

Birtle Transmission Project

Appendix G

Draft Construction Environmental Protection Plan

Prepared by Manitoba Hydro

Transmission Planning & Design Division
Licensing & Environmental Assessment
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Prepared for:
Environmental Approvals Branch

**BIRTLE TRANSMISSION
PROJECT
CONSTRUCTION
ENVIRONMENTAL PROTECTION
PLAN**



Document Owner
Licensing and Environmental Assessment Department
Transmission Planning and Design Division
Transmission Business Unit
Manitoba Hydro

Version – Draft 1

List of Revisions

Number	Nature of Revision	Section(s)	Revised By	Date

PREFACE

Manitoba Hydro's Environmental Commitment

Manitoba Hydro is committed to protect and preserve natural environments and heritage resources affected by its projects and facilities. This commitment and a commitment to continually improve environmental performance is demonstrated through the company's Environmental Management System, which is ISO 14001 certified.

Environmental protection can only be achieved with the engagement of Manitoba Hydro employees, consultants, local communities and contractors at all stages of projects from planning and design through construction and operational phases. As stated in the Corporate Environmental Management Policy:

"Manitoba Hydro is committed to protecting the environment by:

- preventing or minimizing any adverse impacts on the environment, and enhancing positive impacts*
- continually improving our Environmental Management System*
- meeting compliance obligations*
- considering the interests and recognizing the knowledge of our interested parties who may be affected by our actions*
- reviewing our environmental objectives and targets regularly to ensure improvement in our environmental performance*
- documenting and reporting our activities and environmental performance"*

Manitoba Hydro's environmental management policy has been used to guide the development of the environmental protection program for the proposed Project. Implementation of the program is practical application of the policy and will demonstrate Manitoba Hydro's dedication to environmental stewardship. Manitoba Hydro recognizes the unique relationship communities have with their areas of use and is appreciative to all the communities who took time to share information about their history and culture as well as their valued knowledge and perspectives with regards to the Birtle Transmission Project. Indigenous Traditional Knowledge that has been shared assisted Manitoba Hydro in: developing a greater understanding of the study area; identifying potential Project effects; planning and designing the Project; and developing mitigation measures, which can be found throughout this document and other project environmental plans.

Manitoba Hydro understands the importance of continuing to engage with Indigenous communities and to work to address outstanding concerns. Adaptive management is being implemented within the Environmental Protection Program to be responsive and adaptive to changes to the project and on the landscape, stakeholder and indigenous concerns, as well as inputs from our inspection and monitoring programs.

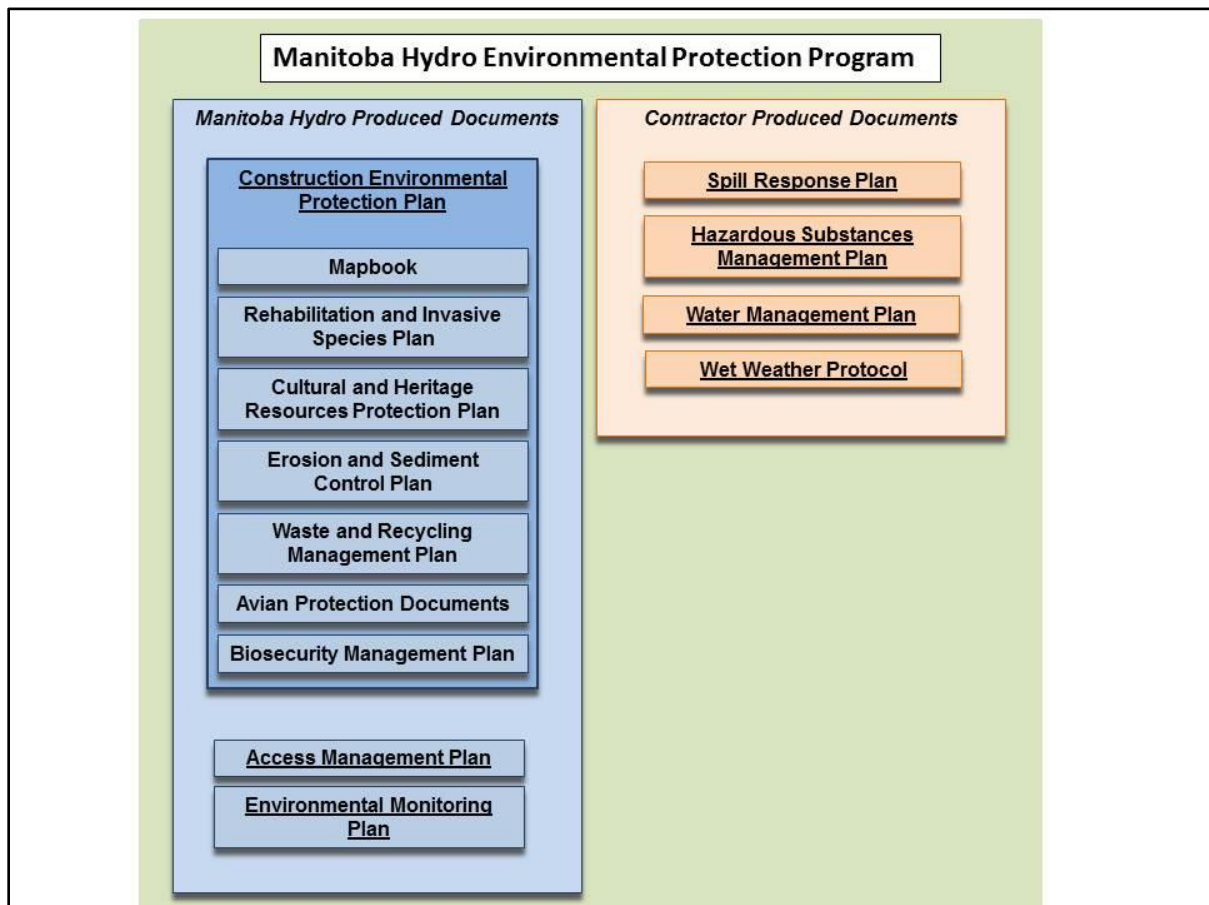


Figure 1-1 Diagram of Environmental Protection Documents

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Overview Map of the Birtle Transmission Project

Section 1

1 Introduction

The purpose of this Construction Environmental Protection Plan (CEnvPP) is to provide information that will guide contractors and field personnel while constructing the Birtle Transmission Project (the 'Project') in a manner that meets environmental legislation requirements. The CEnvPP outlines the commitments and efforts that will be taken by Manitoba Hydro (MH) and contractors to protect the environment and mitigate potential environmental effects that may occur during construction of the Project. The use of environmental protection plans is a practical and direct implementation of Manitoba Hydro's commitment to responsible environmental stewardship.

This CEnvPP provides guidance for the implementation of environmental protection measures for the Project. The Project consists of a 46.2 km single-circuit, 230 kV AC transmission line starting at the existing Birtle South Station south of the Town of Birtle on Highway 83, connecting at the Manitoba- border to a new transmission line proposed by Saskatchewan Power Corporation (SaskPower).

This document provides general and specific mitigation measures to reduce the potential for environmental effects that may occur during the Project's construction phase. It is designed to be a resourceful, user-friendly tool to guide onsite implementation of environmental protection measures. This document provides contractors and field personnel guidance on the implementation of environmental protection measures. Where contractors have experience using other federally or provincially accepted methods of environmental protection, they are encouraged to discuss with the MH Environmental Inspector/Officer.

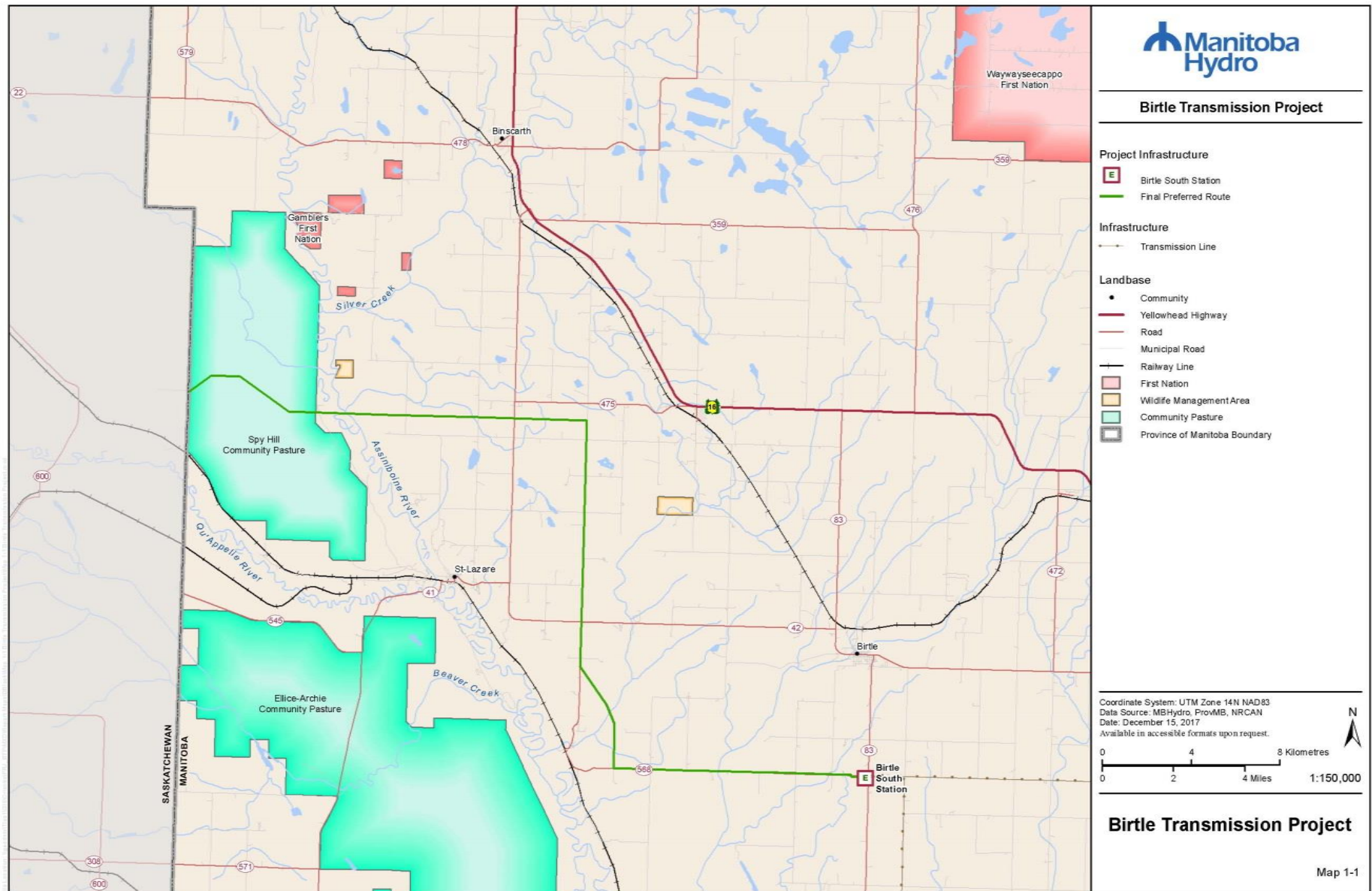


Figure 1-1 Overview Map of the Birtle Transmission Project

1.1 Document Amendment Process

To communicate the most up to date and current versions of Environmental Protection documents an amendment process has been established. This amendment process applies to both text (Part 1) and mapping (Part 2) documents. Throughout construction there will be changes and revisions to documents, these revisions are a result of errors and omissions or due to the ongoing adaptive management process to improve environmental protection measures. In addition, Manitoba Hydro's Licensing and Environmental Assessment Department must approve all field decisions and/or changes to a procedure outlined in the CEnvPP. Should an amendment be required, it will be communicated to Manitoba Sustainable Development (SD) through the Environmental Approvals Branch to determine approval requirements Figure 1-1 illustrates the document amendment process, including loading amendments into the Environmental Protection Information Management System (EPIMS) so that users are notified of changes and the amendments can be distributed to them through Manitoba Hydro Staff.

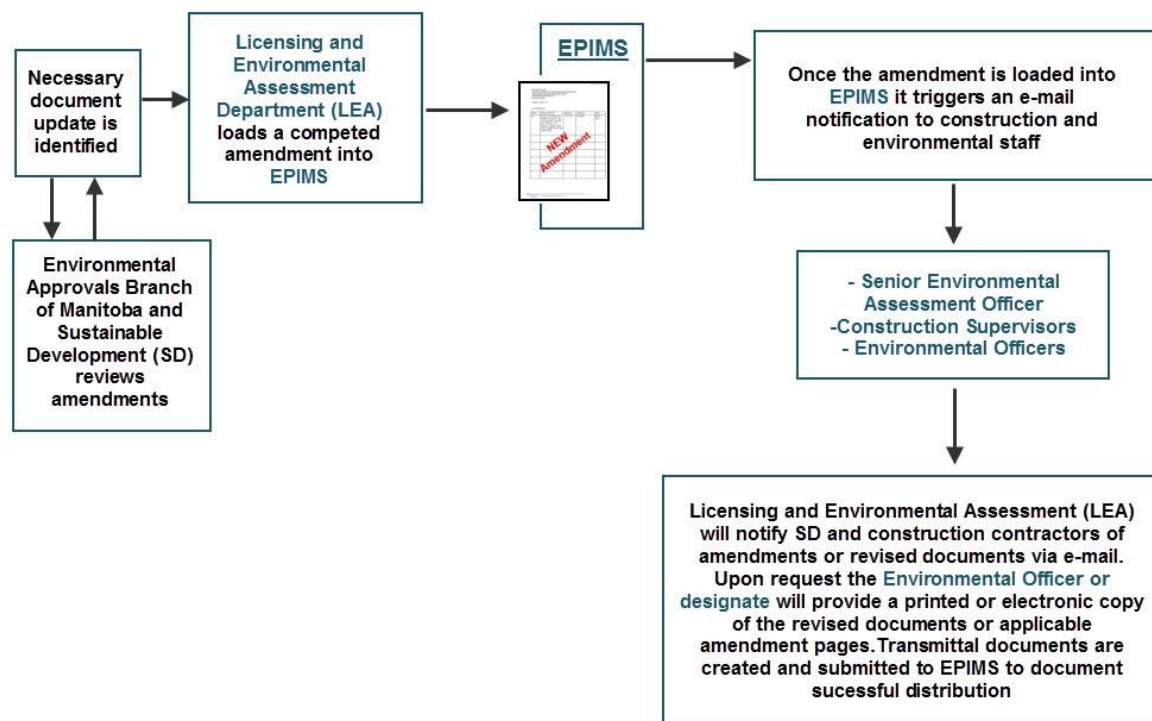


Figure 1-2 Document Amendment Process

1.2 Overview of Environmental Protection Plan

Part of Manitoba Hydro's commitment to environmental protection includes a comprehensive Environmental Protection Program (EPP). This program includes the development of a Construction EnvPP (CEnvPPs) specific to the Project. The CEnvPP provide general and specific environmental protection information for project components and is intended for use by construction contractors and environmental staff.

A number of Environmentally Sensitive Sites (ESS) have been identified for the Project. ESS are locations, features, areas, activities or facilities that were identified in the Birtle Transmission Project EA to be ecologically, socially, economically or culturally important or sensitive to disturbance and require protection during construction of the project. The determination of ESS has included the input and perspectives of Indigenous communities and organizations. Manitoba Hydro will continue to engage with stakeholders and Indigenous communities in efforts to continually update this plan with sensitive sites and current knowledge as it is shared.

Map sheets have been developed for the Project to present the location and spatial extent of ESS. Each map has corresponding tabular summary information including ESS feature information and relevant mitigation measures to address the potential environmental effects at each ESS site.

1.3 Flagging and Signage Standards

Clear identification of ESS locations and applicable buffers in the field is an important part of successful environmental protection implementation. Establishing consistent use of signage and flagging tape across the project is important to reduce confusion and for the clear identification of protected sites and travel routes.

1.3.1 Flagging

Cross hatched flagging of various colors will be reserved for ESS identification or other environmental issues. Figure 1-3 shows the currently approved patterns and colors.



Figure 1-3 Examples of approved flagging tape used in delineating ESS.

1.3.2 Signage

Signage is used in conjunction with flagging. Identification of vegetation clearing types, access or bypass trails as well as identification of ESS can be accomplished through the use of signage. Access signs are Orange with black lettering, Bypass signs are Yellow with Black lettering and ESS signs are reflective white with black lettering.



Figure 1-4 Examples of Access and ESS signage

1.4 Roles, Responsibilities and Reporting

This section outlines the major roles and responsibilities of those involved in the implementation of the CEnvPP for the transmission components of the Project. A summary of roles and key responsibilities is found in Table 1-1. Communication and reporting on environmental issues, monitoring and compliance will be as outlined in Figure 1-3. A contact list for key staff involved in supporting this CEnvPP is found in Appendix A.

Table 1-1: Environmental Roles and Responsibilities of Personnel During the Construction Phase

Role	Key Responsibilities
MH Project Engineer	<ul style="list-style-type: none"> Accountable for all aspects of their construction component in the Project Oversees Construction Supervisors who are responsible for construction activities
MH Senior Environmental Assessment Officer	<ul style="list-style-type: none"> Provides advice and guidance on environmental protection matters. Monitors inspection reports and monitoring information, and prepares annual report as per regulatory requirements. Liaises with Manitoba Sustainable Development Licensing Approvals Branch. Issues Environmental Improvement and stop work orders as required for non-compliance issues.
MH Environmental Specialist	<ul style="list-style-type: none"> Responsible for the implementation of Construction Environmental Protection Plan. Liaises with Regional regulatory authorities and other regulatory authorities where required or applicable. Provides advice and guidance to Construction Supervisors and MH Environmental Inspectors/Officers for non-compliance situations, environmental incidents and emergencies. Supervises MH Environmental Inspectors/Officers and monitors. Provide support and guidance to contractors regarding CEnvPP. Responsible for implementing and ongoing compliance monitoring to ensure consistent and accurate reporting into the Environmental Protection Information Management System.

MH Construction Supervisor(s)	<ul style="list-style-type: none"> • Reports to the Project Engineer. • Facilitates Construction Contractors implementation of remedial actions or responses to non-compliance situations or incidents are implemented as required. • Works with the MH Environmental Specialist, Senior Environmental Assessment Officer and Inspectors/Officers to ensure implementation of environmental protection. Ensures that appropriate authorities are notified in emergency or incident situations.
Environmental Inspector/Officer	<ul style="list-style-type: none"> • The MH Environmental Inspector/Officer reports to the MH Environmental Specialist and provides advice and guidance to the Construction Supervisor. • Monitor the project for compliance of the CEnvPP, Environmental License and other environmental regulatory requirements. • Assist the Contractor's Environmental Representative(s) in ensuring that all necessary information is covered in the Contractors pre-project employee orientation and record is kept (Appendix B). • Conducts site inspections regularly and ensures reports are submitted to the Environmental Protection Information Management System. Both daily and weekly reports containing information on activities carried out, effectiveness of actions and outstanding issues are also submitted to Environmental Protection Information Management System. • Assists in developing solutions for environmental issues on-site with the Construction Supervisor and the Contractor and where applicable with the input from the Senior Environmental Assessment Officer. • Prescribes and ensures follow up mitigation measures are implemented.

