:	
Estimated Drill Fluid Qty:			
Max Pullback Load:		MER#	
		CD #	
Minimum Bend Radius:		Pipe Size, Material	
		Pre-Test Pressure	
Length of Drill:		Site Remediation Completion Date	

Fluid Loss Contingency Plan:	
Drill Fluid Management Plan (Incl. drill fluid disposal site):	
Environmental Protection and Monitoring: (DFO O/S, EPP, etc)	
Mitigation and contingency of geological conditions:	

Workspace and equipment set-up (diagram showing entry and exit work areas including drag section)	
Drilling Comments	

Contractor Foreman: _____ MH Inspector: _____
Date: _____ Date: _____

APPENDIX J

MANITOBA HYDRO'S AGRICULTURE BIOSECURITY POLICY

Subject: **Agricultural Biosecurity**
Number: **P853**
Revised: **2013 11 12**
Owner: **Corporate Environmental Manager**

Contact: **For interpretation or further information on this policy, contact:**
Corporate Environmental Manager

Definitions

agricultural biosecurity: the protection of crops and livestock systems against the threats to production from disease, pests and invasive species

agricultural land: land zoned for agricultural use by the provincial government, a municipality, planning commission or planning district

Policy

1. Policy Statement

To prevent the introduction and spread of disease, pests and invasive plant species in agricultural land and livestock operations, Manitoba Hydro employees and contractors will follow this corporate policy and the relevant Business Unit Agricultural Biosecurity Standard Operating Procedure.

2. Purpose

Biosecurity is a growing concern in the agricultural sector on a global scale. With the increased awareness of animal and crop safety, the implementation of biosecurity protocols is a necessary requirement to ensure the health of agricultural operations and the surrounding environment.

Manitoba Hydro staff and contractors have the potential to impact agricultural biosecurity through construction and/or maintenance activities requiring access to agricultural land. Acknowledging this risk, the purpose of the Agricultural Biosecurity corporate policy is to ensure that Manitoba Hydro staff and contractors take necessary precautions to protect the health and sustainability of the agricultural sector.

Procedure

Agricultural Biosecurity Responsibilities

Responsibility: Business Unit

1. Each Business Unit (BU) requiring access to agricultural land is responsible to develop and maintain an Agricultural Biosecurity Standard Operating Procedure (SOP). The SOP must include, at a minimum, the following items:

- assessment of the potential biosecurity risk
- suitable procedures to manage the risk

2. Document compliance with the SOP. This may be done through a biosecurity checklist, or at the discretion of each BU through another practical method such as a job plan or an existing environmental checklist.

If additional provincially-mandated or emergency biosecurity measures are in place at a specific farm site, they will supersede any Manitoba Hydro SOP.

3. Ensure that all staff and contractors who work on agricultural land are aware of and have access to the SOP.

4. Send a copy of each SOP developed under this policy to the Corporate Environmental Management Department for filing.

Responsibility: Staff and Contractor

5. All Manitoba Hydro staff and contractors who carry out work on agricultural land will:

    - refer to and be aware of the Standard Operating Procedure (SOP) and this Agricultural Biosecurity policy
    - be able to provide a copy of SOP to landowner or producer leasing the land, if asked, whether:
        - there is only one MH employee/contractor — that individual should have a copy of SOP with them
        - there are 2 or more MH employees/contractors — one individual in the group should have a copy of SOP
    - be able to inform a landowner or producer leasing the land about the SOP, if asked

6. Comply with requirements of SOP and this policy.

Responsibility: Corporate Environmental Management Department

7. File each SOP received.

Procedure
Agricultural Biosecurity

Document Owner: Char Gladue
Last Revised: April 29, 2014
Next Revision: April 29, 2017

Related Policies: P853 Agricultural Biosecurity
G125A Point of Delivery for Intensive Livestock Operations

1. PURPOSE OF THE PROCEDURE

This standard operating procedure (SOP) provides guidance for Customer Service & Distribution (CS&D) employees to assist in the prevention of spreading invasive organisms.

2. SCOPE

This procedure applies to the Customer Service & Distribution Business Unit, its employees and contractors. All invasive organisms (plants, pests, disease) that pose a risk to agricultural operations are included in this procedure.

The procedure is geographically specific to:

1. Land zoned for agricultural use by a provincial or municipal government, planning commission or planning district
2. Manitoba Hydro's service area (gas & electric)

3. APPLICABILITY

The SOP is applicable when there is a reasonable risk of moving invasive organisms in soil from one location to another while performing tasks in CS&D, or at the landowner's request. Frozen, dry, or uncultivated ground poses little risk. Where possible, try to avoid wet areas or traveling through areas that contain manure.

Conditions where the SOP does not apply include:

1. Where land use is not zoned agricultural
2. When equipment only comes in contact with gravel or pavement
3. Where the work is carried out on a public right of way
4. In emergency situations (*The Manitoba Hydro Act* will prevail in order to return services to normal operating condition)

4. GENERAL INFORMATION

Agricultural biosecurity is the protection of crops and livestock systems against the threats to production from invasive organisms (disease, pests and invasive species).

Human activity is one of the factors in the spread of invasive organisms. Responsibility for the management of agricultural biosecurity rests with all stakeholders.

5. RESPONSIBILITY

- All CS&D employees who carry out work on agricultural land must be aware of this Standard Operating Procedure
- Contractors (non-prime) who carry out work on agricultural land must be made aware of this Standard Operating Procedure prior to the commencement of work
- Employees from other Business Units carrying out work on behalf of CS&D will be required to follow this SOP during the course of their work
- Managers must monitor compliance with the procedure

6. PROCEDURAL INSTRUCTIONS

1. Continue with the well established practice of communicating with landowners or producers prior to beginning work on or adjacent to private property. This is the landowner or producer's opportunity to voice any concerns, including those related to biosecurity.

    - Respect the landowner or producer's written biosecurity protocol.

2. If a degree of elevated risk is identified (see list below) mechanical cleaning shall be performed which removes about 90% of the soil. Manitoba Hydro vehicles and equipment should enter and exit fields in a clean condition. Mechanically clean vehicles and equipment by removing visible dust, soil, and plant materials using brushes, brooms, and shovels from:
    - interior and exterior of vehicles and equipment
    - shovels, augers and vehicle tires
    - clothes, personal protective equipment, and boots

Elevated risk identifiers:

A. Confirmed presence of invasive species (e.g. clubroot)
B. Extremely wet conditions with disturbed soil (significant accumulation of soil on vehicles and equipment)
C. Work involves close contact with livestock
D. Where there is heightened sensitivity around a particular project and/or from a particular customer or group of customers.

3. RECORD the action completed related to cleaning on one of the three documents: the workorder, the job plan (tailboard), or environmental checklist.

7. DISTRIBUTION, COMMUNICATION & REVIEW

The SOP will be communicated to CS&D employees and contractors as required. It is available on Manitoba Hydro's intranet and to the public upon request.

For subject matter expert guidance or questions from the public, please contact Mr. Alec Stuart, Manager, Corporate Environmental Management at environment@hydro.mb.ca or 204-360-3015.

This procedure will be reviewed every three years by the Division Managers of CS&D.

8. PROCEDURE APPROVAL

Date: April 30, 2014

Signature: _____ APRIL 30/14

G. B. Reed, Vice President, Customer Service & Distribution Business Unit