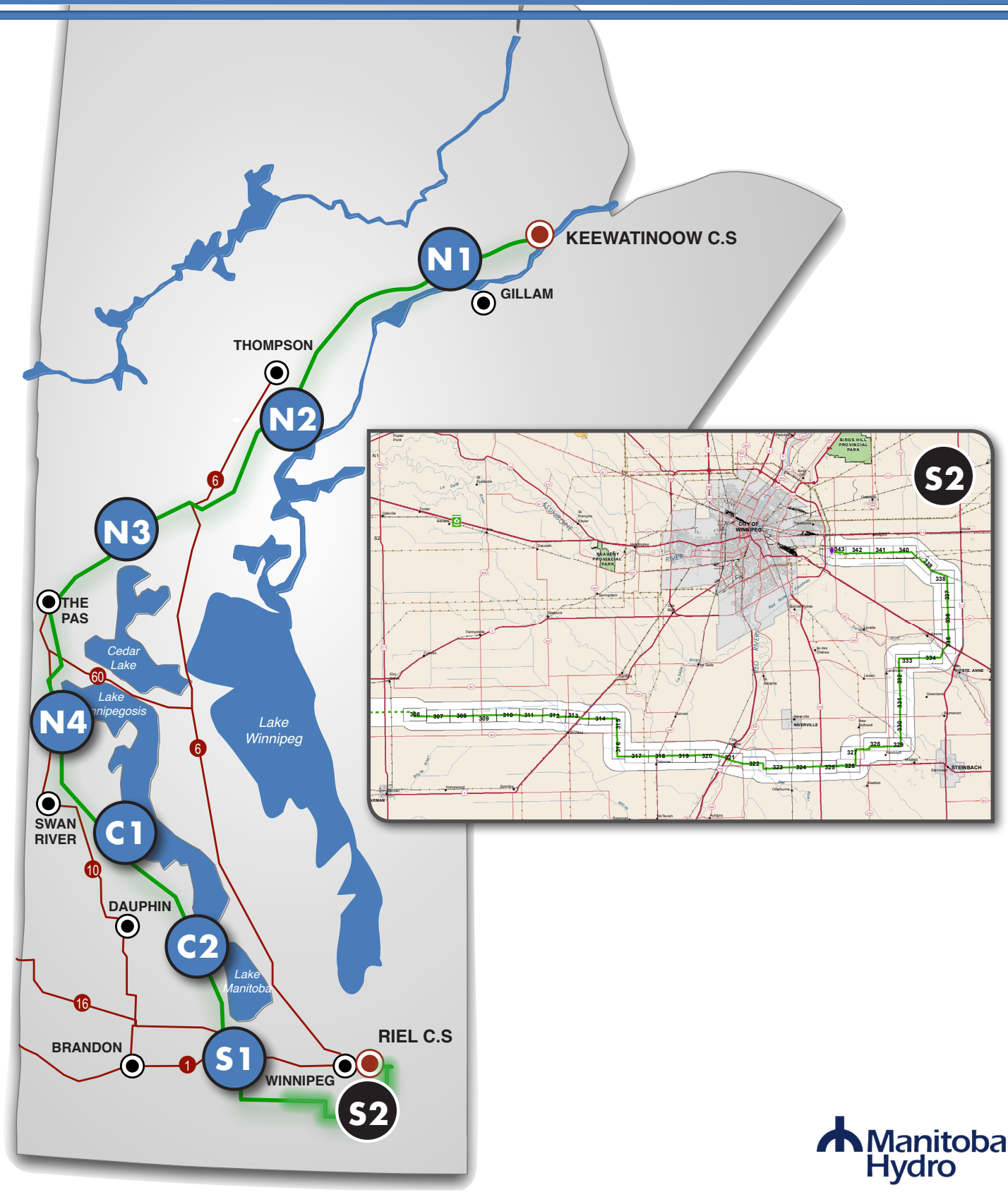
BIPOLE III TRANSMISSION PROJECT
CONSTRUCTION ENVIRONMENTAL PROTECTION PLAN
- SECTION S2



Manitoba Hydro

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

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List of Revisions

Number	Nature of Revision	Page (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 effects*
- *continually improving our Environmental Management System;*
- *meeting or surpassing regulator, contractual and voluntary requirements*
- *considering the interests and utilizing the knowledge of our customers, employees, communities, and stakeholders who may be affected by our actions;*
- *reviewing our environment objectives and targets annually to ensure improvement in our environmental performance; and*
- *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 Aboriginal 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 Bipole III Transmission Project. Aboriginal 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 Aboriginal 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 aboriginal concerns, as well as inputs from our inspection and monitoring programs.

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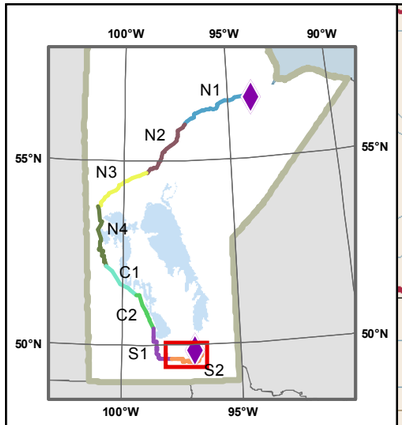
1.0 INTRODUCTION

The purpose of this Construction Environmental Protection Plan (CEnvPP) is to provide information that will guide contractors and field personnel in constructing Section S2 of the Bipole III Transmission Project (the 'Project') in a manner that meets or surpasses 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 Section S2 of the Project's 500-kV HVdc (high voltage direct current) Transmission Line (Map 1). Development of Section S2 will originate approximately 6km south of Elm Creek and terminate approximately 1 km north of Deacon. The Section S2 project footprint, or total area to be cleared, will be a 66-m-wide right-of-way along a length of approximately 152 kilometers. Clearing is proposed to start in the winter of 2014.

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 with details on 'where to' implement environmental protection measures. Where contractors have experience using other federally or provincially accepted methods of environmental protection, they are encouraged to discuss with MH Environmental Inspector.



Bipole III Transmission Project

Bipole III Transmission Project
Construction Environmental Protection Plan
Region of Construction Section S2

Draft: For Discussion Purposes Only

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, Stantec, ProvMB, NRCAN
Date Created: April 15, 2014

0 5 10 Kilometres
0 5 10 Miles

1:300,000

N

Legend

- Proposed Converter Station
- S2
- Final Preferred Route
- Transmission Line
- First Nation
- National/Provincial Park
- Wildlife Management Area

1.1 OVERVIEW OF ENVIRONMENTAL PROTECTION PLAN

Part of Manitoba Hydro's commitment to environmental protection includes the development of a comprehensive Environmental Protection Program (EPP) for the Project. This program includes the development of a Project-Level Environmental Protection Plan (EnvPP) and Construction EnvPPs (CEnvPPs) specific to each major Project component (Figure 1-1). The Project-Level EnvPP contains general environmental protection information applicable to all project components, provides a foundation for developing component-specific CEnvPPs, and is intended for project managers and regulators. The CEnvPPs provide general and specific environmental protection information for each project component and are intended for use by construction contractors and environmental staff.