	Ensures that Construction Contractor Environmental Representative(s) have correctly identified, delineated and flagged or marked all ESS, access, ROW and other applicable boundaries in the field.
Construction Inspector	<ul style="list-style-type: none"> • The Construction Inspector may carry out the duties of the MH Environmental Inspector/Officer when the MH Environmental Inspector/Officer is not on site. • MH Environmental Inspector/Officers and Construction Inspectors work cooperatively to identify ESS site locations and ensure that prescribed mitigation is being implemented and meeting regulatory requirements.
Manitoba Hydro Safety, Health, Emergency Response Officers	<ul style="list-style-type: none"> • Responsible for ensuring implementation of Manitoba Hydro safety policies and programs at the various construction sites. The officers provide information and advice to the Construction Supervisor. • Conduct periodic site safety visits.
	<ul style="list-style-type: none"> •

Role	Key Responsibilities
Construction Contractor(s) (Project Manager / Construction Supervisor)	<ul style="list-style-type: none"> Accountable for all regulatory and environmental prescriptions (i.e., follow CEnvPP and mitigation measures prescribed). Ensure all contractor project staff are adequately trained/informed of pertinent environmental requirements of the Project related to their position. Report any discoveries of non-compliance, accidents or incidents to the Construction Supervisor and Environmental Inspector/Officer. Ensure that all remedial actions are carried out as per Manitoba Hydro instruction. Ensure all discoveries of heritage resources, human remains, paleontological finds, environmentally sensitive sites, etc. are reported to the Construction Supervisor and Environmental Inspector/Officer. Responsible for other permits as outlined in Appendix C.
Construction Staff	<ul style="list-style-type: none"> Accountable for all regulatory and environmental prescriptions (i.e., follow CEnvPP and mitigation measures prescribed). Ensure adequately trained with respect to, and informed of pertinent, environmental requirements of the Project related to their position. Report any discoveries of non-compliance, accidents or incidents to the Construction Supervisor and Environmental Inspector/Officer. Ensures that all remedial actions are carried out as per Manitoba Hydro instruction. Ensures all discoveries of heritage resources, human remains, paleontological finds, environmentally sensitive sites, etc. are reported to the Construction Supervisor and Environmental Inspector/Officer.
Construction Contractor's Environmental Representative	<ul style="list-style-type: none"> Responsible for implementation, coordination and verification of pre-project employee environmental orientation. Ensures that the contractor employees adhere to all aspects of the construction Environmental Protection Plan. Provides information and advice to the Construction Contractor employees on environmental protection matters.

- Responsible for implementation of the emergency response and hazardous materials plans, and other related topics.
- Liaises with MH Environmental Inspector/Officer and Hydro Field Safety Officers.
- Delineate and flag/sign all Environmentally Sensitive Sites as identified in CEnvPP in the field as per Flagging and Signage standards.
- Identify, delineate and flag or mark all access, ROW and other applicable boundaries in the field.
- Identify any previously unknown ESS to MH Environmental Inspector/Officer

1.4.1 Environmental Protection

Manitoba Hydro will provide copies of all available permits, licences, approvals and authorizations obtained for the Project to the Contractor. Prior to commencing associated work the contractor will provide Manitoba Hydro with copies of all available permits, licences, approvals and authorizations obtained for the Project. Electronic copies of all permits are available for download from the Environmental Protection Information Management System.

The Contractor will comply with the Construction Environmental Protection Plans prepared for the Project, including mitigation measures identified during the environmental assessment and contained herein. Environmental aspects of the work including applicable licence/permit conditions will be discussed during the Environmental Pre-Job Orientation, Weekly Progress Meetings, and Daily Job Planning Meetings.

Without limiting or otherwise affecting the generality or application of any other term or condition of the Contract, the Contractor shall:

- Strictly comply with all Environmental Legislation and have suitable corrective and/or preventive measures in place to address any previous environmental warnings, fines or convictions; issued by regulatory agencies and/or Manitoba Hydro;
- Do or cause to be done all things required or ordered, to mitigate environmental damage caused, directly or indirectly, by itself or by its servants, agents, employees or Subcontractors, accidentally or as a result of practices that are in contravention of the Contract or any Environmental Legislation.

1.4.2 Dedicated On-Site Environmental Representative(s)/Supervisor(s)

Before commencing the on-site work, the Contractor shall identify its dedicated on-site Environmental Representative (s)/Supervisor(s), who shall attend the Pre-Job Meeting (Environmental Component) to review environmental matters for the work. The dedicated on-site contractor Environmental Representative (s)/Supervisor(s) shall be fully conversant with:

- Contractor's Environmental Practices and Policies;
- All applicable Environmental Legislation;
- The mitigation measures outlined in the Project's Construction Environmental Protection Plans.

1.4.3 Environmental Improvement Orders

Failure to comply with the Environmental Protection section above or unsatisfactory performance in regards to any other environmental-related matter may result in Manitoba Hydro issuing Environmental Improvement Orders to the Contractor.

The Environmental Improvement Order, once communicated verbally or in writing is considered “effective immediately”. Manitoba Hydro will establish a compliance date for each Environmental Improvement Order issued. The Contractor must provide written documentation of the actions taken regarding the environmental improvement order as follows:

The Contractor shall:

Within the expiry date of the period specified in the order or any extension thereof , prepare a written report on the measures taken to remedy the contravention and on any measures yet to be taken;

Send a copy of the report to the Manitoba Hydro Representative who made the order as well as all individuals CC'd on the transmittal document;

If applicable, provide a copy of the report to the employee(s) involved; and

Review the contravention with all employees at a regular weekly meeting and post in a prominent place at or near the worksite.

1.4.4 Manitoba Hydro Environmental Stop Work Order

Manitoba Hydro may issue an Environmental Stop Work Order where any activities which are being, or are about to be, carried on at a worksite, involve or are likely to involve an imminent risk of serious impact to the environment, or where a contravention specified in an Environmental Improvement Order was not remedied and warning was given. The Environmental Stop Work Order, once communicated verbally or in writing is considered “effective immediately”, for any one or more of the following matters:

The cessation of those activities;

That all or part of the worksite be vacated;

That no resumption of those activities be permitted by the Contractor.

That a Manitoba Hydro issued stop work order remains in effect until it is withdrawn in writing by Manitoba Hydro.

That Manitoba Hydro will not be held responsible for delays to the work or be required to

compensate the contractor for any matters arising as a result of the Manitoba Hydro issued Environmental Stop Work Order.

Note: A Manitoba Hydro-issued Environmental Stop Work Order does not prevent the Contractor from completing any work or activity that may be necessary in order to remove the risk of injury referred to above.

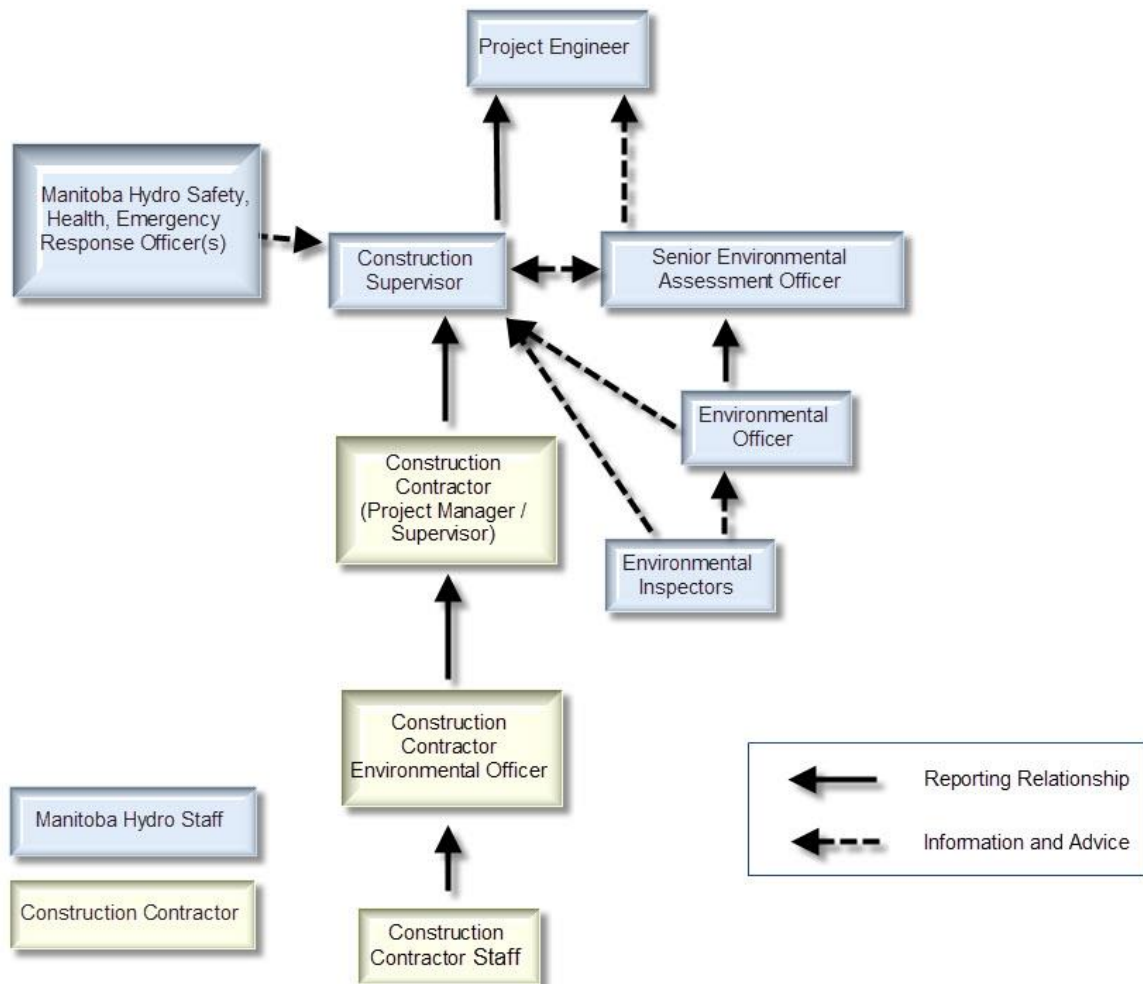


Figure 1-5 Environmental Communication Reporting Structure

1.5 Environmental Protection Information Management System

An Environmental Protection Information Management System (EPIMS) will provide a single interface to store all environmental documentation. It will be utilized by project staff to submit permits, inspection reports, plans, logs, checklists, etc. for the management of all environmental protection implementation, regulatory compliance and incident reporting. The EPIMS will be developed by Manitoba Hydro and be fully integrated with project communications, inspection, biophysical, socio-economic, and heritage monitoring.

1.6 Regulatory Requirements

All relevant regulatory approvals for the Project will be obtained by Manitoba Hydro prior to construction. All documentation will be kept on-site by both the contractor and Manitoba Hydro personnel. Manitoba Hydro requires that its employees and contractors comply with all Federal and Provincial Regulatory requirements relating to the construction, operations and decommissioning of its projects and facilities. All Project licences, approvals and permits obtained can be found in Appendix C: Environmental Licences, Approvals and Permits and EPIMS.

2 Environmental considerations

Important environmental considerations for pre-construction planning and construction activities are required at environmental sensitive sites (ESS), which include locations, features, areas, activities or facilities that were identified in the Birtle Transmission Project EA to be ecologically, socially, economically or culturally important or sensitive to disturbance. These ESS require protection and mitigation during construction. ESS include riparian areas, valued and protected vegetation, wildlife and habitats, cultural (heritage/archaeological and spiritual sites), unique terrain features, erosion- and compaction-prone soils and other important locations requiring specific protection (e.g., resource use, access).

2.1 Timing Windows

2.1.1 Wildlife

Appendix D outlines wildlife reduced risk work windows applicable to the Project. These windows are based on federal and provincial regulatory requirements as well as best management practices. Timing periods may be expanded or refined based on further data collection, transmission line final design and regulatory license and work permits to be issued for the project.

The recommended Reduced Risk Timing Windows table demonstrates periods of the year when wildlife species are sensitive to disruptive operations because of a sensitive lifecycle activity such as calving, nesting, and hibernation, etc. Appendix D is intended to assist in scheduling construction activities for the time of year when risks of adverse construction impacts are negligible. Where conflicting timing restraints with construction activities exist in a particular area, appropriate mitigation will be implemented to reduce effects.

2.1.2 Burning

Between November 16th to March 31st there is no requirement for a burning permit under the Wildfires Act. If burning is required outside of those dates (i.e. between April 1st and November 15th) a burning permit application is made to the local Manitoba Sustainable Development district office. A copy of the burning permit must be on hand at all times while burning. All fires must be completely extinguished by March 15th.

2.1.3 Fish

Fish habitat can be adversely affected by in-stream work that occurs during certain periods in their life history or at certain life stages. Life history periods or life stages susceptible to disturbances from in-stream construction work include the following:

- Spawning and egg incubation;
- Movements to or from spawning or overwintering areas; and
- Egg and newly hatched fry.

Timing works to avoid sensitive life history periods or life stages is an effective means of mitigating adverse effects. All in-stream activities should be conducted during a timing window of least risk to fish and fish habitat. Appendix D contains general timing windows to avoid during construction.

2.2 Setbacks and Buffers for Wildlife and Anthropogenic Features

Setbacks and buffer distances from sensitive environmental features are provided in Appendix E.

These setback and buffers may be expanded or refined based on further data collection, transmission line final design, regulatory license and work permits to be issued for the project.

Setbacks are areas to be maintained from a given environmental feature where no work shall occur unless authorized by the Senior Environmental Assessment Officer. Buffers are work areas where restricted activities such as low ground disturbance clearing are permitted.

Where applicable, site specific setback and buffers are prescribed in specific mitigation measures for each ESS.

2.4 Riparian Management

Based on characteristics and qualities of waterbodies in, or near the project footprint, Contractors will need to modify land clearing, machinery passage and other construction activities, these sites will be identified on the Map Sheets of the Construction Section Mapbook "Part 2".

Riparian Buffers (as shown in Table 2-1) are applied to riparian habitats, which include, streams, rivers, lakes and wetlands within the Project Footprint in which all shrub and herbaceous vegetation will be retained and all trees that do not violate Manitoba Hydro vegetation clearance requirements will be retained. For slopes greater than 50% site investigation and prescription by the Manitoba Hydro Senior Environmental Assessment Officer is required. **The Riparian Buffer is composed of two zones: a Management Zone (variable width based on Table 2-1) that allows equipment to conduct low ground disturbance clearing and a 7m Machine Free Zone which only allows reaching into zone with equipment but not entering the zone except at trail crossing (Figure 2-1).**

Table 2-1: Riparian Buffer and Machine Free Zone Distances Based on Slope

Slope of Land Entering Waterway (%)	Width of Machine Free Zone (m)	Width of Riparian Buffer (m)
10	7	30
20	10	40
30	15	55
40	20	70
50	25	85

Machine Free Zones are work areas where restricted activities such as low ground disturbance clearing (i.e hand cutting or feller buncher) are permitted by reaching into zone with equipment but not entering the zone. Where applicable, site specific setbacks are prescribed in specific mitigation measures for each feature. Setbacks, Riparian Buffers and Machine Free zones distances from sensitive water features are provided in Appendix E. Setbacks are to be maintained from a defined riparian habitat where no work shall occur.

Boundaries of **Riparian Buffers** and **Machine Free Zones** are measured from the **Ordinary High Water Mark (OHWM)**. If the OHWM is unable to be determined, measure from the **tree line** (Figure 2-1). Setbacks (if required) are measured from the tree line or from a defined riparian boundary as delineated by an Aquatics Specialist.

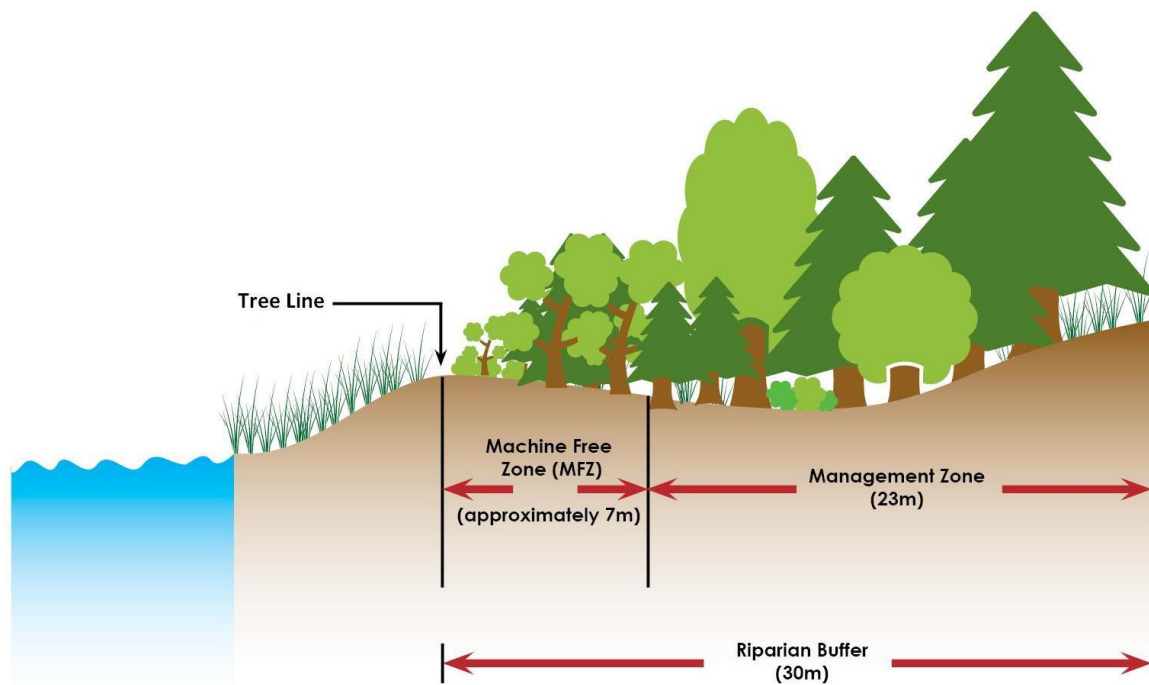


Figure 2-1 Example of Zones in a 30m Riparian Buffer

2.4.1 Riparian Mitigation

Activities associated with project construction pose a low risk to fish habitat. Because of this low level of risk, general mitigation measures will be applied to modify construction of overhead lines, temporary water crossings, ice bridges and snow fills (Section 5.2). In addition to these general mitigation measures, Contractors will implement setbacks and buffers as indicated on Site-specific information found in the map sheets of the Construction Section Mapbook "Part 2".

2.4.2 Tower Foundations within Riparian Buffers:

In instances where tower placements require tower guy wires be located within a Riparian Buffer, a tracked excavator will be allowed to excavate the anchor foundation while minimizing ground disturbance as much as possible. The excavator must make one trail only and exit on that same trail. Each site where this occurs will be noted by MH Environmental Inspector\Officers for monitoring by vegetation specialist the following season to determine if any further re-vegetation or rehabilitation is required.

2.5 Wildlife and Habitat

2.5.1 Birds and Habitat

Vegetation removal activities such as clearing and ground stripping can be destructive to birds and their habitat, such as tree and ground nests, as well as areas in which they find food (foraging areas). Birds and their habitat are particularly vulnerable during the breeding season when they mate, lay eggs and raise their young, as they are not able to relocate away from areas of disturbance. Migratory birds, such as geese, ducks and songbirds, and their habitat are protected by federal regulation, which prohibits killing, harassing or destroying the nests of these birds.

Potential effects of the project on birds include: mortality, habitat alteration and fragmentation, sensory disturbance, and disruption of movements. Increases in bird mortality can occur in a variety of forms including collisions with transmission wires and construction vehicles, electrocutions, increased predation and hunting. Bird-wire strikes are one of the most common causes of mortality for birds, particularly birds with short wings and large body masses. Collisions with wires are more likely over or near open water, the risk of collision would likely be greatest near rivers. As mitigation, bird diverters or aerial markers may be installed in high bird traffic areas. The location of these bird diverter installations will be provided through design specifications and engineering drawings.

Should construction activities be required during breeding bird timing windows (see timing windows Appendix D) please refer to the General Mitigation Approach for Reducing Risk to Nesting Birds found as Appendix H-1. This decision tree will help to apply the appropriate approach and direct mitigation measures found in Appendices H-1 to H-5. These Appendices prescribe levels of disturbance, the breeding bird timing windows, nest sweep and reporting procedures as well as buffer guidelines for each species identified. Through this process, Manitoba Hydro and its contractors will reduce the effects to birds and continue to meet regulatory compliance requirements.

2.5.2 Reptiles/Amphibians

Areas where reptiles and amphibians, such as salamanders, frogs, and toads, mate and lay eggs (i.e., breed) are sensitive to ground disturbance. Heavy equipment traffic and ground clearing activities that coincide with breeding activities can have a measurable effect on local populations. Further, Manitoba is home to unique and

endangered reptiles and amphibians, such as the northern leopard frog (found throughout the province) that are protected by legislation and policy.

Potential Project effects on northern leopard frog and common snapping turtle during construction include habitat loss and alteration, which are threats to these populations. As these species are mainly found in riparian areas near large rivers, bodies of water or productive marshes, minimal habitat effects are anticipated with mitigation such as riparian buffers.

Mortality could increase in the Project Study Area during construction due to increased road traffic. Northern leopard frogs are particularly susceptible to road mortality during migration and dispersal.

2.5.3 Mammals

Large-bodied mammals, such as white-tailed deer and elk, are considered sensitive to disturbance. Sensory disturbance from construction activity could result in a temporary loss of effective habitat and disruption of movement, as individuals will likely avoid the construction zone. The risk of wildlife-vehicle collisions could increase due to a greater volume of traffic on roadways, increasing mortality of some mammal species, particularly larger ones such as white-tailed deer and elk. The right-of-way and access trails could facilitate movement and increase hunting efficiency for gray wolves and for other predators.

2.6 Species Of Concern

The following procedures provide contingency measures for the discovery of species of concern during construction. Species of concern can include rare vascular plants, rare non-vascular plants, rare wildlife species, and rare ecological communities and are further outlined in Appendix E. Further information regarding the discovery of bird nests can be found in Appendix H-3

Species of conservation concern that are discovered during pre-project studies along the route have been assessed by an environmental specialist and appropriate mitigation measures have been outlined in the Part 2 CEnvPP mapbook.

2.6.1 Species of Concern Discovery during Project Construction

In the event that rare plants, wildlife species or rare ecological communities are identified or suspected along the construction right-of-way during construction (e.g., during survey activities, prior to clearing and construction), follow the measures outlined below:

- Suspend work immediately in the vicinity of any newly discovered species of concern. Work at that location may not resume until the measures below are conducted.
- Notify Environmental Inspector\Officer.
- Flag or fence the area until the plant, wildlife species or community can be confirmed. Environmental Inspector\Officer may enlist a qualified biologist to assist with confirmation.
- Implement protection measures based on specific conditions and criteria found in Appendix E (Buffers and Setbacks) and or Appendix H (Avian Protection).

Additional mitigation measures may be developed by the Environment Inspector\Officer in consultation with a qualified biologist and, when necessary, the appropriate regulatory authority.

2.7 Agriculture

2.7.1 Agricultural Biosecurity

Manitoba Hydro's Agricultural Biosecurity Policy

Manitoba Hydro's Agricultural Biosecurity Policy was created 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 through the execution of the the Biosecurity Management Plan (BMP) found in Appendix F.

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 Policy is to ensure that Manitoba Hydro staff and contractors take necessary precautions to protect the health and sustainability of the agricultural sector.

The BMP also includes procedures to provide guidance and direction to staff and contractors/consultants who may be required to enter agricultural land and the levels of cleaning necessary to reduce the likelihood of transport of invasive species, pests or disease.

2.8 Soils and Terrain

2.8.1 Soils

As the basis of natural, medicinal, spiritual and commercial vegetation, soils and their quality are an important part of ecosystem health and human wellbeing. The types of soil considered to be sensitive are topsoil (the thin, nutrient rich surface soil layer), and soils susceptible to wind erosion. Soils are generally sensitive to loss by erosion or mixing with less suitable soils and quality degradation from compaction. During construction, soil compaction and rutting can result from the movement of vehicles and equipment, storage of materials, and assembly and erection of towers. Effects of soil compaction and rutting can be mitigated by managing equipment traffic routes and activities for clearing of the transmission right-of-way (ROW), and installation of transmission towers to minimize the impact. Existing access routes are planned to be utilized wherever possible to avoid disturbing new areas.

2.8.2 Encountering Unexpected Contamination

Manitoba Hydro considers any of its electrical stations as potentially containing contaminated soils and/or groundwater; subsequently, there is potential to encounter contamination during construction activities. Contamination at Manitoba Hydro Stations may have resulted from historical spills or leaks of fuels, oils, lubricants, and coolants. Manitoba Hydro may conduct environmental site assessments at a Station any prior to construction to determine if contamination exists within the construction footprint. If contamination exists, Remedial Action Plans will be prepared. There is also potential to encounter non-Manitoba Hydro owned sites that may contain contaminated soils and/or groundwater; however, due to the majority of Project routing transecting agricultural lands, the potential is low. Please see Appendix G (Guidance for Contaminated Soils or Groundwater Identification and Disposal) for more information.

2.9 Cultural

2.9.1 Heritage

Archaeological sites, or sites where historic and pre-historic artefacts of human activity are found, are sensitive to disturbance and loss from ground disturbance activities, such as clearing and excavation. Artefacts may include tools and objects, such as arrowheads, pottery shards or bottles, or burial sites and human remains. These sites and objects are protected under legislation as a part of our common heritage. Manitoba Hydro is committed to protecting and preserving the environment including, cultural landscapes, and heritage resources affected by the Project. Sites identified as having spiritual or cultural importance through an ongoing First Nations and Metis Engagement Process (FNMEP) or other communications are considered sensitive to disturbance and should be respected for the values they have to communities.

The Cultural and Heritage Resources Protection Plan (CHRPP) is part of the Environmental Protection Program is found as an additional standalone document. The CHRPP sets out Manitoba Hydro's commitment to safeguard cultural and heritage resources and appropriately handle human remains or cultural and heritage resources discovered or disturbed during the construction of the project.

2.10 Access

Existing intersections, such as those for trails, provincial trunk highways (PTHs), provincial roads (PRs) and railways, are considered sensitive to change or conflicting land uses and as a fixed component of the larger transportation network, intersections are difficult to close or relocate. Use of trails is important for both recreational, commercial and subsistence hunters, gatherers and trappers. Ensuring there is safe access to these trails is important to minimize effects on resource users. In conjunction with mitigation measures a standalone document called the "Access Management Plan" (AMP) has been developed to safeguard and support the preservation of environmental, socio-economic, cultural and heritage values within the Projects' area of direct impact in the creation of new access.

3 Environmental protection plan orientation and awareness

3.1 Pre-Job Meeting (environmental component)

A pre-job meeting will be held between the Contractor (senior project staff including construction supervisors, environmental/safety officer) and Manitoba Hydro (senior staff including Project Engineer or designate, the Senior Environmental Assessment Officer, Construction Supervisor and the MH Environmental Inspector\Officer).

The environmental portion of this meeting will include the following:

- A review of Manitoba Hydro's Environmental Principles and key environmental specifications of the Contract;
- Transfer of further relevant information or precautions that Manitoba Hydro is aware of and which pertain to the job;
- Procedures/requirements for dealing with environmental stop work orders or improvement orders;
- Reporting of environmental incidents and emergencies;
- Documentation needs including the review of all pertinent forms (i.e. job planning form; environmental checklist);
- Requirement to educate/train all Project employees with respect to the requirements of the Construction EnvPP.

The Contractor shall communicate to all field supervisors, subcontractors and work crews the work specifications, environmental requirements and information provided during the pre-job meeting and notify the Senior Environmental Assessment Officer in writing when it has been completed.

3.2 Contractor Start-Up Meeting

A pre-work orientation meeting is held by the Contractor with field crews prior to the initiation of work to ensure that they are aware of the environmental requirements of work at that location. Should project conditions dictate a change in work location, another start-up meeting may be convened.

The Contractor is required to ensure minutes, attendance records, and all other pertinent information is recorded and distributed. Manitoba Hydro will attend and if asked could provide an overview of the environmental concerns/ESS.

In situations where a new employee joins the project, it is the responsibility of the Contractor's Environment Officer to ensure that that employee has been provided with the necessary information and/or training related to the environmental aspects of the project. The Contractor will be required to document all instances of new employees to demonstrate that they have received the necessary training.

3.3 Weekly Progress Meetings

Senior field staff will meet on a weekly basis to review and discuss progress to date and planned upcoming work. These meetings will also review environmental requirements of the job and environmental precautions necessary. Manitoba Hydro will be responsible for the maintenance of minutes/documents related to these meetings.

3.4 Daily Job Planning Meetings

Field crew job planning meetings will be held daily prior to the commencement of any work. The daily job-planning meeting will include a review environmental requirements of the planned work and the applicable environmental precautions. All job planning meetings, including the environmental content, shall be documented by the Contractor.

4 Contractor-developed environmental Management plan

Construction contractors will be required to develop environmental management plans as part of the Environmental Protection Program for this project component.

The Contractor shall be responsible to develop and implement specific plans for its work as described in Figure 1-1. These plans will be included as Appendix K when approved by the Senior Environmental Assessment Officer.

5 Environmental Mitigation Requirements

Contractors must follow all mitigation measures identified to protect the environment, including Environmental Sensitive Sites (ESS). Two types of mitigation measures must be followed:

- General Mitigation Measures apply to all Project areas.
- Specific Mitigation Measures apply to individual ESS.

Contractors will need to modify construction activities in accordance with general mitigation measures (Section 5.2) and specific mitigation measures (see detailed maps and specific mitigation in the Construction Section Mapbook “Part 2”).

5.1 General Mitigation Requirements

Construction considerations required for all Project areas are considered general mitigation and are applicable to all construction areas. **NOTE: Site specific mitigation measures found in mapbooks will override the general mitigation measures found below.**

There is overlap and duplication of mitigation measures amongst the above categories, this allows the user to look up the actions they must perform by different categories. The general mitigation measures are provided under the following five categories: 1) Management (MM); 2) Project Activity (PA); 3) Project Component (PC); 4) Environment Component (EC); and 5) Environmental Issue (EI), as follows:

(MM) Management environmental protection measures include management, contractual, administrative and other measures that are common to all environmental protection categories and topics.

(PA) Project Activity environmental protection measures include construction activities that are likely to cause direct environmental effects. Project activities are action words or phrases, that are carried out during construction of the Project such as drilling, clearing, etc..

(PC) Project Component environmental protection measures relate to major components of the Project. The Project is very large and complex consisting of several major components including transmission lines, converter stations and ground electrode facilities, and involves access trails, water crossings, construction camps, marshalling yards, etc.

(EC) Environmental Component protection measures include important or vulnerable components of the environment that are subject to environmental effects of the Project. Some environmental components are particularly vulnerable to construction of transmission lines, converter stations, ground electrode facilities and other project components and activities, and warrant separate consideration. Example environmental components include agricultural areas, fish habitat, heritage sites and wetlands.

(EI) Environmental Issue and Topic protection measures include important issues and topics identified for the Project. Environmental issues and topics include emergency response, erosion protection/sediment control, hazardous substances, petroleum products and soil contamination.

5.2 General Mitigation Tables

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Access Roads and Trails (PC-1)

ID	Mitigation
PC-1.01	Access roads and trails no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-1.02	Access roads and trails required for future monitoring, inspection or maintenance will be maintained in accordance with the Access Management Plan.
PC-1.03	Access roads and trails will be constructed to a minimum length and width to accommodate the safe movement of construction equipment.
PC-1.04	Access roads and trails will be constructed and operated in accordance with contract specifications.
PC-1.05	Access roads and trails will be provided with erosion protection and sediment control measures in accordance with the Erosion Protection and Sediment Control Plan.
PC-1.06	All season access roads will not be permitted within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats.
PC-1.07	Approach grades to waterbodies will be minimized to limit disturbance to riparian areas.
PC-1.08	Bypass trails, sensitive sites and buffer areas will be clearly marked prior to clearing, to identify that prescribed selective clearing is to occur as per Map Sheets.
PC-1.09	Contractor will be restricted to established roads and trails, and cleared construction areas in accordance with the Access Management Plan.

PC-1.10	During winter construction, where necessary (i.e. unfrozen wetlands, creeks), equipment will be wide-tracked or equipped with high flotation tires to minimize rutting and limit damage and compaction to surface soils. If wet conditions exist the use of construction matting/temporary bridge is also permitted.
PC-1.11	Equipment, machinery and vehicles will only travel on cleared access roads and trails, and will cross waterways at established temporary and permanent crossings.
PC-1.12	Existing access roads, trails or cut lines will be used to the extent possible. Permission to use existing resource roads (i.e. forestry roads) will be obtained.
PC-1.13	MSD Work Permits will be obtained prior to the commencement of the project.
PC-1.14	No chemical melting agents are to be utilized.
PC-1.15	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
PC-1.18	Routing for access roads and trails should follow natural terrain contours to the extent possible and should be minimized adjacent to and approaching waterbodies.
PC-1.19	Surface water runoff will be directed away from disturbed and erosion prone areas but not directly into waterbodies.
PC-1.20	Vegetation control along access roads and trails will be in accordance with Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-1.23	The Contractor shall check that rock utilized for access road construction does not have acid or alkali generating properties.
PC-1.24	All constructed access points onto Manitoba Infrastructure (MI) roadways (Provincial Roads or Provincial Trunk Highways) will require a permit from MI.
PC-1.25	Heavy equipment will not be allowed access to MI roadways without the appropriate protection and permits.
PC-1.26	Access Roads and Trails that use or cross MI roadways care will be taken to ensure excessive amounts of material are not tracked onto the roadway, with contractor being responsible for cleanup.
PC-1.27	Any temporary constructed access within an MI roadway will need to be removed once the project is completed.
PC-1.28	All works undertaken within the MI right-of-way (ROW) will adhere to the MI traffic control policies.

PC-1.29	Ice Crossings will be constructed and maintained as found in Ice Thickness chart in Appendix. Ice thickness must be checked regularly and thickness in cm and date posted by the Contractor.
PC-1.30	Required travel off existing roads will be minimized and restricted to previously designated and approved routes.
PC-1.31	The contractor is required to install and maintain access road signage indicating road or trail number as per Signage Standards.
PC-1.32	If a prospective access road or trail is located off easement and on private land, a private land agreement must be submitted to MH for approval prior to any access use occurring

Agricultural Areas (EC-1) [If applicable]	
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 rehabilitated as per the Rehabilitation and Invasive Species Management Plan (In Appendix), 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	Vehicle and equipment travel on agricultural lands will follow existing roads, trails and paths to the extent possible.
EC-1.09	Where access to agricultural land is necessary the Transmission Agricultural Biosecurity Standard Operating Procedure (SOP) must be followed.
EC-1.10	When construction activities take place through agricultural lands drainage patterns are not to be altered, any anticipated diversions of surface water will require authorization under The Water Rights Act. This applies to creating new drainage, blocking natural drainage or diverting flows around a site.

Aircraft Use (EI-1) [If applicable]

ID	Mitigation
EI-1.01	Contractors using aircraft will submit flight plans in advance of flying to the Manitoba Hydro Project Engineer or delegate during active construction periods.
EI-1.02	Fuel storage, handling and dispensing at aircraft landing areas will conform to provincial legislation and guidelines.

Blasting and Exploding (PA-1)

ID	Mitigation
PA-1.01	A communication protocol will be developed to notify affected parties of blasting operations and conductor splicing. Affected parties may include Manitoba Sustainable Development, RCMP, municipalities, landowners, and resource users.
PA-1.02	Blasting will be conducted and monitored in accordance with Fisheries and Oceans Canada Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.
PA-1.04	Blasting will not be permitted during timing windows established for sensitive bird breeding, nesting and brood rearing months.
PA-1.05	Explosives will be stored, transported and handled in accordance with federal requirements through the Explosives Act and Transportation of Dangerous Goods Act and provincial regulations stated in The Workplace Safety and Health Act.
PA-1.06	Implode Compression conductor splicing will be minimized to extent possible on weekends and after normal working hours in residential areas.
PA-1.07	Quarry blasting operations and conductor splicing will be scheduled to minimize disturbance to wildlife and area residents, and to ensure the safety of workers.
PA-1.08	The Blasting Contractor will be in possession of valid licenses, permits and certificates required for blasting in Manitoba.
PA-1.09	The Blasting Contractor will submit a Blasting Plan to the Construction Supervisor for review and approval prior to commencement of blasting operations.
PA-1.10	Use of ammonium nitrate and fuel oil will not be permitted in or near waterways. Only DFO approved explosives shall be permitted in or near waterways.
PA-1.11	Warning signals will be used to warn all project personnel and the public of safety hazards associated with blasting.
PA-1.12	Written and/or oral notification will be outlined in the Communication Plan prior to each blasting period.
PA-1.15	The Blasting Contractor shall check that blast rock does not have acid or alkali generating properties.

Borrow Pits and Quarries (PC-2)

ID	Mitigation
PC-2.01	Decommissioning of access to abandoned borrow pits and quarries will be managed in accordance with the Access Management Plan.
PC-2.02	All equipment and structures will be removed from borrow pits prior to abandonment.
PC-2.03	Borrow pits and quarries will be designed, constructed and operated in compliance with provincial legislation and guidelines.
PC-2.04	Borrow pits and quarries will not be located within 150 m of a provincial trunk highway or provincial road unless an effective vegetated berm is provided to shield the area from view.
PC-2.05	Borrow pits and quarries will not be located within established buffer zones and setback distances from identified Environmentally Sensitive Sites without approval from MH Environmental Officer.
PC-2.06	Drainage water from borrow pits and quarries will be diverted through vegetated areas, existing drainage ditch(es) or employ a means of sediment control prior to entering a waterbody.
PC-2.07	Erosion protection and sediment controls will be put in place before borrow pit excavation commences, when required as determined by the MH Environmental Inspector\Officer.
PC-2.08	Fuel storage will not be permitted near stockpiles outlined in PC 5.21.
PC-2.09	Garbage, debris or refuse will not be discarded into borrow pits and quarries.
PC-2.10	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
PC-2.11	Organic material, topsoil and subsoil with-in borrow pits and quarries will be stripped and stockpiled for use in future site rehabilitation.
PC-2.12	Previously developed borrow sites and quarries will be used to the extent possible before any new sites are developed.
PC-2.13	Signs will be posted at borrow pits and quarries to warn all persons of safety hazards.
PC-2.15	Vegetated buffer areas will be left in place when borrow pits are cleared in accordance with provincial guidelines.
PC-2.16	Vegetation control at borrow pits and quarries will be in accordance with the Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-2.17	Vegetation in active Manitoba Hydro permitted borrow pits and quarries

Borrow Pits and Quarries (PC-2)

	will be maintained as per the Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-2.18	Worked out borrow pits and granular quarries will be left with maximum 4:1 (horizontal to vertical) side slopes.
PC-2.24	The Blasting Contractor shall check that blast rock does not have acid or alkali generating properties.
PC-2.26	Vehicles hauling materials to or from the work site that have the potential for dust emissions should be hauled with the load enclosed by an anchored tarp, plastic or other material.