A number of Environmentally Sensitive Sites (ESS) have been identified for Section S2. ESS are locations, features, areas, activities or facilities that were identified in the Bipole III Transmission Project EIS 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 consideration of Aboriginal Traditional Knowledge (ATK). Manitoba Hydro will continue to engage with stakeholders and aboriginal communities in efforts to continually update this plan with sensitive sites and current knowledge as it is shared.

Thirty eight map sheets have been developed at a scale of 1:10,000 for Section S2 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.

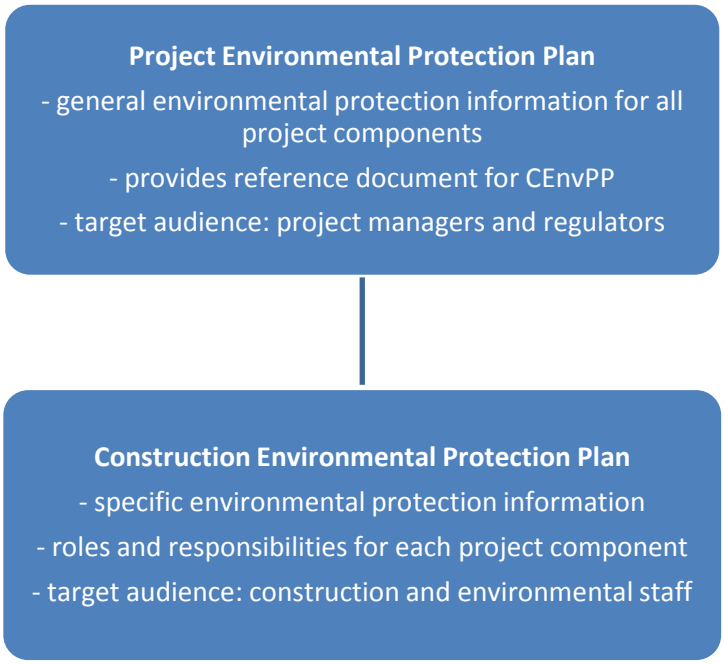


Figure 1-1: Relationship between Environmental Protection Documents

1.2 ROLES, RESPONSIBILITIES AND REPORTING

This section outlines the major roles and responsibilities of those involved in the implementation of the CEnvPP for Section S2. 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 1-1. A contact list for key staff involved in supporting this CEnvPP is found in Appendix A.

1.2.1 Environmental Protection

Manitoba Hydro will provide copies of all available permits, licences, approvals and authorizations obtained for the Project to the Contractor. 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 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 license/ permit conditions will be discussed during the Pre-Job Meeting, 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.

1.2.2 Dedicated On-Site Environmental Officer(s)/Supervisor(s)

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

- Contractor's Environmental Practices and Policies.
- All applicable Environmental Legislation;
- The conditions of Project and Construction Environmental Protection Plans.

1.2.3 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 are 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;
- if applicable, provide a copy of the report to the employee(s) involved; and
- review the contravention with all employees at regular weekly meeting and post in a prominent place at or near the workplace.

1.2.4 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 in a workplace, 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 workplace 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.

Table 1-1: Environmental Roles and Responsibilities of Personnel During the Construction Phase of Section S2

Role	Key Responsibilities
Project Engineer	• Accountable for all aspects of this component of the Bipole III Transmission Project including regulatory compliance and environmental performance. • Oversees Construction Supervisors and Senior Environmental Officer who are responsible for implementing environmental protection measures and ensuring regulatory compliance.
Licensing and Environmental Assessment Department	• 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 Conservation Licensing Approvals Branch
Senior Environmental Assessment Officer	• Advises Project Engineer and Construction Supervisor on implementation of Construction Environmental Protection Plan • Liaises with Licensing and Environmental Assessment Department • Liaises with Regional regulatory authorities • Provides advice and guidance to Construction Supervisors and Environmental Inspectors for non-compliance situations, environmental incidents and emergencies. • Issues Environmental Improvement and Stop Work orders for environmental non-compliance situations and incidents. • Supervises Environmental inspectors/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
Construction Supervisor(s)	• Reports to the Project Engineer. • Reviews environmental inspection reports with the Construction Contractor, and ensures remedial actions or responses to non-compliance situations or incidents are implemented as required. • Works with the Senior Environmental. Assessment Officer and Inspectors to ensure implementation of environmental protection • Ensures that appropriate authorities are notified in emergency or incident situations. • Issues Environmental Improvement and stop work orders as required for non compliance issues.

Environmental Inspector / Construction Inspector	• The Environmental Inspectors reports to the Senior Environmental Assessment Officer 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 Contractors Environmental Officer in ensuring that all necessary information is covered in the Contractors pre-project employee orientation. • The Construction Inspector will carry out the duties of the Environmental Inspector when the Environmental Inspector is not on site. • Conducts site inspections regularly and ensures reports are submitted to the Environmental Protection Information Management System Weekly and monthly 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. • Prescribes and ensures follow up mitigation measures are implemented. • Ensures all ESS sites are correctly identified, delineated and flagged/marked in the field. • Environmental Inspectors 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	• 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.

Construction Contractor(s) (Project Manager / Construction Supervisor)	• 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. • 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 • Responsible for other permits as outlined in Appendix D
Construction Staff	• 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. • 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
Construction Contractor's Environmental Officers	• 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 and safety matters. • Responsible for implementation of the emergency response and hazardous substances plans, and other related topics. • Liaises with Environmental Inspector and Hydro Field Safety Officers
Environmental Monitor(s)	• Environmental Monitors conduct field monitoring activities as outlined in the monitoring plans (access, wildlife, vegetation monitoring). • Provide Liaison opportunities for the communities and reports the protection and preservation of community natural resources. • Assists in the locating and delineating of environmentally sensitive sites. • Works with Environmental Inspector and reports to the Senior Environmental Assessment Officer.
Community Liaison	• Primary contact for disseminating information regarding this project to their community • Developing project communication materials for their community • Identifies community concerns and interests and communicates to Construction Supervisor

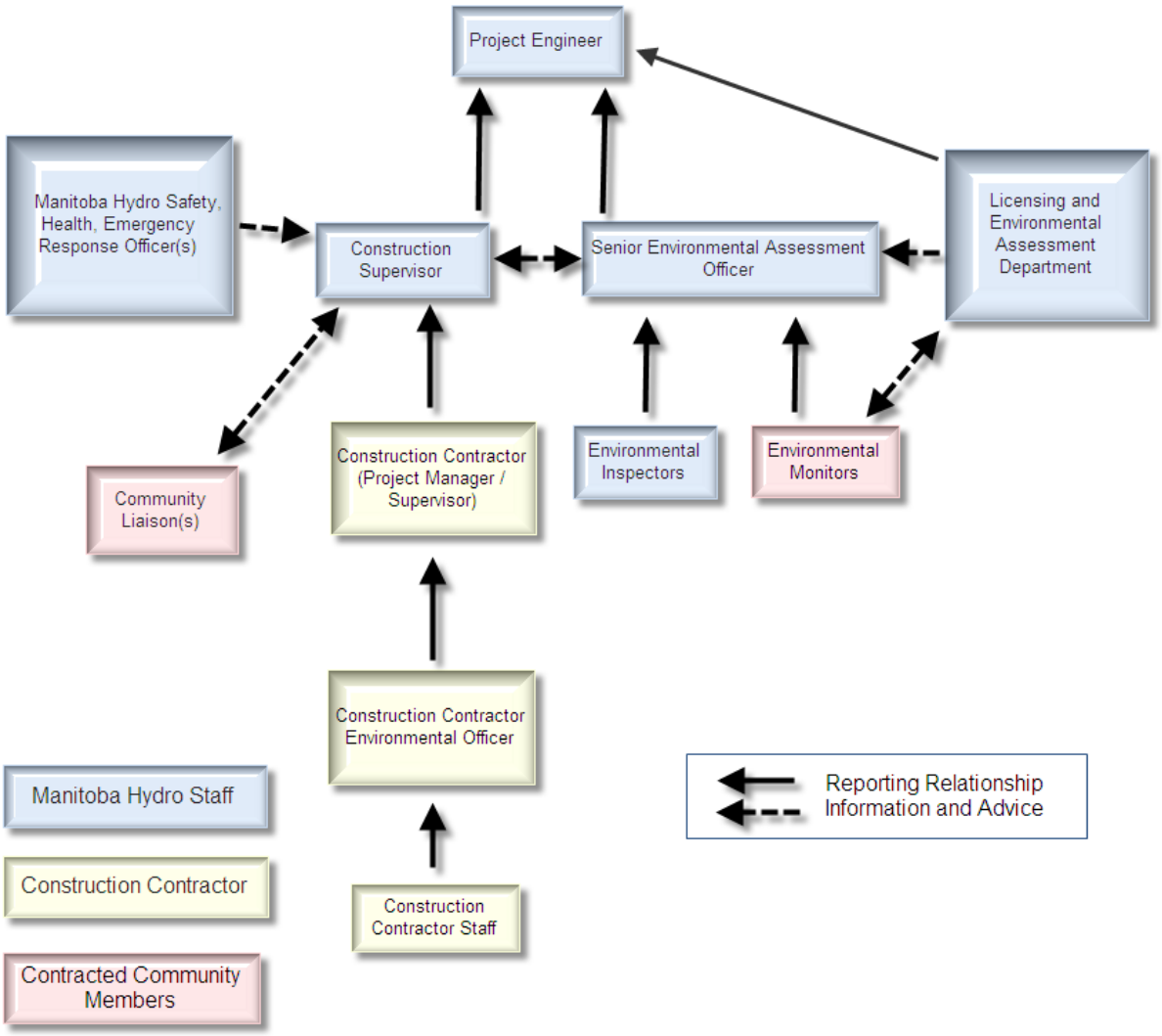


Figure 1-2: Environmental Communication Reporting Structure

1.3 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.

1.4 REGULATORY REQUIREMENTS

All relevant regulatory approvals for the Bipole III Transmission 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.

2.0 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 Bipole III Transmission Project EIS to be ecologically, socially, economically or culturally important or sensitive to disturbance. These ESS require protection and mitigation during construction of Section S2. 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, permafrost, and other important locations requiring specific protection (e.g., resource use, access).

A summary of environmentally sensitive sites for the Project are identified in Table 2-1 and described in further detail below.

Table 2-1: Summary of ESS in Section S2

ESS Categories	Groups	Sensitivity Type	No. Sites
Riparian Features	Stream Crossings	Fish Habitat Quality	59
	Groundwater	Groundwater Quality	7
Vegetation, Wildlife and Habitat	Birds and Habitat	Migratory/Foraging/Breeding Habitat	4
	Reptiles and Habitat	Breeding Habitat	0
	Mammals and Habitat	Summer and Winter Habitats	0
	Vegetation	Habitat/Species of Concern	3
Soils and Terrain	Soils	Erosion/Permafrost	0
	Terrain	Unique Landform Features/Steep Slopes	0
Heritage	Heritage/ Archaeological/ Spiritual and Cultural	Archaeological	11
Other ESS	Access-Intersections	Snowmobile Trails/Canoe Routes	8
	Resource Use	Food/Medicinal, Forestry	15
	Land Use	Conservation/Crown Land Encumbrance/Recreation	0

2.1 TIMING WINDOWS

Table 2-1 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 work windows are considerate of 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. Table 2-1 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.

Table 2-1 Project Wildlife Reduced Risk Timing Windows

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

Reduced Risk to Wildlife

Sensitive Time Period for Wildlife

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

2.2 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 activity, these sites will be identified on the Map Sheets in Section 6.0.

Riparian Buffers (as shown in Table 2-2) 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 that 50% site investigation and prescription by MH Senior Environmental Assessment Officer is required. **The Riparian Buffer is composed of two zones: a Management Zone (variable width based on Table 2-2) that allows equipment to conduct low 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 2-2: Riparian Buffer Distances Based on Slope

Slope of Land Entering Waterway (%)	Width of Riparian Buffer (m)
10	30
20	40
30	55
40	70
50	85

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 are measured from the **tree line** or from a defined riparian boundary as delineated by an Aquatics Specialist.

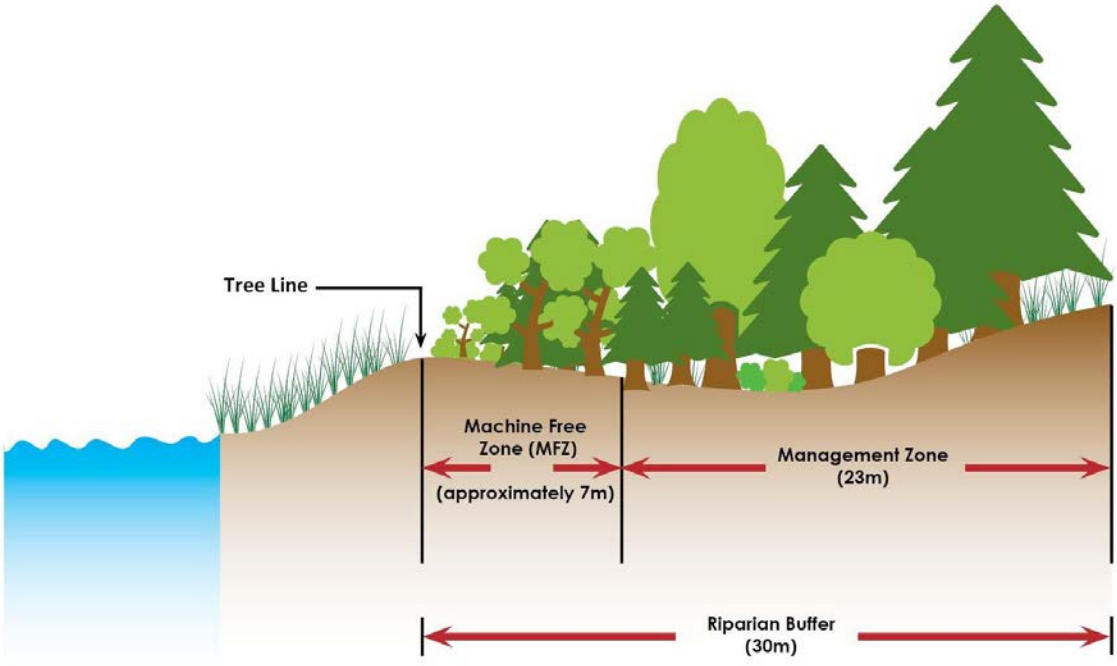


Figure 2-1: Example of Zones in a 30m Riparian Buffer

2.2.1 Riparian Mitigation

Activities associated with project construction pose a low risk to fish habitat. Because of this low level of risk, Operational Statements (OS) developed by the Fisheries and Oceans Canada will be applied to modify construction of overhead lines, temporary stream crossings, ice bridges and snow fills, and dry open cut stream crossings (Appendix F). In addition to Fisheries and Oceans Canada OS requirements, Contractors will implement setbacks and buffers as indicated on Site-specific information the Map Sheets Section 6.0.