Built-up and Populated Areas (EC-2) [If applicable]

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 by applicable noise bylaws
EC-2.04	All stockpiles shall be maintained as to minimize dust associated with fine soils prone to wind erosion (i.e. Covering with tarp/poly, maintain wetted surface).
EC-2.05	Vehicles hauling materials to or from the work site that have the potential for dust emissions should be hauled with the load enclosed by an anchored tarp, plastic or other material.

Burning (PA-2)

ID	Mitigation
PA-2.01	All occurrences of uncontrolled burning or fire spreading beyond the debris pile will be reported immediately to Manitoba Hydro.
PA-2.02	Any residue or unburned materials remaining post-burn is not to encumber operations or re-vegetating activities.
PA-2.04	Burning of solid wastes including kitchen wastes and treated wood will not be permitted.
PA-2.05	Burning will be monitored to ensure that fires are contained and subsequent fire hazards are not present. Post season all burn piles will be scanned for hot spots using infrared scanning technology.
PA-2.06	Burning will not be carried out within riparian buffer zones or setbacks for water crossings or waterbodies.
PA-2.07	A Burning Permit is required between April 1st and November 15.
PA-2.08	Debris and wood chip piles located near habitation or highways will only be burned when weather conditions are favorable to ensure the safe dispersal of smoke and in accordance with burning permits where applicable.
PA-2.10	Firefighting equipment required by legislation, guidelines, contract specifications and Work Permits will be kept on site and maintained in serviceable condition during burning.
PA-2.11	Slash will be piled in a manner that allows for clean, efficient burning of all material and on mineral soils where applicable.
PA-2.12	Burning of any material is not permitted on Manitoba Infrastructure (MI) roadway ROW's.
PA-2.13	The contractor will take steps (such as choosing location and weather conditions) to minimize the impact that smoke from slash burning may have on landowners, and specifically landowner residences.

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. (See Riparian Buffer Table in CEnvPP) 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 and trails to the extent possible.
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-3.10	Clearing is allowed only within the Reduced Risk Time Period for Wildlife illustrated in Appendix D. If clearing within the Sensitive Time Period for Wildlife, further mitigation and approvals would be required.
PA-3.11	Clearing within environmentally sensitive sites, 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 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-3.14	Danger trees will be flagged/marked for removal using methods that do not damage soils and adjacent vegetation.
PA-3.15	During clearing Environmentally sensitive sites, along the right of way will be clearly identified by signage and/or flagging
PA-3.16	In locations where grubbing and vegetation stripping is not required, 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 a shear "V" or "K-G" type blades, feller-bunchers, mulcher, chipper and other means approved by the MH Environmental Officer.

Clearing (PA-3)

ID	Mitigation
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-3.20	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	If extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies, a stop work order may be issued.
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-3.26	As per Clearing Management Plan, timber that is not salvaged will be piled and burned/chipped/mulched during frozen conditions in accordance with timing windows, or permit conditions.
PA-3.28	If clearing is needed on a Manitoba Infrastructure (MI) roadway ROW, clearance must be obtained from MI in advance.
PA-3.29	When Elm trees are removed the stump must be debarked to the soil line or stump must be ground or removed to flush or just below the soil line.
PA-3.30	All Elm wood must be immediately disposed of onsite by burning/chipping (<5cm) or transported to a designated elm disposal site.
PA-3.31	Storing Elm wood firewood is prohibited under the Dutch Elm Disease Act.
PA-3.32	During mulching or chipping activities, debris must be directed away and not enter watercourses.

Concrete Wash Water and Waste (EI-13)

ID	Mitigation
EI-13.01	Wash water and solid waste will not be discharged onto the ground at the project site.
EI-13.02	All concrete solid waste and wash water will be collected and removed from the project site by the concrete supplier or treated on site in an approved settling pond.
EI-13.03	High Density Polyethylene geomembrane liners and either earth or physical berms may be used for a temporary concrete washout for uncured or partially cured concrete.
EI-13.04	All water from chute washing activities will be contained in leak proof containers or in an approved settling pond.
EI-13.05	All water that has been used for wash out purposes and associated activities will be disposed in an appropriately sized settling pond(s) treated to meet turbidity (Total Suspended Solids [TSS]) and pH requirements prior to discharge. Turbidity will be treated by settlement or filtration; pH will be treated by use of acid, dry ice, carbon dioxide gas or other methods.
EI-13.06	All water that has been used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 1) for municipal wastewater effluents of 25 mg/L TSS prior to discharge into a watercourse.
EI-13.07	All water that has been used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 3) for the protection of aquatic life for pH 6.5-9.0, prior to discharge into a watercourse.
EI-13.08	Cured concrete can be transported in non-hazardous waste containers and disposed of at a licensed facility.
EI-13.09	Any uncured and partly cured concrete will be kept isolated from watercourses/ditches.

Construction Camps (PC-3) [If applicable]

ID	Mitigation
PC-3.01	A food handling permit will be obtained from the local Public Health Inspector prior to the operation of kitchens.
PC-3.02	Animal-proof garbage containers with regular removal of food waste to approved waste management facilities will be used to manage food waste.
PC-3.03	Construction camp sites will be kept tidy at all times. Waste materials including litter will be collected for disposal.
PC-3.04	Construction camps will be located based on criteria that consider soil type, topography, land form type, wildlife habitat and other environmental factors.
PC-3.05	Crown land permits will be obtained for construction camps as required.
PC-3.06	Erosion protection, sediment control and drainage management measures will be put in place prior to construction where applicable.
PC-3.07	Feeding or harassment of any wildlife is prohibited.
PC-3.08	Firebreaks will be constructed around camp locations where there is a risk of fire.
PC-3.09	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
PC-3.10	Liquid and solid sewage wastes held in tanks will be removed in accordance with the Waste and Recycling Management plan by a licensed contractor and taken to licensed or approved disposal areas.
PC-3.11	Problem wildlife will be reported immediately to the nearest Manitoba Sustainable Development office.
PC-3.12	Propane tanks for camp use will be stored in dedicated, vehicle protected and secure areas at a safe distance from kitchen and sleeping quarters in accordance with provincial legislation and national codes.
PC-3.13	Sewage and grey water holding tanks will be sited in accordance with provincial legislation, and federal and provincial guidelines with proper licensing and approvals on hand. Tanks must be situated a minimum of 100 m from the ordinary high water mark of any waterbody.
PC-3.14	Sewage and grey water will be collected in holding tanks and chemical toilets.
PC-3.15	Spill control and clean-up equipment and materials will be provided for construction camps in accordance with the Emergency Preparedness and Response Plan.

Construction Camps (PC-3) [If applicable]

ID	Mitigation
PC-3.16	The MH Environmental Inspector\Officer will inspect rehabilitated construction camps in accordance with the Rehabilitation and Invasive Species Management Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-3.17	Vegetation control at construction camps will be in accordance with the Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-3.18	Waste and recyclables will be sorted, segregated and removed in accordance with the Waste and Recycling Management Plan to a licensed or approved waste management facilities site and/or recycling facility.
PC-3.19	Food, greases and wastes will be stored in sealed, air-tight containers and managed as per PA-3.2.
PC-3.20	If a prospective camp is to be located on private land, a private land agreement must be submitted to MH for approval prior to any setup occurring

Construction Matting (PA-11)

ID	Mitigation
PA-11.01	Verify that mats are clean and free of soil, debris and plant material when they arrive for use on site.
PA-11.02	Mats cannot be constructed of chemically treated wood products.
PA-11.03	In wetlands three mats is the maximum number that can be stacked and used in one location.
PA-11.04	Follow the Biosecurity Management Plan for cleaning and disinfecting matting prior to moving it to a new project location.
PA-11.06	Matting should not impede or redirect natural drainage patterns or water courses.
PA-11.07	Mat removal will take place from the existing mat road, working in a backwards fashion (from work site to initial access point).
PA-11.08	When mat removal is complete all remaining matting debris will be cleaned up and transported to an approved waste disposal facility
PA-11.09	When matting is removed any compaction of soils will have to be rehabilitated

Demobilizing and Cleaning Up (PA-4)

ID	Mitigation
PA-4.01	Temporary buildings, structures, trailers, equipment, utilities, waste materials, etc. will be removed from construction areas and sites when work is completed.
PA-4.02	Construction access roads/trails will be decommissioned and rehabilitated as per the Access Management Plan.
PA-4.03	After demobilizing and clean-up, construction areas and sites will be assessed by the Contractor for rehabilitation. Contractor prescriptions will be developed as per Rehabilitation and Invasive Species Management Plan and submitted for approval to MH Environmental Officer.
PA-4.05	Petroleum product and other temporary hazardous material storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro guidelines.
PA-4.06	Water crossings ,ditches and drains will be left free of obstructions so as not to impede water flow.

Directional Drilling (PA-12)

ID	Mitigation
PA-12.01	A frac-out contingency plan will be prepared that includes measures to stop work, contain the drilling mud and prevent its further migration into the watercourse.
PA-12.02	When drilling takes place under a watercourse, the drill entry and exit points will be outside of the riparian buffer of that watercourse.
PA-12.03	A dugout/settling basin at the drilling exit site will be constructed to contain drilling mud to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, silt fences or other effective sediment and erosion control measures will be installed to prevent drilling mud from entering the watercourse.
PA-12.04	Excess drilling mud, cuttings will be disposed of at an adequately sized disposal site located away from the water to prevent it from entering the watercourse.
PA-12.05	Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
PA-12.06	In the event of a frac-out, implement the frac-out contingency plan and notify all applicable authorities. Prioritize clean-up activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
PA-12.07	Stabilize any spoil materials to prevent them from entering the watercourse.
PA-12.08	Re-vegetate any disturbed native vegetation by seeding with native grass species and cover such areas with mulch to prevent erosion and to assist in seeds germination. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
PA-12.09	Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.
PA-12.10	When obtaining water from fish bearing waterways all pump intakes will be screened according to the "Freshwater Intake End-of-Pipe Fish Screen Guideline" (DFO 1995).
PA-12.11	Water, to mix the drilling mud, shall be brought in from off site and stored in tanks at the entry locations or be withdrawn from local a watercourse.

Draining (PA-5)

ID	Mitigation
PA-5.01	Construction activities shall not block natural drainage patterns.
PA-5.02	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines and relevant provincial and municipal acts, regulations and bylaws.
PA-5.03	Dewatering discharges from construction activities will be directed into vegetated areas, existing drainage ditch(s) or a means of sediment control at such a rate that will have adequate flow dissipation at the outlet to ensure it does not cause erosion at the discharge point or at any point downstream.
PA-5.04	Drainage water from construction areas will be diverted through vegetated areas, existing drainage ditch(s) or a means of sediment control prior to entering a waterbody.
PA-5.05	Erosion protection and sediment control will be provided by the Contractor in accordance with the Erosion Protection and Sediment Control Plan.
PA-5.06	Existing, natural drainage patterns and flows will be identified and maintained to the extent possible.
PA-5.14	Flows to Manitoba Infrastructure (MI) roadway drains and ditches will not be altered by construction (increased flow, de-watering and other flow effects) without department approval in advance.
PA-5.15	All drainage, natural or manmade that may deposit construction generated sediments on the MI roadway right-of-way will managed through the Erosion and Sediment Control Plan.

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 be contained and not 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 MH Environmental Inspector\Officer and mitigation measures are implemented.
PA-6.07	Drilling will not be permitted within established buffer zones and setback distances from waterbodies unless approved in advance by MH Environmental Officer.
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 groundwater, precautions will be taken to prevent the interconnection of these waters.
PA-6.12	The contractor must submit a plan to the MH Environmental Officer describing how surface water, drill flush, and excess waste grout will be controlled and disposed of, including emergency response plans for working in groundwater environmentally sensitive sites for sealing/grouting artesian wells and pumping (if required) excess groundwater

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, marshaling 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	Contractor to conduct investigation for all provincially reportable 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.
EI-2.12	Spill response and clean up equipment will be available for responding to releases for a site location.
EI-2.13	Temporary construction camps will have a designated fire marshal in accordance with the Emergency Preparedness and Response Plan.

Emergency Response (EI-2)

ID	Mitigation
EI-2.14	The Emergency Preparedness and Response Plan will be prepared by the Contractor, approved by the MH Environmental Officer prior to construction and updated annually.
EI-2.15	A hazardous materials incident report form will be completed when reporting a spill.
EI-2.17	Should a forest fire be caused by a project activities, it must be reported to Manitoba Sustainable Development as soon as feasible

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-3.04	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-3.08	The Contractor will be responsible for implementing the Erosion Protection and Sediment Control Plan with procedures put in place prior to commencement of applicable construction activities.
EI-3.09	The Contractor will be responsible for monitoring and if required modifying erosion protection and sediment control installations to ensure continued effectiveness.
EI-3.10	The Contractor will communicate the requirement to follow the Erosion Protection and Sediment Control Plan to all project staff and a copy will be made available at the project site.
EI-3.11	The MH Environmental Inspector\Officer will make inspections of erosion protection and sediment control measures to confirm implementation and continued effectiveness.

Fish Protection (EC-3)

ID	Mitigation
EC-3.01	When a work, undertaking or activity results in the deposit of a deleterious substance or creates the potential for such a deposit, Manitoba Hydro will advise DFO of the situation.
EC-3.02	Disturbances to waterbodies, shorelines, riparian areas, etc. will be stabilized to prevent erosion immediately.
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-3.05	If a beaver dam must be cleared along rights-of-ways and along access roads and trails, a Beaver Dam Clearing Permit is required by Manitoba Sustainable Development (MSD).
EC-3.06	Project personnel will be prohibited from fishing at project locations or along rights-of-way.
EC-3.07	When obtaining water from fish bearing waterways all pump intakes will be screened according to the "Freshwater Intake End-of-Pipe Fish Screen Guideline" (DFO 1995).
EC-3.08	The withdrawal of any water will not result in reduction in the wetted width of a stream, in order to maintain existing fish habitat
EC-3.09	In watercourses where mussel Species of Conservation Concern are known to occur, watercourse crossings may occur by boat or barge, or during winter (i.e., under frozen conditions) to prevent mortality of the mussels.

Grading (PA-7)

ID	Mitigation
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 the Rehabilitation and Invasive Species Management Plan (In Appendix).
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.

Groundwater (EC-4)

ID	Mitigation
EC-4.01	Potable water samples will be collected every two weeks and submitted for analysis according to provincial sampling and analysis protocol.
EC-4.02	Well locations will be marked with flagging tape prior to construction.
EC-4.03	Where there is potential for mixing of surface and groundwater, precautions will be taken to prevent the interconnection of these waters.
EC-4.04	The contractor must submit a plan to the MH Environmental Officer describing how surface water, drill flush, and excess waste grout will be controlled and disposed of, including emergency response plans for working in groundwater environmentally sensitive sites for sealing/grouting artesian wells and pumping (if required) excess groundwater

Grubbing (PA-8)

ID	Mitigation
PA-8.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will be assessed by MH Environmental Officer/Inspector for additional erosion protection and sediment control measures.
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 unless approved by the MH Environmental Officer.
PA-8.06	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.07	Unless required for the work, 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.
PA-8.10	If grubbing is needed on a Manitoba Infrastructure (MI) right-of-way, clearance must be obtained from MI in advance.

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 MH Environmental Officer 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-4.06	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 labeled in accordance with WHMIS requirements. Required documentation 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 by the contractor.
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-4.13	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-4.16	Hazardous waste materials will be segregated and stored by type in approved containers within a secondary containment system.
EI-4.17	Indoor storage of flammable and combustible substances will be in fire resistant and ventilated enclosed storage area or building in accordance with national codes and standards.
EI-4.19	Non-hazardous products will be used in place of hazardous substances to the extent possible.

Hazardous Materials (EI-4)

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 materials 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 legible and prominently displayed.
EI-4.24	The MH Environmental Inspector/Officer will make routine inspections of hazardous substance storage sites to confirm 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.
EI-4.27	Hazardous waste can be stored temporarily for no longer than 30 days before removal to a licensed or approved disposal site.
EI-4.28	Temporary hazardous material storage containers will be located on level ground and within a structure that is covered by roofing preventing precipitation from entering the storage area or the secondary containment system

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. Construction activities will cease in the immediate vicinity until the Project Archaeologist is contacted and provides further instruction.
EC-5.07	The Culture and Heritage Resource Protection Plan will be adhered to during preconstruction and construction activities.
EC-5.08	The MH Environmental Inspector\Officer will inspect borrow pits and other excavations 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 obtained and in the possession of both the Contractor and Manitoba Hydro prior to commencement of applicable work.
MM-02	All project participants will ensure that project activities are carried out in compliance with applicable legislation, guidelines and, 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 notify First Nation and Metis leadership of active construction schedules, prior to project start-up as per project Communication Plan.
MM-05	Manitoba Hydro will contact local municipal authorities prior to project start-up as per project Communication Plan.
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 as per project Communication Plan.
MM-07	Manitoba Hydro will contact Manitoba Sustainable Development 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-11	Project construction update meetings will be held weekly and include discussion 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 project participants.
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 or as authorization are acquired and will discuss any questions or concerns with Manitoba Hydro.
MM-16	In areas of active construction the contractor must provide Manitoba Hydro representatives with full and unrestricted access to the ROW and all project related work areas so that inspections can occur.
MM-17	The Construction Environmental Protection Plan Text and Mapbook will

Management Measures (MM)

	available at active construction project sites.
MM-18	The Contractor's Environment Officer is responsible for the delineation and flagging of all identified project Environmentally Sensitive Sites as per Construction Environmental Protection Plan.
MM-19	The Contractor must submit all Contractor developed Environmental Plans (Appendix) to Manitoba Hydro before work on the project can commence, the plan may be updated as required.
MM-20	Aside from service animals, pets are not permitted on active construction project sites
MM-21	Affected private landowners and Crown land encumbrance holders will be notified in advance of the schedule for construction, operation and maintenance

Marshaling Yards (PC-5) [If applicable]

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 marshaling yards will be developed.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place in accordance with Erosion and Sediment Control Management Plan.
PC-5.04	Fire breaks will be established a minimum of 6 meters around marshaling 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 Management Facilities site.
PC-5.06	Hazardous materials entering and leaving the marshaling yards will be inventoried and accounted for.
PC-5.07	Hazardous materials will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Marshaling yards will be located based on criteria that consider soil type, topography, land form type, wildlife habitat and other environmental factors.
PC-5.09	Marshaling yards will be located in existing clearings or natural openings.
PC-5.10	Marshaling yards will be located, constructed, operated and decommissioned in accordance with contract specifications and in accordance with the Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-5.11	Once marshaling 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 marshaling yards in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within marshaling yards.
PC-5.16	Vegetation control at marshaling yards will be in accordance with Rehabilitation and Invasive Species Management Plan (In Appendix).
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within marshaling yards.

Marshaling Yards (PC-5) [If applicable]

PC-5.18	Hazardous waste materials, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste management facilities by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.
PC-5.20	The MH Environmental Specialist will inspect rehabilitated marshaling and work storage areas in accordance with the Rehabilitation and Invasive Species Management Plan (In Appendix) to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-5.21	The Contractor will assess lands required for marshaling yards, camps or petroleum storage, dispensing areas and hazardous materials storage areas for potential contamination following Canadian Standards Association Environmental Site Assessment (CSA Z768- 01) procedures.