Tower Foundations within Riparian Buffers:

In instances where tower placements require tower guy wires be located within a Riparian Buffers 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 Environmental Inspectors for monitoring by vegetation specialist the following season to determine if any further re-vegetation or rehabilitation is required.

2.3 WILDLIFE AND HABITAT

2.3.1 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 and international regulation, which prohibits killing, harassing or destroying the habitat of these birds that migrate to other countries.

2.3.2 Reptiles/Amphibians

Areas where reptiles and amphibians, such as salamanders, skinks, 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 these breeding ground sites can have a measurable effect on local populations. Further, Manitoba is home to unique and endangered reptiles and amphibians, such as skinks (a lizard found primarily in the Spruce Woods region) and northern leopard frog (found throughout the province) that are protected by legislation and policy.

2.3.3 Mammals

Large-bodied mammals, such as moose, are considered sensitive to disturbance. The habitat that support these species are important to maintaining their populations, which may be in decline. Provincial and federal regulation protects species that are considered rare or endangered and their habitat from disturbance.

2.4 AGRICULTURE

2.4.1 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 and the Transmission Business Unit Agricultural Biosecurity Standard Operating Procedures (SOP). In relation to this policy agricultural land is defined as land zoned for agricultural use by the provincial government, planning commission or planning district.

Manitoba Hydro staff and contractors have the potential to impact agricultural biosecurity through construction and/or maintenance activities requiring access to agricultural land. Acknowledging this risk, the purpose of the Agricultural Biosecurity corporate policy is to ensure that Manitoba Hydro staff and contractors take necessary precautions to protect the health and sustainability of the agricultural sector.

The Transmission SOP and the training associated with it apply to all the employees of Transmission as well as external individuals such as contractors or consultants who conduct work on behalf of the Transmission Business Unit. The Transmission Business Unit uses a risk matrix to identify the potential Biosecurity risk. The matrix identifies 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 SOP 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 soil and manure transport of invasive species, pests or disease.

2.5 SOILS AND TERRAIN

2.5.1 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. Compaction of permafrost soils can impact their natural insulation causing soils to become unstable.

2.5.2 Terrain

Terrain refers to the surface form/shape of the land. Slopes that are steep and/or unstable are sensitive to becoming eroded and losing material if disturbed. These slopes often occur in riparian areas adjacent to streams where the eroded materials can affect the fish habitat and water quality. Other sensitive terrain features are landforms that are unique compared to the surrounding area. Being unique, these features often support a diversity of soils, plants and wildlife not found in the surrounding area. Unique terrain features are sensitive as they may be impaired or lost if disturbed or removed.

2.6 CULTURAL

2.6.1 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.

2.6.2 Spiritual and Cultural

Sites identified as having spiritual or cultural importance through Aboriginal Traditional Knowledge (ATK) or other communications are considered sensitive to disturbance and should be respected for the values they have to local communities.

2.7 OTHER

2.7.1 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. 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.

3.0 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 Environmental Inspector).

The environmental portion of this meeting will include the following:

- A review of Manitoba Hydro's Environmental Principles and all 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 be used to review environmental requirements of the job and environmental precautions necessary. All job planning meetings, including the environmental content, shall be documented by the Contractor.

4.0 CONTRACTOR-DEVELOPED ENVIRONMENTAL MANAGEMENT PLANS

Construction contractors will be required to develop environmental management plans as part of the Environmental Protection Program for this project component. The frameworks for plans developed by the contractor for the construction period are outlined below:

1. Emergency Preparedness and Response Plan
   - The Contractor shall be responsible to develop and implement a specific Emergency Preparedness and Response Plan for its work. This plan will be included as Appendix E when approved by the Senior Environmental Assessment Officer.
2. Waste and Recycling Management Plan
   - The Contractor shall be responsible to develop and implement a specific Waste and Recycling Management Plan for its work. This plan will be based on the Waste and Recycling Management Plan Framework (Appendix D) and be included as Appendix E when approved by the Senior Environmental Assessment Officer.
3. Erosion and Sediment Control Plan
   - The Contractor shall be responsible to develop and implement site-specific Erosion and Sediment Control Plans for its work. These plans will be based on the Erosion and Sediment Control Plan Framework (Appendix D) and be included as Appendix E when approved by the Senior Environmental Assessment Officer.

5.0 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 5.1)** and **specific mitigation measures (see detailed maps and specific mitigation in Section 6).**

5.1 GENERAL MITIGATION REQUIREMENTS

Construction considerations required for all Project areas are considered general mitigation and are applicable to all construction areas. General mitigation measures have been grouped by environmental protection measures, a summary of general mitigation categories is found below.

The environmental protection 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 that are carried out during construction of the Bipole III Transmission 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, stream 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.

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.

5.2 GENERAL MITIGATION TABLES

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 Vegetation Management Plan.
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 located, constructed, operated and decommissioned 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-1.10	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.
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 (ie forestry roads (North/South Jonas roads) will be obtained.
PC-1.13	MCWS 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-1.16	Public use of decommissioned access routes will be controlled through the Access Management Plan.
PC-1.17	Public use of project controlled access roads and trails during construction will be controlled through the Access Management Plans.
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 Vegetation Management Plan.
PC-1.23	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 and Transport (MIT) roadways (Provincial Roads or Provincial Trunk Highways) will require a permit from MIT.
PC-1.25	Heavy equipment will not be allowed access to MIT roadways without the appropriate protection and permits.
PC-1.26	Access Roads and Trails that use or cross MIT roadways care will be taken to ensure excessive amounts of material are not tracked onto the roadway, with contractor being responsible for clean up.
PC-1.27	Any temporary constructed access within an MIT roadway will need to be removed once the project is completed.

Agricultural Areas (EC-1)

ID	Mitigation
EC-1.01	All fences and gates will be left in "as-found" condition.
EC-1.02	Any necessary access on agricultural lands will be discussed in advance with the landowner.
EC-1.03	Construction areas and sites will be assessed for compaction and if required will be deep ploughed by the contractor to mitigate any compaction prior to returning them to agricultural use.
EC-1.04	Erosion protection and sediment control measures will be established before construction work commences in agricultural areas where necessary.
EC-1.05	Excess construction materials (i.e. waste, granular fill; clay) will be removed from construction sites and areas located on agricultural lands. Area will be restored to pre-existing conditions.
EC-1.06	Existing access to agricultural lands will be utilized to the extent possible.
EC-1.07	Required travel off existing roads will be minimized and restricted to previously designated and approved routes.
EC-1.08	Vehicular travel on agricultural lands will follow existing roads, trails and paths to the extent possible.
EC-1.09	Where access to agricultural land is necessary the Agricultural Biosecurity Transmission Standard Operating Procedure (SOP) must be followed.
EC-1.10	When construction activities take place through Agricultural lands drainage patterns are not to be alterated, 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.

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 Conservation and Water Stewardship, 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	Only approved explosives will 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	Check that rock utilized for access road construction does not have acid or alkali generating properties.

Borrow Pits and Quarries (PC-2)

ID	Mitigation
PC-2.01	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.
PC-2.06	Drainage water from borrow pits and quarries will be diverted through vegetated areas, existing drainage ditch(s) 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 Environmental Inspector.
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-2.14	Surface drainage will be redirected away from the borrow pits and quarries before excavation commences.
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 Vegetation Management Plan.
PC-2.17	Vegetation in active Manitoba Hydro permitted borrow pits and quarries will be maintained as per the Rehabilitation/ and Vegetation Management Plan
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	Check that rock utilized for access road construction does not have acid or alkali generating properties.

Built-up and Populated Areas (EC-2)

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

Burning (PA-2)

ID	Mitigation
PA-2.01	All occurrences of fire spreading beyond the debris pile will be reported immediately in accordance with work permit conditions
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 stream crossings or waterbodies.
PA-2.07	Burning will only be carried out in accordance with provincial work permits. 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-2.09	Debris piles scheduled for burning will be piled on mineral soils where possible.
PA-2.10	Firefighting equipment required by legislation, guidelines and contract specifications 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 (ie permafrost).
PA-2.12	Burning of any material is not permitted on Manitoba Infrastructure and Transport (MIT) roadway ROW's

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 Bufffer 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-3.08	Clearing activities will be carried out in accordance with contract specifications
PA-3.09	Clearing and disturbance and equipment use will be limited to the project footprint and associated access routes.
PA-3.10	Clearing will not be permitted within established setbacks for bird nesting and rearing during established timing windows.
PA-3.11	Clearing within environmentally sensitive areas, not designated for organic removal will be carried out in a manner that minimizes disturbance to existing organic soil layer.
PA-3.12	Construction vehicles where possible will be wide-tracked or equipped with high floatation tires to 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	Environmentally sensitive sites, along the right-of-way will be clearly identified by signage.
PA-3.16	In locations where grubbing and vegetation stripping is not required, existing low growth vegetation such as grasses, forbs and shrubs will be maintained to the extent possible; disturbance to roots and adjacent soils will be minimized.
PA-3.17	Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using only "V" or "K-G" type blades, feller-bunchers and other means approved by the Construction Supervisor.
PA-3.18	Property limits, right-of-way boundaries, buffers and sensitive areas (where applicable) will be clearly marked with stakes and/or flagging tape prior to clearing.
PA-3.19	Selective clearing will be carried out in erosion prone areas. Low ground disturbance methods will be employed to minimize soil disturbance.
PA-3.20	Slash piles will be placed at least 15 m from forest stands.
PA-3.21	Slash piles will not be placed on the surface of frozen waterbodies and will not be located within established setbacks from waterbodies or within the ordinary high water mark.
PA-3.22	The Construction Supervisor will issue a stop work order if extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies.
PA-3.23	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
PA-3.24	Trees will be felled toward the middle of rights-of-way or cleared area to avoid damage to standing trees. Trees will not be felled into waterbodies.
PA-3.25	Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated at identified Environmentally Sensitive Sites.

Clearing (PA-3)

PA-3.26	Where practical, merchantable timber will be salvaged and brought to market. As per Annual Harvest Plan, timber that is not salvaged will be piled and burned during frozen conditions in accordance with timing windows, or permit conditions.
PA-3.28	If clearing is needed on a Manitoba Infrastructure and Transport (MIT) roadway ROW, clearance must be obtained from MIT in advance.

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 that are no longer required will be decommissioned and rehabilitated to prevent access.
PA-4.03	Construction areas and sites will be rehabilitated and re-vegetated as appropriate immediately after demobilizing and clean-up.
PA-4.04	Construction areas no longer required will be demobilized and rehabilitated in accordance with Rehabilitation and Vegetation Management Plan and/or provincial regulations (ie quarries and borrow sites)
PA-4.05	Petroleum product and other hazardous substances storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro guidelines.
PA-4.06	Stream crossings and drainages will be left free of obstructions so as not to impede natural runoff.

Draining (PA-5)

ID	Mitigation
PA-5.01	Construction Activities shall not block natural drainage patterns by construction
PA-5.02	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines and DFO Operation Statement on Culvert Maintenance and relevant provincial and municipal acts, regulations and bylaws.
PA-5.03	Dewatering 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 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-5.07	No debris or slash is allowed to be placed in drainage channels/ditches
PA-5.14	Flows to Manitoba Infrastructure and Transport (MIT) 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 MIT roadway ROW will be contained.

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-6.02	Drilling activities in northern Manitoba will be carried out under frozen ground conditions to minimize damage to surface vegetation, soils and permafrost to the extent possible.
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 into waterbodies, riparian areas or wetlands.
PA-6.05	Drilling in environmentally sensitive sites, features and areas will not be permitted unless approved in advance by Environmental Inspector and mitigation measures are implemented.
PA-6.07	Drilling will not be permitted within established buffer zones and setback distances from waterbodies.
PA-6.08	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	The drilling contractor will inspect drilling equipment and machinery for fuel and oil leaks prior to arrival at the project site, and will inspect for fuel and oil leaks and spills regularly.
PA-6.11	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.

Emergency Response (EI-2)

ID	Mitigation
EI-2.01	All fires will be reported in accordance with fire reporting procedures in the Emergency Preparedness and Response Plan.
EI-2.02	All spills at construction sites will be reported in accordance with provincial legislation and guidelines , and Manitoba Hydro Guidelines.
EI-2.03	All vehicles hauling petroleum products will carry spill containment and clean-up equipment.
EI-2.04	Clean-up and the disposal of contaminated materials will be managed in accordance with provincial guidelines and Manitoba Hydro guidelines.
EI-2.05	Emergency Preparedness and Response Plans and procedures will be communicated to all project staff and a copy will be made available at the project site.
EI-2.06	Emergency spill response and clean-up materials and equipment will be available at construction sites, marshalling yards, fuel storage facilities and standby locations.
EI-2.07	Fire extinguishers will be mounted on buildings at locations where they will be most readily accessible. Safety Officers will conduct annual inspections of fire extinguishers.
EI-2.08	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include emergency response awareness.
EI-2.09	Post audit assessments will be carried out for all major spills and fires reported to ensure that procedures are followed and plans remain effective.
EI-2.10	Project emergency response and evacuation procedures in the Emergency Preparedness and Response Plan will be adhered to in the event of forest fires.
EI-2.11	Reasonable precautions will be taken to prevent fuel, lubricant, fluids or other products from being spilled during equipment operation, fuelling and servicing.
EI-2.12	Spill response and clean up equipment will be available for responding to release for this site.
EI-2.13	Temporary construction camps will have a designated fire marshall in accordance with the Emergency Preparedness and Response Plan.
EI-2.14	The Emergency Preparedness and Response Plan will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
EI-2.15	The Manitoba Hydro hazardous materials incident report form will be completed when reporting a spill.
EI-2.16	The on-site Emergency Spill Response Coordinator will be notified of hazardous substance releases immediately in accordance with the Emergency Preparedness and Response Plan.