Petroleum Products (EI-5)

ID	Mitigation
EI-5.01	Aboveground tanks will be equipped with overfill protection, spill containment and collision protection as per legislation.
EI-5.02	All aboveground petroleum product tanks with a capacity greater than 5,000 L will be registered with Manitoba Sustainable Development and have a valid operating permit posted onsite.
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., double wall tank, bermed liner) will be used at all locations where stationary 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-5.07	Fuelling operations require the operator to visually observe the process 100% of the time.
EI-5.08	Containment areas (berms/dykes/trays, etc.) will be dewatered after precipitation events and the containment water disposed of as specified in contract specifications.
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.
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 Sustainable Development 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. Water collected in the containment shall be removed regularly so as not to diminish the capacity of the containment.
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 have adequate collision protection.
EI-5.17	Petroleum product storage will be located a minimum of 100 m waterbodies, riparian areas or wetlands.

Petroleum Products (EI-5)

EI-5.18	Petroleum products stored outside will be in waterproof and labeled containers, placed on spill containment pallets.
EI-5.20	Petroleum products will display required signage, placards and labeling, and will be transported, handled and stored in accordance with provincial legislation.
EI-5.21	Petroleum products will only be stored and handled within designated areas at construction camps and marshaling 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. Accumulated precipitation collected in the containment shall be removed regularly so as not to diminish the capacity of the containment.
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-5.26	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 Sustainable Development.
EI-5.28	Ignition sources (i.e. smoking) must be at least 7.5m from petroleum product storage areas.
EI-5.29	Transfer of petroleum products between storage areas and work sites will 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.
EI-5.33	All slip tanks are to be a ULC approved double walled design.
EI-5.34	Drip containers will be placed beneath all Slip tank nozzles when not in use and regularly monitored, any accumulation removed and appropriately disposed.
EI-5.35	Nozzles used for dispensing petroleum products will have their lever catches removed so that the operator will be present while product is being dispensed.
EI-5.36	When a spill or release is identified, it shall be flagged off to prevent disruption of that area until clean up takes place.
EI-5.37	The Contractor is responsible for reporting a spill to Manitoba Hydro of any quantity within 2 hours, with a written report due in 24 hours.
EI-5.38	In the case of an externally reportable spill (see Appendix J for quantities), the Contractor is required to contact an MH Environmental Inspector\Officer immediately.

Potable Water (EI-11)

ID	Mitigation
EI-11.01	Drinking water holding tanks will be designed for potable water containment.
EI-11.02	Drinking water holding tanks will be cleaned and disinfected before use.
EI-11.03	Potable water used to fill the drinking water holding tanks will be in compliance with federal legislation.
EI-11.05	Leaking fixtures will be repaired in a timely manner.

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 Invasive Species Management Plan (In Appendix).
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 Management 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 is subject to Manitoba Sustainable Development approval
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 to minimize rutting and erosion.
PC-8.06	Construction equipment will be wide-tracked or equipped with high flotation tires if there is a potential for rutting and/or compaction to surface soils.
PC-8.07	Disturbed areas along transmission line rights-of-way will be rehabilitated in accordance with site Rehabilitation and Invasive Species Management Plan (In Appendix).
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 dry ground conditions alternate products such as construction mats may be used as per the Contract Specifications.
PC-8.10	Contractors are to develop wet weather protocols that provide for mitigation measures to be implemented when wet soil conditions exist (see wet soil section)

Soil Contamination (EI-7)

ID	Mitigation
EI-7.01	A closure report will be prepared for completed soil remediation projects in accordance with provincial and Manitoba Hydro guidelines.
EI-7.02	A Remediation Plan will be prepared by the Contractor and submitted to MH Environmental Officer 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-7.07	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-7.10	The Contractor will assess lands required for marshaling yards, camps or petroleum storage, dispensing areas and hazardous materials storage areas for potential contamination following Canadian Standards Association Environmental Site Assessment (CSA Z768- 01) procedures.
EI-7.11	The Contractor will carry out a CSA Phase I Environmental Site Assessment (CSA Z768-01) at abandoned construction camps, marshaling yards, petroleum product storage, dispensing areas and hazardous materials storage areas if contamination is suspected by MH Environmental Officer. If required Phase II Environmental Site Assessment (CSA Z769-00) will be conducted by contractor.
EI-7.12	The MH Environmental Inspector\Officer will inspect contaminated site assessment and remediation work regularly to confirm that environmental protection measures are implemented and effective.
EI-7.13	When a spill or release is identified, it shall be flagged off to prevent disruption of that area until clean up takes place.

Water Crossings (PC-9)

ID	Mitigation
PC-9.01	Access road crossings will be at right angles to waterbodies to the extent possible.
PC-9.02	Riparian Buffers shall be a minimum of 30m and increase in size based on slope of land entering waterway. (See Riparian Buffer Table in CEnvPP) Within these buffers shrub and herbaceous understory vegetation will be maintained along with trees that do not violate Manitoba Hydro Vegetation Clearance Requirements.
PC-9.03	Construction vehicles and equipment will not be permitted in designated machine-free zones except at designated crossings.
PC-9.04	Construction of water crossings will follow the Manitoba Stream Crossing Guidelines For The Protection of Fish and Fish Habitat.
PC-9.05	Ice bridges are constructed of clean water, ice and snow and snow fills are constructed of clean snow. Materials such as gravel, rock and loose woody material are cannot be used. Crossings cannot impede water flow at any time of the year.
PC-9.06	The withdrawal of any water will not exceed 10% of the instantaneous flow, in order to maintain existing fish habitat. Water flow is maintained under the ice, where this naturally occurs, and If water is being pumped from a lake or river to build up the ice bridge, the intakes are sized and adequately screened to prevent debris blockage and fish mortality.
PC-9.07	Where logs are required for use in stabilizing shoreline approaches, they are clean and securely bound together, and they are removed either before or immediately following the spring freshet.
PC-9.08	When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to facilitate water flowand also to prevent blocking fish passage, channel erosion and flooding. Compacted snow and all crossing materials will be removed prior to the spring freshet.
PC-9.09	No logs or woody debris are to be left within the water body or on the banks or shoreline where they can wash back into the water body.
PC-9.10	Grading of the stream banks for the approaches should not occur. Establish a single entry and exit. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage.
PC-9.11	Fording should occur only after authorization from an MH Environmental Inspector/Officer. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-

Water Crossings (PC-9)

	time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. One-time fording will be timed to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows and will not be permitted to occur in areas that are known fish spawning sites.
PC-9.12	Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark.
PC-9.13	In watercourses where mussel Species of Conservation Concern are known to occur, watercourse crossings may occur by boat or barge, or during winter (i.e., under frozen conditions) to prevent mortality of the mussels.
PC-9.14	The contractor is responsible for having signage at each end of any ice bridges indicating the ice thickness and the date it was last measured.

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 be put 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 where 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 minimize erosion.

Transmission Towers and Conductors (PC-10)

ID	Mitigation
PC-10.01	Areas where soil was disturbed will be stabilized and re-vegetated with low growth vegetation as soon as practical.
PC-10.02	During tower foundation excavation the A horizon soils (black or dark in color/organic layer) shall be stripped and stored separately from other soils. When back filling, these soils are to be replaced as the surface soils to encourage site re-vegetation.
PC-10.03	Excavations required for tower installations will be restricted to the minimum required footprint.
PC-10.04	The Construction Supervisor will issue a stop work order if extreme wet weather conditions result in soil damage from rutting and erosion is resulting in sedimentation of adjacent waterbodies.

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	Vehicle, equipment and machinery maintenance repair procedures will include containing waste fluids and will use preventative measures such as spill trays and tarps where required.
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, washing 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 labeling 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 Waste and Recycling Management Plan will be developed, prior to construction and updated annually.
EI-10.02	Animal-proof garbage containers with regular removal of food waste to approved waste management facility grounds will be used to manage food waste.
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-10.06	Waste materials will be collected and transported to a licensed or approved waste management facility in accordance with the 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.

Wastewater (EI-12)

ID	Mitigation
EI-12.01	All sewage haulers will be registered with the Manitoba Sustainable Development. A copy of the hauler registration will be provided to MH Environmental Inspector/Officer upon request.
EI-12.02	Wastewater holding tanks will be installed as per provincial legislation and regulation and a minimum of 100 m from the ordinary high water mark of any waterbody.:
EI-12.03	Wastewater will be removed from holding tanks when they are no more than 90% full by a registered sewage hauler and disposed of at a licensed wastewater treatment facility.
EI-12.04	Sewage and grey water will be collected in holding tanks and chemical toilets.

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	Wetland areas will be prescribed riparian buffers in site specific mitigation tables in which understory low-growth vegetation will be maintained where possible. 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.
EC-8.04	Disturbance of wetlands will only be carried out under frozen ground conditions. If frozen ground conditions don't exist alternate mitigation measures such as construction matting may be used to minimize surface damage, rutting and erosion if approved by MH Environmental Inspector/Officer.

Wildlife Protection (EC-9)

ID	Mitigation
EC-9.01	Any injured or killed wildlife encountered on the transmission line ROWs and associated access roads/trails will be reported to Manitoba Sustainable Development.
EC-9.02	Bird Diverters or aerial markers may be installed in high bird traffic areas.
EC-9.03	Boundaries of important wildlife habitats (i.e. Mineral licks and Stick nests) will be identified in mapsheets and flagged prior to clearing.
EC-9.04	Clearing and construction activities are allowed only within the Reduced Risk Time Period for Wildlife illustrated in Appendix. If clearing within the Sensitive Time Period for Wildlife, further mitigation and approvals would be required.
EC-9.06	Animal-proof garbage containers with regular removal of food waste to approved waste management facility will be used to manage food waste.
EC-9.07	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
EC-9.09	If animal traps or bait sites are encountered within the project footprint they are to be removed for the safety of workers and construction equipment. If found on private land, the landowner will be contacted and have the materials returned to them. If found on Crown land the materials will be released to Manitoba Sustainable Development.
EC-9.10	If a beaver dam must be cleared along rights-of-way and access roads and trails a permit is required from Manitoba Sustainable Development. Fisheries and Oceans Canada needs to be contacted if the beaver dam is in potentially fish bearing waters.
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 Sustainable Development.
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. Artificial structures for nesting may be provided if unoccupied nests must be removed.
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.

Wildlife Protection (EC-9)

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.
EC-9.22	New by-pass trails and access routes will be sited where possible to utilize existing natural terrain features and existing vegetation to minimize line of site.
EC-9.23	New occurrences of any listed rare, threatened or endangered species will be documented and provided to Manitoba Sustainable Development.
EC-9.24	In watercourses where mussel Species of Conservation Concern are known to occur, watercourse crossings may occur by boat or barge, or during winter (i.e., under frozen conditions) to prevent mortality of the mussels.

6 Map sheets and mitigation tables

The map sheets and specific mitigation tables are presented in Part 2 in a “map book” format. The map sheets provide an overview of Environmentally Sensitive Sites (ESS), while the associated mitigation tables provide specific mitigation requirements related to these ESS.

APPENDICES

APPENDIX A: CONTACT LIST

Contact	Name	Phone Number(s)
Construction Contractor		
Contractor Project Manager		
Contractor Field Lead		
Contractor Safety Officer		
Contractor Environmental Representative		
Manitoba Hydro		
Project Engineer		
Construction Supervisor		
Senior Environmental Assessment Officer		
Environmental Officer		
FSO: Field Safety Officer		
Hazardous Materials Officer		
Area Spill Response Coordinator		
Emergency Response Services		
Project Archaeologist (Primary Contact)		

Contact	Name	Phone Number(s)
Manitoba Sustainable Development Contacts		
24 hr Environmental Emergency Response reporting line		1-204-944-4888 or Toll free at 1-855-944-4888
District Office		
First Nations and Metis Contacts		

**APPENDIX B: ENVIRONMENTAL PRE-
WORK ORIENTATION RECORD –
ATTACH SIGNED COPY**



Transmission Line and Civil Construction Contractor Environmental Pre-job Orientation

The following information, rules and regulations will be reviewed at this pre-job meeting with the contractor and Manitoba Hydro Project Engineer and/or Construction Supervisor, and Senior Environmental Assessment Officer and/or Environmental Inspector.

The contractor shall perform all work in accordance with the contract and adhere to the requirements set out by the *Environment Act* licence, *Crown Lands Act* Work Permit, and the MH Environmental Protection Plan, as they apply. The contractor shall comply with the environmental statutes that pertain to the project, as set out by Federal and Provincial regulatory agencies. In addition, the contractor shall comply with the project's Environmental Protection Plan and licensing/permitting requirements if applicable.

Upon completion of the orientation, all individuals present at the orientation, both Manitoba Hydro and the contractor representatives, will sign this document.

Division: TRANSMISSION CONSTRUCTION AND LINE MAINTENANCE
Department: TRANSMISSION LINE AND CIVIL CONSTRUCTION
Project Name: _____
RFQ or PO No.: _____
Work Location: _____
Environment _____
Act License #: _____
MB Con. Work _____
Permit #: _____
Date _____
(YYYY/MM/DD): _____

In accordance with the Workplace Safety and Health Act, the **Prime Contractor** designated for this project is: _____.

Manitoba Hydro Supervisor: _____ email ____@hydro.mb.ca
Address: 3rd Floor, 820 Taylor Avenue, Winnipeg, Manitoba R3C 0J1
Phone Numbers Office: (204) 360 - _____, Emergency: (204) ____ - _____ Cell: (204) ____ - _____

Manitoba Hydro Senior Environmental Assessment Officer: Fiona Scurrah email: FScurrah@hydro.mb.ca
Address: 3rd Floor, 820 Taylor Avenue, Winnipeg, Manitoba R3C 0J1 Phone: (204) 360-3048 Cell: (204) 918-3277

For any emergency situation (Fire, Accident, etc.) call _____
and relay the message including the location and the nature of the emergency. Radio System Control: 040, 050, or
call: 474-3327, 474-3007.

Contractor Information:

Contractor: _____ email: _____

Address: _____

Phone Numbers: Office (____) ____-____ Emergency (____) ____-____ Cell (____) ____-____

Contractor Representative: _____ email: _____

Address: _____

Phone Numbers: Office (____) ____-____ Emergency (____) ____-____ Cell (____) ____-____

Contractor Environmental Representative: _____ email: _____

Address: _____

Phone Numbers: Office (____) ____-____ Emergency (____) ____-____ Cell (____) ____-____

Please list proposed Sub-Contractors:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Construction Site/Designated Work Areas:

The area of work as described in the contract is to be considered a construction site and anyone in this area must adhere to all rules and regulations as outlined in this document.

Manitoba Hydro Job Construction Supervisor must be notified of any changes to the contractor supervisory, safety and environmental components.

LOCAL OR SITE CONDITIONS:

The following specific local or site conditions will apply (e.g.: Environmentally Sensitive Sites/Species, Restricted Areas, etc.)

Key Environmental Issues and Requirements Review:

(the environmental issues and requirements of the work as specified in the Environmental Protection Plan (EnvPP) and other environmental requirements (e.g., MB Conservation work permits; contract clauses)).

Pre-Job Orientation Check List

Check off all items that apply to the contracted work being done as they are discussed. If the item does not apply, mark "not applicable (N/A)". If for any reason an item marked N/A becomes applicable during the course of the contracted work, the contractor must inform the Project Engineer and/or Construction Supervisor.

ITEM#	ITEM	Yes	No	N/A
Key Environmental Issues and Requirements Review				
1.	Is there an EnvPP, environmental job plan or other environmental plan requirement for the work? ▪ others: _____ _____ _____			

ITEM#	ITEM	Yes	No	N/A
2.	Have the environmental requirements been reviewed with the contractor and the contractor's staff? (Use the checklist below to guide review and discussion)			
2.1	Soil Compaction. _____ _____ _____			
2.2	Vegetation disturbance or removal. _____ _____ _____			
2.3	Generation and disposal of hazardous substances _____ _____ _____			
2.4	Generation and disposal of waste _____ _____ _____			
2.5	Contaminated soil management _____ _____ _____			
2.6	Spill of hazardous substances _____ _____ _____			

ITEM#	ITEM	Yes	No	N/A
2.7	Fuel and flammable storage _____ _____ _____			
2.8	Dust generation / other air emissions _____ _____ _____			
2.9	Water quality – erosion and siltation _____ _____ _____			
2.10	Fish and Aquatic – Habitat alteration, disturbance or loss _____ _____ _____			
2.11	Wildlife and Bird – Habitat Alteration, Disturbance or Loss _____ _____ _____			
2.12	Disturbance to Heritage Resources / Archaeological Sites _____ _____ _____			
2.13	Visual Impacts / Noise Concerns _____ _____ _____			

ITEM#	ITEM	Yes	No	N/A
2.14	Property Considerations _____ _____ _____			
2.15	Disruption of Recreation Use _____ _____ _____			
2.16	Public Safety Concerns _____ _____ _____			
3.0	<p>Permits and Approvals Information: Ensure the necessary environmental permits and approvals relating to the work have been obtained prior to starting work.</p> <ul style="list-style-type: none"> ▪ Environmental Act Licence File # and/or MB Conservation Work Permit Number should be located on the front page of this document. ▪ DFO Notification ▪ Other: (need lines for writing) ▪ Have the permits, licenses and approvals obtained and / or checked? _____ _____ _____			
Emergency Response Plan / Oil and Chemical Spill Response Plan				
4.0	<p>Has the Emergency Response Plan been reviewed and discussed?</p> _____ _____ _____			
5.0	<p>Has the spill response plan been reviewed and discussed?</p> _____ _____ _____			

ITEM#	ITEM	Yes	No	N/A
6.0	Are there spill kits available on location and on each piece of equipment (As applicable)? _____ _____ _____			
7.0	Were environmental incident reporting procedures discussed? _____ _____ _____			
8.0	Has environmental competency been demonstrated? <ul style="list-style-type: none"> ▪ Demonstrated applicable environment training for appropriate crew members/supervisors ▪ Site Environmental Monitor to be on-site in lieu of training _____ _____ _____			

Date of contractor pre-job on-site employee safety and environment orientation meeting: _____
YYYY MM DD

REMARKS:

Any specific environmental concerns that are not mentioned here will be discussed at pre-job (TAILBOARD) meetings prior to the work being performed. (This would include such items as any Species at Risk species located on site, noxious weeds, migratory birds, etc)

The above items have been discussed and understood. Any questions relating to these items may be discussed further during the course of the contract.

OFFICER OR DESIGNATE (SIGN)

MANITOBA HYDRO SENIOR ENVIRONMENTAL ASSESSMENT

YYYY MM DD

CONTRACTOR'S REPRESENTATIVE (SIGN)

YYYY MM DD

All PARTIES involved in **THIS** Pre-Job Orientation will indicate they have participated and understand all items discussed (and if not are responsible for ensuring they understand compliance measures prior to going on the job site), by signing the document below:

Signature (print/sign)	Date: YY MM DD	Signature	Date: YY MM DD



Contractor Environmental Orientation Procedures

NOTE:

This sheet is not intended for the contractors. Tear off this sheet, follow the steps and recycle when all steps are complete.