Erosion Protection and Sediment Control (EI-3)

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

Fish Protection (EC-3)

ID	Mitigation
EC-3.01	Construction activities will not be carried out within established buffer zones and setback distances from waterbodies, wetlands and riparian areas without prior written notification of Department of Fisheries and Oceans.
EC-3.02	Disturbances to waterbodies, shorelines, riparian areas, etc. will be rehabilitated immediately upon completion of construction activities.
EC-3.03	Erosion protection and sediment control measures will be put in place at all project locations where surface drainage is likely to flow into fish bearing waters.
EC-3.04	Fish and fish habitat will be protected in accordance with federal legislation and federal and provincial guidelines.
EC-3.05	MCWS and Fisheries and Oceans Canada (DFO) will be notified if beaver dams must be cleared along rights-of-ways and along access roads and trails. Clearing of dams will be carried out in accordance of the Fisheries and Oceans Canada Operational Statement
EC-3.06	Project personnel will be prohibited from fishing at project locations or along rights-of-way

Grading (PA-7)

ID	Mitigation
PA-7.02	Grading for gravel pads for construction areas and access roads will be limited to areas where it is needed for the safe and efficient operation of vehicles, machinery and construction equipment.
PA-7.03	Grading for site rehabilitation and restoration will be in accordance with Rehabilitation and Vegetation Management Plan.
PA-7.04	Grading will not be permitted within established buffer zones and setback distances from waterbodies.
PA-7.05	Grading will only be permitted within rights-of-ways and construction areas.
PA-7.06	Gravel pads will be graded so the surface runoff is directed away from waterbodies, riparian areas and wetlands.
PA-7.07	Required erosion protection and sediment control measures will be put in place prior to grading in accordance with the Erosion Protection and Sediment Control Plan.

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 location will be marked with flagging tape prior to construction.
EC-4.03	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.

Grubbing (PA-8)

ID	Mitigation
PA-8.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-8.02	Construction areas requiring extensive grubbing will be stabilized as soon as possible to minimize erosion.
PA-8.03	Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils.
PA-8.04	Grubbing will not be permitted within 2 m of standing timber to prevent damage to root systems and to limit the occurrence of blow down.
PA-8.05	Grubbing will not be permitted within established buffer zones and setback distances from waterbodies.
PA-8.06	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.07	Unless required for the work, the extent of grubbing will be minimized to the extent possible.
PA-8.08	When not under frozen conditions, erosion protection and sediment control measures will be put in place prior to grubbing in accordance with the Erosion Protection and Sediment Control Plan.
PA-8.09	Windrows of grubbed materials will be piled at least 15 m from standing timber.
PA-8.10	If grubbing is needed on a Manitoba Infrastructure and Transport (MIT) roadway ROW, clearance must be obtained from MIT 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 Construction Supervisor/Site Manager prior to construction and updated annually.
EI-4.02	Access to hazardous materials storage areas will be restricted to authorized and trained Contractor and Manitoba Hydro personnel.
EI-4.03	An inventory of WHMIS controlled substances will be prepared by the Contractor and maintained at each project site and updated as required by provincial legislation.
EI-4.04	Bulk waste oil will be stored in approved aboveground tanks provided with secondary containment in accordance with provincial legislation.
EI-4.05	Containers of hazardous materials stored outside will be labeled, weatherproof, placed on spill containment pallets and covered by a weatherproof tarp.
EI-4.06	Contractor personnel will be trained and certified in the handling of hazardous materials including emergency response procedures in accordance with provincial legislation.
EI-4.07	Contractor personnel will receive WHMIS training in accordance with provincial legislation.
EI-4.08	Controlled substances will be 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.
EI-4.10	Hazardous materials storage sites will be secured, and signs will be posted that include hazard warnings, contacts in case of a release, access restrictions and under whose authority the access is restricted.
EI-4.11	Hazardous materials will be adequately contained and will be protected from wind and rain to prevent deposition of fine particles or dust into watercourses through runoff.
EI-4.12	Hazardous materials and WHMIS inventories will be completed prior to construction. Inventories will be updated in accordance with regulatory requirements and Manitoba Hydro policies.
EI-4.13	Hazardous substances management procedures will be communicated to all project staff and a copy will be made available at the project site.
EI-4.14	Hazardous substances storage areas including coke materials for ground electrode facilities will be located a minimum of 100 m from the ordinary high water mark of a waterway and above the 100-year flood level.
EI-4.15	Hazardous substances will be transported, stored and handled according to the procedures prescribed by provincial legislation and at a minimum follow Manitoba Hydro policies.
EI-4.16	Hazardous waste substances will be segregated and stored by type.
EI-4.17	Indoor storage of flammable and combustible substances will be in fire resistant and vented enclosed storage area or building in accordance with national codes and standards.
EI-4.19	Non-hazardous products will be used in place of hazardous substances to the extent possible.
EI-4.20	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include hazardous substance awareness.
EI-4.21	Pesticide storage will be in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-4.22	The Contractor will be responsible for the safe use, handling, storage and disposal of hazardous substances including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-4.23	The Contractor will monitor containers of hazardous substance containers regularly for leaks and to ensure that labels are displayed.
EI-4.24	The Environmental Inspector will make routine inspections of hazardous substance storage sites to ensure that environmental protection measures are implemented and effective.
EI-4.25	Waste oil will be transported by licensed carriers to licensed or approved waste oil recycling facilities.
EI-4.26	Wet batteries will be stored and transported to licensed or approved waste recycling facilities.

Heritage Resources (EC-5)

ID	Mitigation
EC-5.01	All archaeological finds discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.
EC-5.02	Construction activities will not be carried out within established buffer zones for heritage resources except as approved by Project Archaeologist.
EC-5.03	Environmental protection measures for heritage resources will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-5.04	Orientation for project staff working in construction areas will include heritage resource awareness and training including the nature of heritage resources and the management of any resources encountered.
EC-5.05	Orientation information will include typical heritage resource materials and reporting procedures.
EC-5.06	The Contractor will report heritage resource materials immediately to the Construction Supervisor will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.
EC-5.07	The Culture and Heritage Resource Protection Plan will be adhered to during Preconstruction and construction activities.
EC-5.08	The Environmental Inspector will inspect borrow pits and other excavations regularly for the presence of heritage resource materials.

Management Measures (MM)

ID	Mitigation
MM-01	All licenses, permits, contracts, project specifications, guidelines and other applicable documents will be obtained and in the possession of both the Contractor and Manitoba Hydro prior to commencement of work.
MM-02	All project participants will ensure that project activities are carried out in compliance with applicable legislation, guidelines 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-05	Manitoba Hydro will contact local municipal authorities prior to project start-up.
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 for the ongoing review of environmental and safety issues.
MM-12	Relevant documents including licenses, permits, approvals, legislation, guidelines, environmental protection plans, orthophotos maps, etc will be made available to all project participants.
MM-13	Response to enforcement actions by regulatory authorities will be in accordance with Manitoba Hydro policy P602.
MM-14	The Contractor will obtain all licenses, permits, contracts and approvals other than those that are Manitoba Hydro's responsibility prior to project start-up.
MM-15	The Contractor will review terms and conditions of all authorizations, contract specifications, agreements, etc prior to project start-up or as authorizations are acquired and will discuss any questions or concerns with Manitoba Hydro.

Marshalling Yards (PC-5)

ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.02	Emergency Preparedness and Response Plan and procedures for marshalling yards will be developed.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.04	Fire breaks will be established a minimum of six meters around marshalling yards in areas where there is a risk of fire.
PC-5.05	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved waste disposal site.
PC-5.06	Hazardous materials entering and leaving the marshalling yards will be inventoried and accounted for.
PC-5.07	Hazardous substances will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Marshalling yards will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-5.09	Marshalling yards will be located in existing clearings or natural openings.
PC-5.10	Marshalling yards will be located, constructed, operated and decommissioned in accordance with contact specifications and in accordance with the Rehabilitation and Vegetation Management Plan.
PC-5.11	Once marshalling yards are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.12	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.
PC-5.13	Petroleum products will only be stored, handled and dispensed in designated areas within marshalling yards in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within marshalling yards.
PC-5.16	Vegetation control at marshalling yards will be in accordance with Rehabilitation and Vegetation Management Plan.
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within marshalling yards.
PC-5.18	Waste hazardous substances, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste disposal facilities by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.

Petroleum Products (EI-5)

ID	Mitigation
EI-5.01	Aboveground tanks will be equipped with overfill protection and spill containment consisting of perimeter dykes or secondary containment in the tank design.
EI-5.02	All aboveground petroleum product tanks with a capacity greater than 5,000 L will be registered by the contractor with Manitoba Conservation and Water Stewardship and have a valid operating permit.
EI-5.03	Construction, installation or removal of petroleum product storage tank systems will only occur under the supervision of a registered licensed petroleum technician.
EI-5.04	Containment measures, such as secondary containment (i.e., berms) will be used at all locations where stationary oil-filled equipment is used.
EI-5.05	Contractors will inspect all mobile and stationary equipment using petroleum products on a regular basis to ensure that measures are taken immediately to stop any leakage discovered.
EI-5.06	Fuelling of equipment or portable storage tanks will be a minimum of 100 m from the ordinary high water mark of any waterbody.
EI-5.07	Fuelling operations require the operator to visually observe the process 100% of the time.
EI-5.08	If dykes are used, the containment areas will be dewatered after rainfall events and the containment water disposed of as specified in contract specifications.
EI-5.09	Once petroleum product storage areas are no longer required, a Phase I and when required a Phase II Environmental Site Assessment will be carried out to determine if remediation is required in accordance with national standards.
EI-5.10	Only approved aboveground petroleum storage tanks will be used during the construction phase of the project. No underground tanks will be permitted.
EI-5.11	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include petroleum product storage and handling awareness.
EI-5.12	Petroleum product dispensing systems will be secured and locked by authorized personnel when not in use by authorized personnel.
EI-5.13	Petroleum product inventories will be taken weekly by the owner/operator on all aboveground tanks greater than 5,000 L and retained for inspection by Manitoba Hydro or Manitoba Conservation upon request.
EI-5.14	Petroleum product storage containers in excess of 230 L will be located on level ground and will incorporate secondary containment with a capacity of 110% of the largest container volume. 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 be protected from vehicle collisions by concrete filled bollards.
EI-5.17	Petroleum product storage will be located a minimum of 100 m from the ordinary high water mark of waterbodies, riparian areas or wetlands.
EI-5.18	Petroleum products stored outside will be in waterproof and 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 marshalling yards.
EI-5.22	Portable petroleum product storage containers will be placed on spill trays with a capacity of 110% of the largest container when not in use. Water 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-5.25	Spill trays will remain impervious at very low temperatures (-45 °C) and have accumulated precipitation removed regularly.

Petroleum Products (EI-5)

EI-5.26	The Contractor will be responsible for the safe use, handling, storage and disposal of petroleum products including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-5.27	The Contractor will inspect all petroleum product storage tanks and containers regularly for leaks, and product inventories will be recorded and retained for inspection by Manitoba Hydro and Manitoba Conservation and Water Stewardship.
EI-5.28	There will be no ignition sources in and adjacent to petroleum product storage areas.
EI-5.29	Transfer of petroleum products between storage areas and work sites 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.

Rehabilitating and Re-vegetation (PA-9)

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

Rights-of-Way (PC-8)

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

Safety and Health (EI-6)

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

Soil Contamination (EI-7)

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

Stream Crossings (PC-9)

ID	Mitigation
PC-9.01	Access road crossings will be at right angles to waterbodies to the extent possible.
PC-9.02	Construction of temporary crossings will follow the Fisheries and Oceans Canada Manitoba Operational Statement for Temporary Stream Crossings.
PC-9.03	Construction of transmission line stream crossings will follow the Fisheries and Oceans Canada Manitoba Operational Statement for Overhead Line Construction.
PC-9.04	Where applicable, the Fisheries and Oceans Canada Manitoba Operational Statement for Isolated or Dry Open Cut Stream Crossings and/or High-pressure Directional Drilling will be adhered to.
PC-9.05	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-9.06	Construction vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings.

Stripping (PA-10)

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

Treated Wood (EI-8)

ID	Mitigation
EC-8.01	Salvage and disposal of treated wood products will be in accordance with Manitoba Hydro guidelines.
EC-8.02	Small quantities of surplus or unwanted treated wood products may be disposed of as domestic waste products at licensed or approved waste disposal sites.
EC-8.03	Treated wood products will not be used indoors and will not be burned.
EC-8.04	Treated wood will be delivered to project locations or construction sites on an as required basis to reduce storage time in the field.

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

Wetlands (EC-8)

ID	Mitigation
EC-8.01	Clearing wastes and other construction debris or waste will not be placed in wetland areas. Existing logs, snags and wood debris will be left in place.
EC-8.02	Environmental protection measures for working in and around wetlands will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-8.03	Natural vegetated buffer areas of 30 m will be established around wetlands and riparian zones will be maintained to the extent possible.
EC-8.04	Project activities will avoid wetland areas to the extent possible. If avoidance is not practical, the extent of disturbance will be minimized. Disturbance of wetlands will only be carried out under frozen ground conditions.