1. Environmental Orientation Meeting is to be held with Contractor Supervisory staff prior to starting field work.
2. Ask all present to sign the attendance sheet. Retain attendance sheet and store appropriately.
3. Read each topic of the form out loud. Discuss each topic and answer question as necessary.
4. Fill in blanks as required.
5. Mark the appropriate boxes as either Yes, No, or N/A.
6. Pay particular attention to who shall be designated as Prime Contractor.
7. Sign the form. Have the form signed by the Contractor or delegate.
8. Distribution of Contractor Safety Orientation: Original plus 6 copies.
Signed Original: to be kept in safety folder, on site with all other required documents, permits, etc.
Copies to:
 - Post on site,
 - Project File,
 - Contractor,
 - Contract Supervisor,
 - Environmental Representative (Contractor)
 - Senior Environmental Assessment Officer (Fiona Scurrah)

APPENDIX C: ENVIRONMENTAL LICENCES, APPROVALS AND PERMITS

List of Potential Approvals required for Construction		
Approval required (Applicable Legislation / Regulation)	Type of Approval needed	Responsibility
Environment Act Licence (Class 3)	Licence	LEA
Crown Lands Act (Work Permit)	Permit	TLCC
Crown Lands Act (General Permit)	Permit	Property Dept.
Permit to cut timber on Crown Lands (Forest Act)	Permit	TLCC
Wildfires Act (Work Permit)	Permit	TLCC
Permit to burn wood (Wildfires Act) – outside of timing windows only	Permit	TLCC
Wildlife Management Area Permit (Wildlife Act)	Licence	LEA
Annual Harvest Plan (Environment Act Licence)	Forestry Branch Director Approval	TLCC
Storage and Handling of Gasoline and Associated Products Regulation, Generator Registration and Carrier Licencing Regulation (Dangerous Goods Handling and Transportation Act)	Permit	Contractor
Highways Protection Act	Permit	TLCC
The Heritage Resources Act (when required)	Permit	LEA
Rail line crossing at temporary access road intersections	Permit	Property Dept.
A permit from Manitoba Infrastructure is required for any construction above or below ground level that falls within 250 ft. of a Provincial Trunk Highway right-of-way edge or within 150 ft. of a Provincial Road right-of-way edge.	Permit	Property Dept.
Note: Permits, Licences and Approvals are the sole responsibility of those groups indicated in this table LEA – Manitoba Hydro Licensing and Environmental Assessment		

Department

TLCC – Transmission Line and Civil Construction Department

APPENDIX D: TIMING WINDOWS

Project Wildlife Reduced Risk Timing Windows

Species	Sensitivity	January	Febuary	March	April	May	June	July	August	September	October	November	December
Mammals	Den Sites												
Moose	Calving Sites												
Amphibians/Reptiles	Breeding and Emergence												
Bats	Hibernaculum												
Birds	Breeding and Nesting												
Fish	Spawning												

Reduced Risk to Wildlife

Sensitive Time Period for Wildlife

(Where construction activities occur during this period, mitigations measures will be prescribed on a site by site basis)

APPENDIX E: BUFFERS AND SETBACKS (ANY MANITOBA HYDRO TRANSMISSION PROJECT)

Table E 1 Setbacks and Buffers

Feature	Activity	Non Frozen Ground Setback Distance (No work allowed ¹)	Frozen Ground Setback Distance (No work allowed)	Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Rationale
Vegetation					
Plant Species at Risk	Tower Foundation Siting	100m	100m		Protect from disturbance
	Clearing And Construction	30m		30m	Protect from disturbance
	Maintenance	30m		30m	Protect from disturbance
	Access Trail	30m	30m		Protect from disturbance
Anthropogenic					
Heritage and Cultural	All	Varies	Varies	Varies	Protect from Disturbance
Amphibians					
Northern Leopard Frog * (known breeding pond, watering site)	Tower Foundation Siting	30m	30m		Protect from disturbance
	Clearing And Construction	30m		30m	Protect from disturbance
	Maintenance	30m			Protect from disturbance
	Access Trail	30m	30m		Protect from disturbance

Reptiles					
Garter Snake Hibernaculum	Tower Foundation Siting	200m	200m		Protect from disturbance
Landforms					
Wetlands	Clearing And Construction			30m	Protect from disturbance
	Maintenance			30m	Protect from disturbance
	Access Trail			30m	Protect from disturbance
	Hazardous Material Handling/Storage	100m	100m		Protect from disturbance
	Soil Stockpiles	30m		30m	Protect from disturbance
Mammals					
Mineral Licks	All	120m		120m	Protect from disturbance
Occupied Mammal Dens	All	50m	50m		Protect from disturbance

All measurements are from edge of feature

Footnote 1: No Work Allowed without Manitoba Hydro Licensing and Environmental Assessment Department review and approval, which may be subject to regulatory approval.

APPENDIX F: BIOSECURITY MANAGEMENT PLAN

**APPENDIX G: GUIDANCE FOR
CONTAMINATED SOILS OR
GROUNDWATER IDENTIFICATION AND
DISPOSAL**

Guidance document for the Identification and Management of soils, surface waters or groundwater suspected to be impacted by Hazardous Materials

Objective

This guidance document has been developed to provide general information and direction on recognized methods considered acceptable by the regulatory agencies when contamination or suspected environmental impacts have been encountered. The information within this document is intended to assist frontline workers when conducting preliminary environmental site assessments or investigations of sites or lands where the quality of groundwater, surface water, sediments and/or soil have potentially or is suspected of being impacted or affected by hazardous materials as result of past or present usage of the site or land.

The guidance document has been developed as an informational reference tool only and is intended for frontline supervisors, inspection personnel, contractors and/or subcontractor working under contract or on Manitoba Hydro owned property that do not have formal training in Environmental Site Assessments or site investigations.

Identifying Impacted Surface Water/Groundwater or Soils,

Surface water, groundwater and Soils have known observable characteristics when they come into contact with some hazardous materials. For example water (surface or ground) that has been impacted by Petroleum Hydrocarbons - PHC's (such as Petroleum, Fuels – such as diesel or gasoline, and/or lubricants) may have display an obvious hydrocarbon odour and/or multi colored 'sheen' that is typically visible to the naked eye and appear on the surface of the liquid (like a film or residue) and are typical indications that water has been impacted by PHC's.

Similarly soils that have been impacted with PHC's typically turn "grey-black" in color or become "stained" depending on weathering and they also typically have a strong PHC odour and appears unnatural compared to other native soils is exposed for comparison.

Water or soils exhibiting these types of observable characteristics should be documented (daily reports, photos, gps coordinates, ect.) and the MH Environmental Inspector/Officer is to be notified as soon as practical. All work shall be halted in areas where suspected impacted/contamination exists until the MH Environmental Inspector/Officer has been notified and no materials (soils, water, debris) suspected to be impacted by a hazardous material shall be permitted from the suspected area until the MH Environmental Inspector/Officer has been notified and has granted approval to proceed.

Manitoba Hydro construction activities have the potential to impact work locations through equipment malfunction and or spills. Hazardous materials such as Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAHs), and Glycols can result from incidents on a site. Any excavated soils from Manitoba Hydro owned or leased properties must either be sampled prior to disposal at a licensed facility or directly transported to a licensed facility. MH Property and Corporate Environment department or Transmission Line and Civil Construction Soils Remediation Section can be contacted to assist in determining a suitable or Licenced disposal facility.



Oil staining on earth and mulch mixture

Worker Health and Safety

Workers who suspect they have encountered materials impacted by a hazardous material will need to assess what protective measures are required to further assess the site or manage the suspected impacts. This may include wearing appropriate personal protective equipment (PPE) if they are required to handle or manage the impacted materials/contamination (i.e. soils and surface groundwater).

Appropriate PPE will be dependent on the hazardous material or contaminant and contaminant concentration (if known), and may include but not be limited to: nitrile or rubber gloves, half or full mask respirator, safety boots, protective clothing, and protective eyewear.

A qualified environmental professional or consultant will be engaged to confirm, and subsequently characterize the hazardous materials and assess the impact to the environment as required.

Communications / Notifications

If impacted/contaminated materials are encountered during construction, all personnel working within the suspected area are to immediately stop work, leave the suspect impacted/contaminated area, secure the site and notify the on-site environmental officer or MH Environmental Inspector.

Additional notifications of the potential hazards would then be made to all applicable personnel as required.

Impacted Soil and Water Handling and Disposal

In the event that impacts or contamination as a result of hazardous materials is encountered or is suspected during construction the following measures should be taken to further protect worker health and safety:

- If possible limit personnel working within or around the impacted area until a further assessment is conducted..
- Secure the site or area suspected to be impacted or contaminated and keep unauthorized personnel out of the area (barriers may be required) until further assessment is conducted.
- Notify project supervisor and the MH Environmental Inspector/Officer to assist/initiate further site assessment process
- If impacted materials have been mobilized as part of the work or prior to identifying the impacts, then the material should be segregated and/or contained if at all possible, and all efforts to prevent further impacts or contamination shall be undertaken.

(Example – excavated soils suspected to be impacted shall be placed on an impermeable surface and covered to prevent precipitation run-off until the soils can be assessed for contaminants.)

- Soil and/or groundwater samples if required will be sent to a Canadian Association for Laboratory Accreditation (CALA) accredited Laboratory for waste characterization. (note MH Selkirk Laboratory has this capacity)
- Soils will be characterized for waste disposal and appropriate truck placarding. (as per the corporate policy and as per the MH Hazardous Materials Management Handbook)
- Contaminated soils and/or groundwater will be transported in accordance with the Manitoba *Dangerous Goods Handling and Transportation Act* and associated Regulations. As per MH - Hazardous Materials Management Handbook
- <http://hrcs.hydro.mb.ca/wshcs/ws/we/Pages/HazardousMaterials.aspx>
- Decontamination of equipment, as required.

Please note that prior to the disposal of soils confirmed to be impacted above the applicable regulatory criteria, current provincial legislation requires a 'Remedial Action Plan' to be submitted to the provincial regulator for their approval. In addition at the conclusion of the remedial activities, a closure report is also required to be submitted. The Remedial Action Plan(s) and Closure Report(s) will be in accordance with the Manitoba Contaminated Sites Remediation Act, and its associated regulations and guidance documents.

Use Guidelines and upon approval of the Waste Disposal Ground. However, if soil samples are above these Guidelines, soils must be disposed of at a Licensed Soil Treatment Facility. Options include the following facilities:

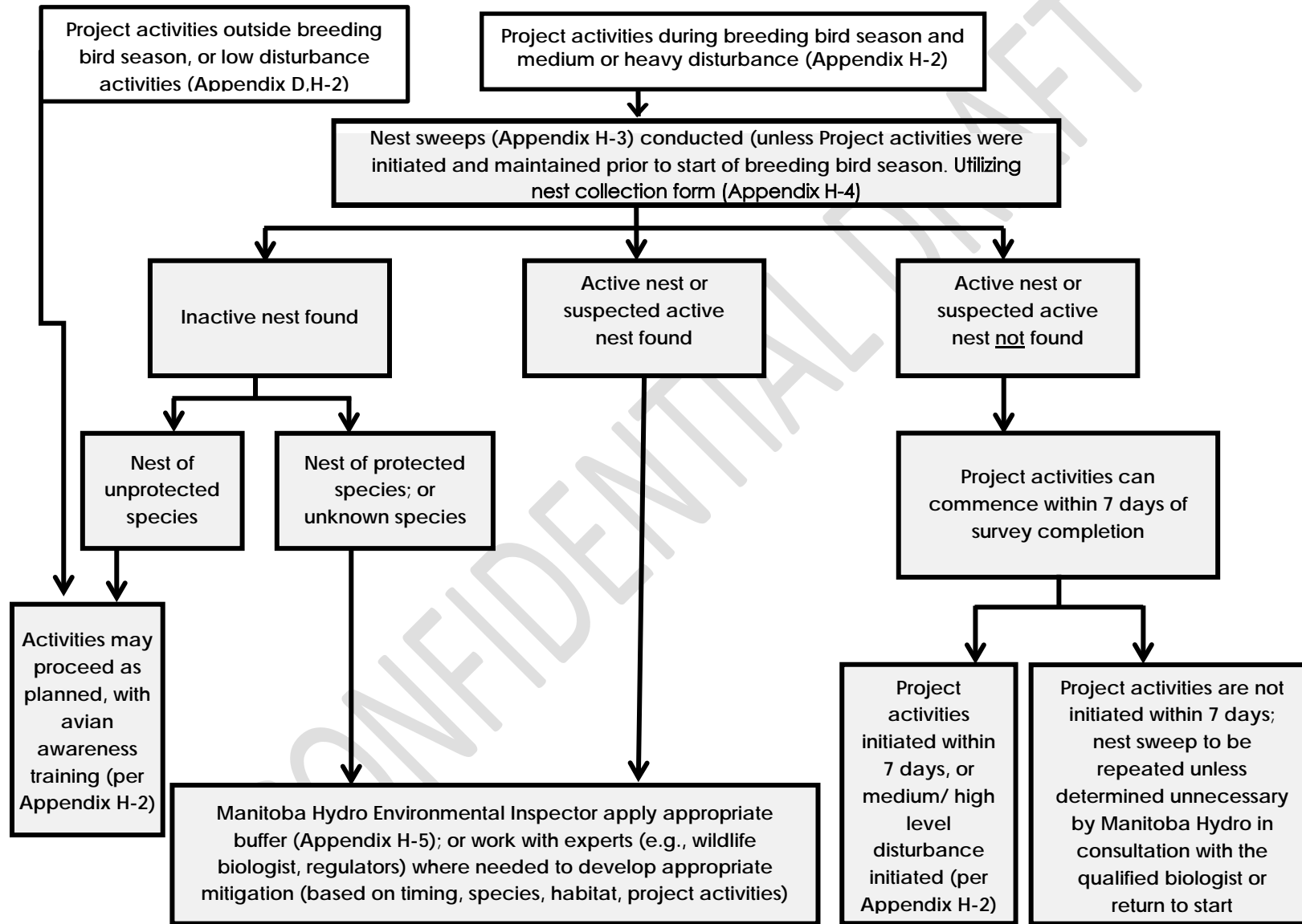
Contaminated Soil Disposal		
MidCanada Soil Treatment Facility	1373 Bernat Road, Grand Pointe, MB	(204) 987-9600
Miller Environmental Corporation	Hwy 14 & 75, Saint Jean Baptiste, MB	(204) 925-9600
City of Brandon Landfill	3300 Victoria Avenue East, Brandon, MB	(204) 729-2281

Virden Municipal & Industrial Waste Facility	236 Wellington Street South, Virden, MB	(204) 204-512-0816 or (204) 748-6033
Contaminated Water Disposal		
A1 Environmental Services	1447 Dugald Road, Winnipeg, MB	(204) 515-2473

All contaminated soils and water will be disposed of in accordance with the *Manitoba Dangerous Goods Handling and Transportation Act*, and the *Manitoba Contaminated Sites Remediation Act*, and associated regulations and guidelines.

The above mentioned legislation and associated regulations mandate that a qualified Environmental Professional is to conduct formal Environmental Site Assessments or Investigation and are required to follow an established guideline. As such if a site has been determined to be 'suspect' for contamination as a result of observations made using this guidance document then a qualified Environmental Professional is required when conducting a formal site assessment that includes a Remedial Action Plan (RAP).

APPENDIX H: AVIAN PROTECTION DOCUMENTS

Appendix H-1: General Mitigation Approach for Reducing Risk to Nesting Birds

Appendix H-2: Determining Disturbance Level for Nesting Birds during Breeding Bird Season

Activity	Disturbance Level	Training	General Mitigation
<ul style="list-style-type: none"> Foot Traffic; Vehicle/Equipment (<1 ton or UTV/ATV) : one round trip (two passes); Herbicide application (spot) with flex track vehicle 	Low	General Avian Awareness: <ul style="list-style-type: none"> basic bird biology nesting characteristics Regulations 	Operator and applicators remain vigilant for any possible bird nesting activity, provide 5 m berth
<ul style="list-style-type: none"> Vehicle/Equipment (<1 ton or UTV/ATV) : three or more passes Sustained activity for <4 hours; Limbing; Testing/treating of poles; Danger tree removal; Removal of soil and/or brush 	Moderate	General Avian Awareness: <ul style="list-style-type: none"> basic bird biology nesting characteristics Regulations; and 	Nest sweeps protocol as per Appendix H-3 Appendix H-1: General Mitigation Approach
<ul style="list-style-type: none"> Vehicle/Equipment (>1 ton) Sustained activity for >4 hours Brushing; Hand felling; Mowing; Mulching; Mechanical tree felling; Road Construction; 	High	Consult Manitoba Hydro Environmental Officer	

Appendix H-3: Manitoba Hydro Nest Sweep Protocol

Birds may nest on the ground, others nest in shrubs and/or trees, while other nest along the edges of water bodies. In general, lands under agricultural cultivation or other regular disturbance will not support nesting birds and will not require a nest sweep. Nest sweeps are to be conducted on lands having potential to support bird nesting. Birds may nest on the ground, others nest in shrubs and/or trees, while other nest along the edges of water bodies. Qualified biologist from Manitoba Hydro, a contractor, or consultant are to complete nest sweeps no more than 7 days before disturbance activities. To complete a nest sweep:

- Nest sweeps are to be done on foot and can be completed from sunrise until 1800 hours, however birds are most active from sunrise until 1000 hours. Nest sweeps will be discontinued during high winds or precipitation as birds are less active.
- In advance of any medium or heavy disturbance activity (Appendix H-2) walk the entire area, ensuring full coverage. Recommended spacing between parallel transects is approximately 10 m, but surveyors may reduce this spacing as necessary.
- Walk slowly, observing from ground-level, to the tops of the trees.
- If a nest is suspected to be nearby based on bird behavior (e.g. acting strange/aggressive or agitated vocalizations), try to locate the nest location.
- If the nest is found, mark the location with flagging tape (tie the flagging tape to a tree or other landmark several meters away). Record the following information on the flagging tape: location of the nest including UTM coordinates, type of bird (songbird, waterfowl, or raptor) and the date.
- If the bird species and the corresponding necessary buffer cannot be readily determined, establish a temporary minimum 30 meter “no clearing” buffer around the nest site.
- Once the bird species has been determined, an appropriately sized “no clearing” buffer must be setup around the nest location. Consult regulatory guidelines (MH Avian Protection Plan – Appendix H-5 – select the most appropriate buffer) or contact a Manitoba Hydro environment officer or environmental.
- Use flagging tape or appropriate signage to mark the required buffer around the nest location.
- Enter each nest observation into the nesting bird collection form (Appendix H-4) and include what actions were taken or what actions are recommended**.
- Continue nest sweep until the entire area scheduled for clearing has been adequately searched.
- For sites with a high variability of habitat types or a high abundance of birds detected, searchers are encouraged to engage a qualified biologist* to assist with the nest search. If no nests were found, proceed with clearing.

* Personnel from Manitoba Hydro or consulting company with expertise in wildlife biology.

** If a nest was found, there are two options:

- Defer disturbance within the required buffer. Activity can recommence after breeding bird nesting season, as described by regulators (Timing Windows - Appendix D).

- Check the nest again seven (7) days from the day it was found to see if eggs have hatched and birds have left. If there is no sign of activity, complete another foot patrol of the buffer area. If no nests are found, proceed with activity. If after (7) days, the nest is still occupied, continue checking at seven (7) day intervals (Appendix H-5).

CONFIDENTIAL DRAFT

Appendix H-4 Nesting Bird Collection Form (start sheet(s) for each new Location)

Name(s): _____ Date: _____

Location and general description of ROW area to be surveyed (i.e. S1 between towers 1234-1280 near Holland, MB):

Habitat (photo # and description):	Temperature:	Wind	Noise	Precipitation	Cloud Cover	Weather (description):
		Calm	None	None	0 - 25%	
		Light Air	Low	Haze/Fog	25 - 50%	
		Light Breeze	Moderate	Drizzle	50 - 75%	
		Gentle Breeze	High	Rain	75 - 100%	

GPS Tracks should be recorded by each member on the survey and submitted with the daily reports.

[illegible]

Manitoba Hydro Breeding Bird Buffer Guidelines

Key	
	Manitoba Conservation Data Centre specified
	100-200 m Buffer
	50 m Buffer
	25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Alder Flycatcher	<i>Empidonax alnorum</i>				25	12-14	12-15	F
American Bittern	<i>Botaurus lentiginosus</i>			Emergent-dominated wetlands	25	24-28	1-4	F
American Coot	<i>Fulica americana</i>			Emergent-dominated wetlands	25	21-25	1-4	F
American Crow	<i>Corvus brachyrhynchos</i>				25	15-18	28-35	F
American Dipper	<i>Cinclus mexicanus</i>				25	13-18	12-14	F
American Goldfinch	<i>Spinus tristis</i>				25	10-12	12-14	F
Green-winged Teal	<i>Anas c. carolinensis</i>				25	20-24	1-4	F
American Kestrel	<i>Falco sparverius</i>			Forest clearings, grassland, or pasture	25	29-30	30	F
American Pipit	<i>Anthus rubescens</i>				25	13-15	12-14	F
American Redstart	<i>Setophaga ruticilla</i>				25	12-14	12-14	F
American Robin	<i>Turdus migratorius</i>				25	12-14	12-14	F
American Three-toed Woodpecker	<i>Picoides dorsalis</i>				25	12-14	18-23	P
American Tree Sparrow	<i>Spizella arborea</i>				25	12-14	12-14	F
American white pelican	<i>Pelecanus erythrorhynchos</i>			isolated islands	1000	30		F
Arctic Warbler	<i>Phylloscopus borealis</i>				25	12-14	12-14	F
Bald Eagle	<i>Haliaeetus leucocephalus</i>			forests near water	1000	28-35	35-49	P
Baltimore Oriole	<i>Icterus galbula</i>			Forest, deciduous	25	12-14	12-14	F
Band-tailed pigeon	<i>Patagioenas fasciata</i>	Special Concern -1	Special Concern	Riparian Forest;Pasture/Old Field;Cultivated Field;Deciduous/Broadleaf Forest;Conifer Forest	25			
Bank Swallow	<i>Riparia riparia</i>		Threatened (Apr 2013)	Rivers	300	14-16	17-18	F
Baird's Sparrow	<i>Ammodramus bairdii</i>	Special Concern -1	Special Concern	Native grass prairie	500	11-12	8-11	F
Barn Swallow	<i>Hirundo rustica</i>		Threatened (May 2011)	Forest clearings, grassland, or pasture	150	13-17	17-18	F
Barred Owl	<i>Strix varia</i>			mature forest	1000	28-33	28-35	P
Barrow's Goldeneye	<i>Bucephala islandica</i>			Open water wetlands or riparian	25	28-44	1-4	F

Manitoba Hydro Breeding Bird Buffer Guidelines

Key	
	Manitoba Conservation Data Centre specified
	100-200 m Buffer
	50 m Buffer
	25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Bay-breasted Warbler	<i>Setophaga castanea</i>			Forest, coniferous	50	12-14	12-14	F
Belted Kingfisher	<i>Megaceryle alcyon</i>			Open water wetlands or riparian	25	22-24	27-29	F
Black Swift	<i>Cypseloides niger</i>			Riparian areas and forest; streams	25	24-27	12-14	F
Black Tern	<i>Chlidonias niger</i>			Open water wetlands or riparian	25	17-22	12-14	F
Black-and-white Warbler	<i>Mniotilta varia</i>				50	10-12	12-14	F
Black-backed Woodpecker	<i>Picoides arcticus</i>				25	12-14	21	P
Black-billed Magpie	<i>Pica hudsonia</i>				25	16-21	12-14	P
Black-capped Chickadee	<i>Poecile atricapillus</i>				25	11-13	12-14	P
Blackpoll Warbler	<i>Setophaga striata</i>					11-13	12-14	F
Black-throated Green Warbler	<i>Setophaga virens</i>			Forest, mixed wood; riparian	50	11-13	12-14	F
Blue Jay	<i>Cyanocitta cristata</i>				25	16-18	17-21	P
Blue-headed Vireo	<i>Vireo solitarius</i>				25	12-14	12-14	F
Blue-winged Teal	<i>Anas discors</i>			Open water wetlands or riparian	25	22-27	1-4	F
Bobolink	<i>Dolichonyx oryzivorus</i>		Threatened	forage crops	400	12	11-12	F
Bohemian Waxwing	<i>Bombycilla garrulus</i>				25	13-15	17-21	P
Boreal Chickadee	<i>Poecile hudsonicus</i>				25	14-18	12-14	P
Boreal Owl	<i>Aegolius funereus</i>			Forest, coniferous	1000	28-30	28-35	P
Brewers Blackbird	<i>Euphagus cyanocephalus</i>				25	11-17	12-16	F
Brewer's Sparrow	<i>Spizella breweri</i>				25	12-14	12-16	F
Broad-winged Hawk	<i>Buteo platypterus</i>			Forest, deciduous	200	28-31	28-35	F
Brown Creeper	<i>Certhia americana</i>			Forest, coniferous	25	14-18	12-16	P
Brown-headed Cowbird	<i>Molothrus ater</i>				25	10-13	12-16	F
Buff-brested Sandpiper	<i>Calidris subruficollis</i>	Special Concern-1	Special Concern (2012)	Stop-over sites, short grass	200	23-25	18-20	F
Bufflehead	<i>Bucephala albeola</i>				25	28-33	12-14	F
Burrowing owl	<i>Athene cunicularia</i>	Endangered-1	Endangered	pasture	500	28	21	F
Calliope Hummingbird	<i>Stellula calliope</i>				25	15-16	12-14	F
Canada Goose	<i>Branta canadensis</i>				25	25-30	1-2	F
Canada Warbler	<i>Cardellina canadensis</i>	1-Threatened (Feb 2010)	Threatened (Mar 2008)	Forest, mixed wood	450	11-13	12-14	F

Manitoba Hydro Breeding Bird Buffer Guidelines

Key

Manitoba Conservation Data Centre specified

100-200 m Buffer

50 m Buffer

25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Canvasback	<i>Aythya valisineria</i>			Open water wetlands or riparian	25	23-29	1-4	F
Cape May Warbler	<i>Setophaga tigrina</i>			Forest, coniferous	50	11-13	12-14	F
Cassin's Finch	<i>Carpodacus cassinii</i>				25	12-14	12-14	F
Cedar Waxwing	<i>Bombycilla cedrorum</i>				25	12-16	12-14	F
Chestnut-collared longspur	<i>Calcarius ornatus</i>	1-Threatened	Threatened	mixed grass prairie	650	11		F
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>				25	11-14	12-14	F
Chimney swift	<i>Chaetura pelagica</i>	1-Threatened	Threatened	anthropogenic	300			F
Chipping Sparrow	<i>Spizella passerina</i>				25	11-14	12-14	F
Clay-colored Sparrow	<i>Spizella pallida</i>				25	10-12	12-14	F
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>			Open water wetlands or riparian	25	14-16	12-14	F
Common Goldeneye	<i>Bucephala clangula</i>			Open water wetlands or riparian	25	28-33	1-2	F
Common Grackle	<i>Quiscalus quiscula</i>				25	12-14	12-14	F
Common Loon	<i>Gavia immer</i>				50	26-31	1-2	F
Common Merganser	<i>Mergus merganser</i>				25	28-35	1-2	F
Common Nighthawk	<i>Chordeiles minor</i>	1-Threatened (Feb 2010)	Threatened (Apr 2007)	Forest clearings, grassland, or pasture	300	19-20	17-18	F
Common Raven	<i>Corvus corax</i>				25	18-21	12-14	P
Common Redpoll	<i>Acanthis flammea</i>				25	10-11	9-14	P
Common Yellowthroat	<i>Geothlypis trichas</i>				25	11-14	12-14	F
Connecticut Warbler	<i>Oporornis agilis</i>			Forest, deciduous	50	11-14	12-14	F
Dark-eyed Junco	<i>Junco hyemalis</i>				25	11-14	12-14	P
Double-crested cormorant	<i>Phalacrocorax auritus</i>			aquatic	750			F
Downey Woodpecker	<i>Picoides pubescens</i>				25	11-14	12-14	P
Dusky Flycatcher	<i>Empidonax oberholseri</i>			Forest, coniferous	25	12-16	12-14	F
Dusky Grouse	<i>Dendragapus obscurus</i>			Shrubland or young forest	25	25-26	1-4	P
Eastern Kingbird	<i>Tyrannus tyrannus</i>			Open water wetlands or riparian	25	16-18	12-14	F
Eastern screech owl	<i>Megascops asio</i>			tree cover	500	26-30		P
Eastern whip-poor-will	<i>Antrostomus vociferus</i>	1-Threatened	Threatened	open woodland	300	19-21		F
Eastern wood-pewee	<i>Contopus virens</i>		Special Concern	clearings, forest edges	300	12-13		F
European Starling	<i>Sturnus vulgaris</i>				0	N/A	N/A	P
Evening Grosbeak	<i>Coccothraustes vespertinus</i>			Forest, mixed wood	25	12-16	12-14	P
Ferruginous hawk	<i>Buteo regalis</i>	1-Threatened	Threatened	open country	1000	32-33		P
Flammulated owl	<i>Psiloscops flammeolus</i>	1- Special Concern	Special Concern		50			
Fox Sparrow	<i>Passerella iliaca</i>				25	12-14	12-14	P

Manitoba Hydro Breeding Bird Buffer Guidelines

Key	
	Manitoba Conservation Data Centre specified
	100-200 m Buffer
	50 m Buffer
	25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Golden Eagle	<i>Aquila chrysaetos</i>			Cliffs	1000	41-45	45-81	F
Golden-crowned Kinglet	<i>Regulus satrapa</i>				25	14-15	12-14	P
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>				25	11-14	12-14	F
Golden-winged warbler	<i>Vermivora chrysoptera</i>	1-Threatened	Threatened	open woodland	450	10-11		F
Grasshopper sparrow	<i>Ammodramus savannarum</i>			open grassland, prairie	400	11-13		F
Gray Jay	<i>Perisoreus canadensis</i>				25	16-18	22-24	P
Great Blue Heron	<i>Ardea herodias</i>			Forest, mixed wood	750	25-30	49-81	P
Great Gray Owl	<i>Strix nebulosa</i>			Forest, mixed wood	1000	28-30	28-35	P
Great Horned Owl	<i>Bubo virginianus</i>			Forest, mixed wood	100	28-35	28-35	P
Greater Scaup	<i>Aythya marila</i>			Open water wetlands or riparian	25	24-28	1-4	F
Greater Yellowlegs	<i>Tringa melanoleuca</i>			Open water wetlands or riparian	25	20-24	1-4	F
Grebes				Colonial nesting sites	200			F
Green-winged Teal	<i>Anas crecca</i>				25	20-24	1-4	F
Gulls/Terns				Colonial nesting sites	500			F
Hairy Woodpecker	<i>Picoides villosus</i>				25	11-15	28-30	P
Hammond's Flycatcher	<i>Empidonax hammondii</i>				25	12-16	12-14	F
Harlequin Duck	<i>Histrionicus histrionicus</i>			Open water wetlands or riparian	100	27-30	1-2	F
Hermit Thrush	<i>Catharus guttatus</i>				25	12-14	12-14	F
Herons spp.				Nesting Colony	500			F
Hoary Redpoll	<i>Acanthis hornemanni</i>				25	9-12	12-14	P
Hooded Merganser	<i>Lophodytes cucullatus</i>				25	32-33	1-4	F
Horned Grebe	<i>Podiceps auritus</i>		Special Concern (Apr 2009)	Open water wetlands or riparian	400	22-25	1-4	F
Horned Lark	<i>Eremophila alpestris</i>			Alpine, subalpine	25	11-12	12-14	F
House Finch	<i>Carpodacus mexicanus</i>				25	12-14	12-14	F
House Sparrow	<i>Passer domesticus</i>				0	N/A	N/A	P
House Wren	<i>Troglodytes aedon</i>				25	12-16	12-14	F
Killdeer	<i>Charadrius vociferus</i>			Forest clearings, grassland, or pasture	25	22-28	1-2	F
Le Conte's Sparrow	<i>Ammodramus leconteii</i>			Emergent-dominated wetlands	25	12-14	12-14	F
Least Flycatcher	<i>Empidonax minimus</i>				25	12-17	12-14	F
Least Bittern	<i>Ixobrychus exilis</i>	Threatened-1	Threatened		200			F
Lesser Scaup	<i>Aythya affinis</i>			Open water wetlands or riparian	25	21-28	1-2	F
Lesser Yellowlegs	<i>Tringa flavipes</i>				25	22-23	1-2	F
Lincoln's Sparrow	<i>Melospiza lincolnii</i>				25	12-14	12-14	F
Loggerhead shrike prairie subspecies	<i>Lanius ludovicianus excubitorides</i>	1-Threatened	Threatened	open woodland	500	16		F
Long-eared Owl	<i>Asio otus</i>				200	26-28	28-35	P
MacGillivray's Warbler	<i>Geothlypis tolmiei</i>				25	11-12	12-14	F
Magnolia Warbler	<i>Setophaga magnolia</i>				25	11-14	12-14	F
Mallard	<i>Anas platyrhynchos</i>				25	26-30	1-2	F
Marsh Wren	<i>Cistothorus palustris</i>				25	12-16	12-14	F

Manitoba Hydro Breeding Bird Buffer Guidelines

Key

Manitoba Conservation Data Centre specified

100-200 m Buffer

50 m Buffer

25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Merlin	<i>Falco columbarius</i>				25	28-32	29	F
Mountain Bluebird	<i>Sialia currucoides</i>				25	12-14	12-14	F
Mountain Chickadee	<i>Poecile gambeli</i>				25	11-12	12-14	P
Mountain White-crowned Sparrow	<i>Zonotrichia l. oriantha</i>				25	11-14	12-14	F
Mourning Warbler	<i>Geothlypis philadelphia</i>			Forest, mixed wood	25	12-14	12-14	F
Nashville Warbler	<i>Oreothlypis ruficapilla</i>				25	11-12	12-14	F
Nelson's Sparrow	<i>Ammodramus nelsoni</i>			Open water wetlands or riparian	50	11-12	12-14	F
Northern Flicker	<i>Colaptes auratus</i>				25	11-16	24-27	F
Northern Goshawk	<i>Accipiter gentilis</i>				200	36-41	12-14	P
Northern Harrier	<i>Circus cyaneus</i>			Forest clearings, grassland, or pasture	100	28-36	12-14	F
Northern Hawk Owl	<i>Surnia ulula</i>			coniferous or mix forest near open areas	1000	25-30	25-30	P
Northern Pintail	<i>Anas acuta</i>			Open water wetlands or riparian	25	22-25	1-2	F
Northern Pygmy-owl	<i>Glaucidium gnoma</i>			Forest, coniferous; forest, mixedwood	200	29-30	28-35	P
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>			Open water wetlands or riparian	25	11-14	18-21	F
Northern Saw-whet Owl	<i>Aegolius acadicus</i>				100	26-28	28-35	P
Northern Shoveler	<i>Anas clypeata</i>				25	21-27	1-2	F
Northern Shrike	<i>Lanius excubitor</i>				25	15-16	20-21	F
Northern Waterthrush	<i>Parkesia noveboracensis</i>				25	11-14	12-14	F
Olive-sided Flycatcher	<i>Contopus cooperi</i>	1-Threatened (Feb 2010)	Threatened (Nov 2007)	Forest, coniferous	300	14-17	12-14	F
Osprey	<i>Pandion haliaetus</i>				200	35-40	36-42	P
Ovenbird	<i>Seiurus aurocapilla</i>				25	11-14	12-14	F
Pacific Wren	<i>Troglodytes pacificus</i>					12-16	12-14	F
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>			Forest, coniferous	25	14-16	12-14	F
Peregrine Falcon	<i>Falco peregrinus</i>	1-Threatened (May 2003)	Special Concern (Apr 2007)		1000	28-32	35-42	P
Philadelphia Vireo	<i>Vireo philadelphicus</i>			Shrubland or young forest	25	11-14	12-14	F
Pied-billed Grebe	<i>Podilymbus podiceps</i>			Open water wetlands or riparian	25	23-27	1-2	F
Pileated Woodpecker	<i>Dryocopus pileatus</i>			Forest, deciduous	25	15-18	24-28	P
Pine Grosbeak	<i>Pinicola enucleator</i>			Forest, deciduous	25	10-12	12-14	P
Pine Siskin	<i>Spinus pinus</i>			Forest, coniferous	25	11-14	12-14	P
Piping plover	<i>Charadrius melodus melodus</i>	E-1	Endangered		400	25-27	Jan-00	F
Purple Finch	<i>Carpodacus purpureus</i>			Forest, coniferous	25	11-14	12-14	F

Manitoba Hydro Breeding Bird Buffer Guidelines

Key

Manitoba Conservation Data Centre specified

100-200 m Buffer

50 m Buffer

25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Red Crossbill	<i>Loxia curvirostra</i>			Forest, coniferous	25	12-18	12-14	P
Red-breasted Merganser	<i>Mergus serrator</i>			Open water wetlands or riparian	25	29-35	1-2	F
Red-breasted Nuthatch	<i>Sitta canadensis</i>			Forest, coniferous	25	11-14	12-14	P
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>			Forest, deciduous	25	12-14	24-27	F
Red-eyed Vireo	<i>Vireo olivaceus</i>			Forest, deciduous	25	11-14	12-14	F
Redhead	<i>Aythya americana</i>			Open water wetlands or riparian	25	23-29	1-2	F
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	1-Threatened	Threatened	open woodland	200	12-14		F
Red Knot	<i>Calidris canutus rufa</i>	E-1	Endangered	Stop-over sites	200	20-22	1-Feb	F
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>			Forest, deciduous	25	12-14	24-27	F
Red-necked Grebe	<i>Podiceps grisegena</i>			Open water wetlands or riparian	25	20-23	1-2	F
Red-necked Phalarope	<i>Phalaropus lobatus</i>		Special Concern	Open water wetlands or riparian	25	17-21	1-2	F
Red-tailed Hawk	<i>Buteo jamaicensis</i>				100	30-35	42-46	F
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			Open water wetlands or riparian	25	11-14	12-14	F
Ring-necked Duck	<i>Aythya collaris</i>			Open water wetlands or riparian	25	23-29	1-2	F
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			Forest, deciduous	25	12-14	12-14	F
Ross's Gull	<i>Rhodostethia rosea</i>	Threatened-1	Threatened		1000	19-22	19-22	F
Rough-legged Hawk	<i>Buteo lagopus</i>			Alpine, subalpine, grassland, pasture	200	30-35	42-46	F
Ruby-crowned Kinglet	<i>Regulus calendula</i>				25	12-14	12-14	F
Ruby-throated Hummingbird	<i>Archilochus colubris</i>				25	11-16	12-14	F
Ruffed Grouse	<i>Bonasa umbellus</i>			Forest, mixed wood	25	21-28	1-4	P
Rufous Hummingbird	<i>Selasphorus rufus</i>			Forest, coniferous; Riparian areas and forest	25	12-14	12-14	F
Rusty Blackbird	<i>Euphagus carolinus</i>	1-Special Concern (Mar 2009)	Special Concern (Apr 2006)	Open water wetlands or riparian	300	12-18	12-14	F
Sandhill Crane	<i>Grus canadensis</i>				100	28-32	1-4	F
Savannah Sparrow	<i>Passerculus sandwichensis</i>				25	11-14	12-14	F
Say's Phoebe	<i>Sayornis saya</i>				25	12-14	12-14	F
Sharp-shinned Hawk					100	34-35	21-28	F
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>			Forest clearings, grassland, or pasture (25m for a nest and 1000m for a lek)	25	21-28	1-4	P
Short-eared Owl	<i>Asio flammeus</i>	1-Special Concern (Jul 2012)	Special Concern (Mar 2008)	Alpine, subalpine, grassland, pasture	500	25-29	28-35	F
Snow Bunting	<i>Plectrophenax nivalis</i>				25	10-16	12-14	P
Snowy Owl	<i>Bubo scandiacus</i>			Forest clearings, grassland, or pasture	N/A	N/A	N/A	F

Manitoba Hydro Breeding Bird Buffer Guidelines

Key	
	Manitoba Conservation Data Centre specified
	100-200 m Buffer
	50 m Buffer
	25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Solitary Sandpiper	<i>Tringa solitaria</i>				25	23-24	17-20	F
Song Sparrow	<i>Melospiza melodia</i>				25	12-14	12-14	F
Sora	<i>Porzana carolina</i>				25	18-20	1-4	F
Spotted Sandpiper	<i>Actitis macularius</i>				25	20-24	1-4	F
Sprague's Pipit	<i>Anthus spragueii</i>	1-Threatened	Threatened	open grassland	650	12-14	12-14	F
Spruce Grouse	<i>Falcipennis canadensis</i>				25	21-24	1-4	P
Steller's Jay	<i>Cyanocitta stelleri</i>				25	16-18	16	P
Surf Scoter	<i>Melanitta perspicillata</i>			Open water wetlands or riparian	25	25-30	1-4	F
Swainson's Hawk	<i>Buteo swainsoni</i>				200	28-32	21-28	F
Swainson's Thrush	<i>Catharus ustulatus</i>			Forest, mixed wood	25	12-14	12-14	F
Swamp Sparrow	<i>Melospiza georgiana</i>				25	12-15	12-14	F
Tennessee Warbler	<i>Oreothlypis peregrina</i>				25	11-14	12-14	F
Townsend's Solitaire	<i>Myadestes townsendi</i>			Alpine, subalpine	25	12-14	12-14	F
Townsend's Warbler	<i>Setophaga townsendi</i>				25	12-14	12-14	F
Tree Swallow	<i>Tachycineta bicolor</i>			Open water wetlands or riparian	25	12-16	12-14	F
Trumpeter Swan	<i>Cygnus buccinator</i>				1000	32-37	1-4	F
Tundra Swan	<i>Cygnus columbianus</i>			Open water wetlands or riparian	100	31-40	1-4	F
Turkey Vulture	<i>Cathartes aura</i>				100	38-41	60-84	F
Upland Sandpiper	<i>Bartramia longicauda</i>			Forest clearings, grassland, or pasture	50	21-27	30-31	F
Varied Thrush	<i>Ixoreus naevius</i>				25	12-14	12-14	F
Vaux's Swift	<i>Chaetura vauxi</i>			Forest, coniferous; Forest, deciduous	25	18-20	12-14	F
Vesper Sparrow	<i>Pooecetes gramineus</i>			Forest clearings, grassland, or pasture	25	11-14	12-14	F
Violet-green Swallow	<i>Tachycineta thalassina</i>			Meadows; open woodlands; wooded canyons	25	12-14	12-14	F
Warbling Vireo	<i>Vireo gilvus</i>				25	12-14	12-14	F
Western Bluebird	<i>Sialia mexicana</i>				25	12-14	12-14	F
Western Grebe	<i>Aechmophorus occidentalis</i>			Open water wetlands or riparian	50	23-24	1-4	F
Western Kingbird	<i>Tyrannus verticalis</i>				25	18-20	12-14	F
Western Meadowlark	<i>Sturnella neglecta</i>				25	12-16	12-14	F
Western Palm Warbler	<i>Setophaga palmarum</i>				25	12-14	12-14	F
Western Tanager	<i>Piranga ludoviciana</i>				25	12-14	12-14	F
Western Wood-Pewee	<i>Contopus sordidulus</i>			Forest, coniferous;	25	12-14	12-14	F
White-breasted Nuthatch	<i>Sitta carolinensis</i>				25	12-14	12-14	P
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>				25	11-14	12-14	F
White-throated Sparrow	<i>Zonotrichia albicollis</i>				25	11-14	12-14	F
White-winged Crossbill	<i>Loxia leucoptera</i>				25	12-14	12-14	P
Whooping Crane	<i>Grus americana</i>	Endangered-1	Endangered	Staging Area	750			F
Willow Ptarmigan	<i>Lagopus lagopus</i>				25	21-22	1-4	P

Manitoba Hydro Breeding Bird Buffer Guidelines

Key	
	Manitoba Conservation Data Centre specified
	100-200 m Buffer
	50 m Buffer
	25 m Buffer

Species	Scientific Name	SARA (schedule & status)	COSEWIC (status & date assessed)	Habitat	Minimum Suggested Buffer (Meters)	Incubation Time (days)	Estimated Time to Leaving Nest or Fledging after hatching (Days)	Jurisdiction for Birds (F=Federal migratory, P=Provincial year-round resident), Nests = Provincial legislation for Herons, Eagles and others
Wilson's Phalarope	<i>Phalaropus tricolor</i>			Open water wetlands or riparian	25	18-21	1-4	F
Wilson's Snipe	<i>Gallinago delicata</i>			Emergent-dominated wetlands; riparian areas and forest	25	18-21	1-4	F
Wilson's Warbler	<i>Cardellina pusilla</i>			Shrubland or young forest	25	11-14	12-14	F
Winter Wren	<i>Troglodytes hiemalis</i>				25	12-16	12-14	F
Yellow Rail	<i>Coturnicops noveboracensis</i>	1-Special Concern (Jun 2003)	Special Concern (Nov 2009)	Emergent-dominated wetlands	350	16-18	1-4	F
Yellow Warbler	<i>Setophaga petechia</i>			Forest, deciduous; young/disturbed; riparian; willow	25	11-14	12-14	F
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>				25	12-16	12-14	F
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>				25	11-14	25-29	F
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>			Open water wetlands or riparian	25	11-14	12-14	F

APPENDIX I: REHABILITATION AND INVASIVE SPECIES MANAGEMENT PLAN

Agricultural Biosecurity Standard Operating Procedures

Transmission Business Unit

1. PURPOSE OF THE PROCEDURE

This Standard Operating Procedure (SOP) provides guidance and direction to individuals who may be required to enter agricultural land and the levels of cleaning necessary to reduce the likelihood of soil and manure transport of invasive organisms (diseases, pests, and invasive species).

2. SCOPE

This SOP describes the risk, techniques, record, and document controls for activities related to transmission construction and maintenance and its associated infrastructure, on agricultural land in Manitoba.

3. APPLICABILITY

This SOP applies to the following:

- Land zoned as agricultural (e.g. pasture, cropland, livestock areas).
- All employees of Manitoba Hydro as well as external individuals such as contractors or consultants who conduct work on behalf of the Transmission Business Unit.
- Additional measures may be prescribed in a project's Environment Act Licence or in the project's Environmental Protection Plan. These measures will be project specific and will not apply to all departments within the Business Unit.
- Additional measures may be implemented for agricultural areas where there is documented evidence of invasive organisms (diseases, pests, and invasive species).

This SOP **does not** apply to the following:

- Government road allowances.
- Gravel or paved driveways or roadways.

4. GENERAL INFORMATION

Agricultural biosecurity is the protection of crops and livestock systems against the threats to production from invasive organisms (diseases, pests, and invasive species). Human activity is one of the factors in the spread of invasive organisms, and the responsibility for agricultural biosecurity rests with all stakeholders.

Agricultural land is land zoned for agricultural use by the provincial government, a municipality, planning commission or planning district.

5. GENERAL CONSIDERATIONS

1. If existing farm level biosecurity measures exist, Transmission staff and contractors will strive to meet the requirements of the agricultural operation when access is required.
2. Activities will try to avoid access through areas that may contain manure.
3. Regular maintenance activities (including patrols) on agricultural lands will typically be scheduled after crops have been harvested and conducted primarily after freeze up.
4. Staff from other Business Units carrying out work for Transmission will be required to follow these procedures during the course of their work.

Agricultural Biosecurity Standard Operating Procedures Transmission Business Unit

6. RESPONSIBILITY

All Transmission staff and contractors who carry out work on agricultural land will:

- Refer to and comply with the requirements of the SOP and the Agricultural Biosecurity Policy.
- If requested, be able to provide a copy of this SOP to the landowner or producer leasing the land.
- Be able to inform a landowner or producer leasing the land about the SOP, if asked.

It is expected that all individuals who require access onto agricultural land and are conducting activities for the Transmission Business Unit, including contractors, will be trained on the Agricultural Biosecurity Policy and this SOP.

Internal Training

A computer based training (CBT) course will be made available for training purposes. All individuals required to undergo training will complete the CBT and will have fulfilled the training requirement.

External Training

The Agricultural Biosecurity Policy and the SOP will be incorporated into the safety and environmental orientation prior to the start of work. Training records will be stored with the individual projects files. Contractors will be required to view the three biosecurity videos available from Corporate Environment as a part of their training.

7. ASSESSMENT OF RISK

The Transmission Business Unit elected to use a risk matrix to identify the potential biosecurity risk. The matrix identified the perceived risk to agricultural land from maintenance and construction activities by taking the frequency a hazard may occur and multiplying it by the consequence or severity of the hazard to determine the level of acceptable risk. The following two levels of risk were identified from the matrix; low risk and higher risk.

Low Risk

During the winter season when the ground is frozen and there is snow cover, it is not anticipated that activities conducted during this time will effectively transfer invasive organisms (diseases, pests, and invasive species) to other agricultural lands and therefore the risk can be considered low. When the ground is dry and undisturbed the risk of transferring these pathogens is minimal, however, avoiding bare ground reduce the risk. Visible inspections will be expected to occur and are described in the biosecurity procedures. The risk can be managed and further minimized by avoiding wet areas and cleaning equipment effectively when leaving the field.

Higher Risk

The higher risk will be located in areas where the ground conditions are very wet and the accumulation of heavy soils such as clay may occur on footwear and in the tracks of vehicles or heavy equipment. It also applies to livestock settings or areas where manure has been spread. There are a number of ways this condition can be mitigated such as avoiding the excessively wet areas, additional cleaning procedures, or rescheduling the work until ground conditions are more favourable.

Although the last method is preferred, it is not always possible because the activity may be dependent upon a

Related Policy: P853 Agricultural Biosecurity

Revision # 3 Date: September 2016

Review Date: June 2017



Agricultural Biosecurity Standard Operating Procedures

Transmission Business Unit

specific timeline, seasonal changes, or an emergency situation where it is essential to return infrastructure to normal operating conditions.

Additional measures may be implemented when there is documented evidence of invasive organisms (diseases, pests, and invasive species) that are of concern to Manitoba Agriculture, Food and Rural Development.

For the majority of activities conducted within the Transmission Business Unit, the level of risk is anticipated to be low risk. With continual educational awareness and effective implementation of biosecurity procedures, the goal is to further minimize the risk to agricultural lands.

8. PRESCRIBED ACTIONS

Emergency

In emergency situations the Manitoba Hydro Act will prevail in order to return services to normal operating conditions. All efforts will be made to assess the risks to agricultural land and personal safety to determine the most appropriate measures to be taken.

Low Risk

Low Risk Activities are those that are typically completed in frozen conditions, or on dry ground with little soil disturbance.

1. Ensure all equipment and clothing is clean prior to entering onto agricultural land.
2. When leaving the field, check clothing, footwear, and equipment for seeds, soil, or manure and if required, brush off prior to leaving the field. The use of a brush will remove most surface soil, plant material, and foreign matter from clothing and equipment.
3. Fill out the Vehicle and Equipment Cleaning Record and submit with the Biosecurity Checklist.

Higher Risk

This type of risk will involve activities on wet or heavy soils, such as clay, with the potential for large soil accumulations on equipment and footwear. It also applies to livestock settings or in cases where manure is confirmed to have been spread on fields.

1. If possible, schedule activities to occur when ground conditions are more favourable.
2. If activities cannot be rescheduled, ensure that proper care and attention is paid to cleaning equipment and footwear prior to leaving the site.
3. Equipment may require fine cleaning to remove remaining soil. This includes pressure washing to rinse off remaining soil or manure. Initial cleaning (i.e. mechanical brushing) should be done at the field approach, and full pressure washing can be completed off site if the equipment is taken directly to a commercial wash facility. In cases where there is a risk of spreading soil (such as vehicle tires), pressure washing must occur before leaving the site. Disinfecting of the equipment through the use of a disinfectant such as Virkon should be applied to all surfaces that have been in contact with soil.

Agricultural Biosecurity Standard Operating Procedures

Transmission Business Unit

4. Use safety footwear that can be easily cleaned. Use a brush to remove visible soil or manure and disinfect or change footwear when leaving the field.
 - Disinfectants such as 1% Virkon may be carried in a household spray bottle or a larger container if required.
 - Any waste solution associated with disinfection is to remain on the field where it was used. It must be disposed of at least ten metres from a drain or drainage ditch.
5. Fill out the Vehicle and Equipment Cleaning Record and submit with the Biosecurity Checklist.

9. PERSONAL PROTECTIVE EQUIPMENT

Safety of the individual will always be of the highest importance at Manitoba Hydro. Corporate safe work procedures and protocols are in place to protect not only the individual(s) directly involved in the activity or work, but also as it relates to public safety.

Personal protective equipment (PPE) will be worn as per the manufacturer's specifications and as directed by Manitoba Workplace Health and Safety Regulation 217/2006, Part 6 Workplace Safety and Health Regulations.

10. CONTACT INFORMATION

If there are any questions or concerns from the public related to biosecurity at Manitoba Hydro, contact the Customer Contact Centre at 1-MB-HYDRO (1-888-624-9376) or via email at environment@hydro.mb.ca.

11. APPROVAL

Original signed by Shane Mailey

September 22, 2016

Shane Mailey
Vice President
Transmission

Date

NOTE: This procedure will be reviewed annually by management. As conditions change or new information becomes available, this document may be revised prior to the annual review date. Printed copies are not controlled, so check with management for the latest version.

Agricultural Biosecurity Standard Operating Procedures Transmission Business Unit

Appendix I - Bipole III Transmission Project Construction Cleaning/Disinfecting Protocols for Clubroot, Livestock and Other High Risk Categories

1. PURPOSE

The following is an appendix to the Agricultural Biosecurity Standard Operating Procedure (SOP), intended for use on properties along the Bipole III Transmission Project route during construction where the presence of soil borne pathogens, such as clubroot, have been identified and instances where landowners have requested additional procedures based on their own biosecurity protocols or in instances where their farming activities require an additional level of protection, such as pedigree seed producers. The following protocols are to be followed to minimize and manage the associated risk of equipment working on those properties when working during non-frozen ground conditions.

The above properties would fall under the defined High Risk category in the SOP and the cleaning procedures outlined below are to be followed. The remaining elements of the SOP remain in effect - i.e. cleaning records are to be completed and submitted as per the SOP.

2. WASHING OF EQUIPMENT, VEHICLES AND FOOTWEAR

All equipment, vehicles and PPE (i.e. boots), that are working on identified High Risk properties must arrive on site clean. Upon completion of the work and prior to exiting the field, all equipment, vehicles and PPE must be washed and disinfectant used. Sediment released from the washing process will be contained to prevent transportation to another field or water course.

Soil Borne Pathogens (i.e. Clubroot, Other)

For disinfection, staff and contractors are to use Virkon 5 gram tablets, mixed in accordance with the manufacturer's specifications. Virkon is biodegradable and no further treatment of the waste solution is required. The process for cleaning equipment and disinfecting is as follows:

- a) Scrape off all heavy soil accumulations and pressure wash all surfaces that have been in contact with the soil.
- b) Virkon disinfectant is to be mixed as one tablet for every 500 ml of water.
- c) Virkon may be applied by spraying or the use of a mop, sponge or cloth to evenly apply onto the equipment surface. A minimum wetted contact time of ten minutes is required for all surfaces that have been treated.
- d) To ensure maximum effectiveness, a **new** batch of solution will be prepared each day.
- e) Any waste solution associated with disinfection is to remain on the field where it was used. It must be disposed of at least ten metres from a drain or drainage ditch.
- f) Do not re-use a solution which has been used to soak contaminated tools or equipment.

**Agricultural Biosecurity Standard Operating Procedures
Transmission Business Unit**

**Appendix I - Bipole III Transmission Project
Construction Cleaning/Disinfecting Protocols for Clubroot, Livestock and Other High Risk
Categories**

Livestock Operations

In livestock settings, or on fields where manure has been spread, the use of Synergize is required, mixed in accordance with the manufacturer's specifications. Synergize has known aquatic environmental impacts on aquatic fish invertebrates, oysters and shrimp. The application of the product will be contained in the field away from any watercourses to mitigate environmental impacts. Disinfecting with this product shall be done on the field away from any watercourse and leftover product will be disposed of at an approved facility. The process for cleaning equipment and disinfecting is as follows:

- a) Scrape off all heavy soil accumulations and pressure wash all surfaces that have been in contact with the soil.
- b) Synergize is to be mixed with a ratio of 4ml (Synergize) to 1L (water).
- c) Synergize may be applied by spraying or the use of a mop, sponge or cloth to evenly apply onto the equipment surface. A minimum wetted contact time of ten minutes is required for all surfaces that have been treated.
- d) Do not re-use a solution which has been used to soak contaminated tools or equipment.
- e) To ensure maximum effectiveness, a **new** batch of solution will be prepared each day.
- f) Any leftover product will be disposed of at an approved facility.

3. CONTACT INFORMATION

If there are any questions or concerns from the public related to biosecurity at Manitoba Hydro, contact the Project Information Line at 1-877-343-1631 or via email at environment@hydro.mb.ca.

APPROVAL

Original signed by Shane Mailey

September 22, 2016

Shane Mailey
Vice President
Transmission

Date

NOTE: This procedure will be reviewed annually by management. As conditions change or new information becomes available, this document may be revised prior to the annual review date. Printed copies are not controlled, so check with management for the latest version.

Cleaning Record

[illegible]



EQUIPMENT CLEANING RECORD TRANSMISSION LINE CONSTRUCTION

Project *	Section *
-----------	-----------

Complete at cleaning area.

Unit number *		
Equipment type *	DATE OF CLEANING *	yyyy mm dd
Cleaned by *		
Location of cleaning *	Free of oil leaks? * <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <input type="checkbox"/> Yes <input type="checkbox"/> No </div>	
Inspected by *	Signed by *	yyyy mm dd
Remarks		

Complete at destination site.

Destination		
Delivered to site by		
Inspected for cleanliness at site? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <input type="checkbox"/> Yes <input type="checkbox"/> No </div>	Free of oil leaks? <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <input type="checkbox"/> Yes <input type="checkbox"/> No </div>	
Inspected by	Signed by	yyyy mm dd
Remarks		

**APPENDIX J: CONTRACTOR
DEVELOPED ENVIRONMENTAL
MANAGEMENT PLANS**