Wildlife Protection (EC-9)

ID	Mitigation
EC-9.01	Any wildlife killed or injured by vehicles will be reported to Manitoba Conservation and Water Stewardship.
EC-9.02	Bird Diverters or aerial markers may be installed in high bird traffic areas.
EC-9.03	Boundaries of important wildlife habitats will be flagged by prior to commencement of construction.
EC-9.04	Clearing will occur outside breeding bird timing windows. See Table 6-1
EC-9.05	Construction activities will not be carried out during prescribed timing windows for wildlife species.
EC-9.07	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
EC-9.09	Manitoba Conservation will be notified if animal traps are encountered and must be removed for project activities.
EC-9.10	MB Conservation and Dept.of Fisheries and Oceans will be notified if beaver dams must be cleared along rights-of-way and access roads and trails. Clearing of dams will be carried out in accordance of the DFO Operational Statement on Beaver Dam Removal
EC-9.11	No firearms will be permitted at construction sites.
EC-9.12	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for wildlife and wildlife habitat.
EC-9.13	Problem wildlife will be reported immediately to Manitoba Conservation and Water Stewardship.
EC-9.15	Trees containing large nests of sticks and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied. 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.
EC-9.17	Where buffer zones or setbacks are not feasible for colonial waterbirds, bird deflectors will be placed on sky wires to improve visibility of the wires to birds and to minimize potential bird-wire collisions.
EC-9.18	Wildlife and wildlife habitat will be protected in accordance with provincial and federal legislation and provincial and federal guidelines.
EC-9.19	Wildlife will not be fed, befriended or harassed at construction areas.

6.0 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. There are a total of 38 map sheets and one map sheet index.

APPENDICES

APPENDIX A: CONTACT LIST

Contact	Name	Phone Number(s)
Construction Contractor		
Contractor Project Manager		
Contractor Field Lead		
Contractor Safety and Environmental Officer		
Manitoba Hydro		
Project Engineer		
Construction Supervisor		
Senior Environmental Assessment Officer		
Environmental Monitor		
Environmental Inspector		
Field Safety, Health and Emergency Response Officer		
Hazardous Materials Officer		
Area Spill Response Coordinator		
Emergency Response Services		
Project Archaeologist (Primary Contact)		
Archaeologist		
Manitoba Conservation Contacts		
District Office		
First Nations Contacts		

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

Manitoba Hydro

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	Permits and Approvals Information: Ensure the necessary environmental permits and approvals relating to the work have been obtained prior to starting work. ▪ 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	Has the Emergency Response Plan been reviewed and discussed? _____ _____ _____			
5.0	Has the spill response plan been reviewed and discussed? _____ _____ _____			

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? ▪ 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) YYYY MM DD
MANITOBA HYDRO SENIOR ENVIRONMENTAL ASSESSMENT

_____ _____
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

Table C-1: List of Approvals required for Construction of Section S2		
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	LEA
Storage and Handling of Gasoline and Associated Products Regulation (Dangerous Goods Handling and Transportation Act) Blasting	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.
LEA – Manitoba Hydro Licensing and Environmental Assessment Department TLCC – Transmission Line and Civil Construction Department		

A permit from Manitoba Infrastructure and Transportation (MIT) 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.
LEA – Manitoba Hydro Licensing and Environmental Assessment Department TLCC – Transmission Line and Civil Construction Department		

APPENDIX D: FRAMEWORKS FOR CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

Manitoba Hydro

D.1 Waste and Recycling Management Planning Framework

Introduction

The Bipole III Transmission Project (the Project) is a large scale development that has potential to generate a significant waste stream. To manage and reduce the amount of materials flowing from the construction of the Project, Manitoba Hydro will require Waste and Recycling Management Plans (W&R) plans from construction contractors in an effort to reduce the volume of materials going to landfill and facilitate reuse and recycling. Where applicable, the W&R Plan will also address wastes developed in the operation of work camps. This framework outlines the objectives, scope and materials to be covered in the W&R Plan required by each applicable contractor for the construction of the Bipole III Transmission Project.

Purpose of Framework

Manitoba Hydro recognizes the need to proactively address the issue of waste management. This document provides a framework to guide contractors in the preparation and implementation of a Waste and Recycling Management Plan, which is a crucial step in managing waste generation and disposal.

Objectives

Manitoba Hydro's objective for developing this Waste and Recycling Management Plan framework is to provide guidance to contractors in the development of a W&R Plan. The W&R Plan must contain the necessary components to meet regulatory requirements, applicable Acts and regulations, industry standards, and best practices in waste reduction, re-use and recycling for the Bipole III Transmission Project.

The goal of the W&R Plan is to reduce the amount of waste disposed at landfills while optimizing waste reduction, reuse and recycling activities. To obtain this goal, W&R Plans will include strategies related to waste minimization and avoidance, appropriate waste treatment and the applicable handling, storage, collection, recycling and disposal of waste. This framework will outline and define Manitoba Hydro's expectations for a W&R Plan to the contractor. Establishing these expectations and minimum requirements in a framework provides the contractor with the opportunity to develop more efficient processes which will meet or exceed Manitoba Hydro's goals of waste reduction and prevention.

Definitions

For the purposes of developing a Waste and Recycling Management Plan, below are the definitions of waste and hazardous waste.

The Environment Act definition of waste is:

"waste" includes rubbish, litter, junk, or junked obsolete or derelict motor vehicles, or obsolete or derelict equipment, appliances or machinery; slimes, tailings, fumes, waste of domestic, municipal, mining, factory or industrial origin; effluent or sewage; human or animal wastes; solid or liquid manure; or waste products of any kind whatsoever or the run-off from such wastes.

The Dangerous Goods Handling and Transportation Act definition of hazardous waste is:

"hazardous waste" means a product, substance or organism that

a) is prescribed, designated or classified as hazardous waste in the regulations, or

b) by its nature conforms to the classification criteria for one or more classes of hazardous wastes set out in the regulations.

Plan Scope

Each W&R Plan must identify the nature of the waste generated by the contractor. Examples of waste that are expected to be produced by the Project and be covered by the W&R Plan are found in the following table. (Note: this is not an exhaustive list.)

Table D-1: Materials to be Covered by the W&R Plan

Category	Items
Hazardous waste	Motor oils, fuels, solvents, coolants, pesticides, other chemicals
Construction materials	Wood, aluminum, copper, steel, cardboard, plastic
Food services	Beverage containers (aluminum and glass), cardboard, boxboard, plastics, newsprint, office paper
Domestic solid waste	Organic material, non-recyclable waste
E-waste	Computers, circuitry, batteries
Construction equipment	Rubber tires, lead-acid batteries, hydraulic fluid, oil filters

For each waste item identified in Table D-1, the following is required:

- the waste management method to be employed (reuse, recycle, landfill);
- collection, handling, storage, treatment and transportation requirements;
- final destination (landfill, recycle depot, etc.); and
- Municipal approvals for waste destined to a licensed waste disposal ground or landfill.

Related Environmental Protection Program Documents

When contactors develop a Waste and Recycling Management Plan, the Construction Environmental Protection Plan and the Project Environmental Plan should be referenced as these plans include waste mitigation measures.

Waste Management

The Waste and Recycling Management Plan must provide a process to which a hierarchical approach is taken to waste management. The purpose of the hierarchy is to assess each waste item for opportunities to avoid waste, then opportunities to reuse, followed by opportunities to recycle prior to disposal. This hierarchy will be as follows:

- compliance with federal and provincial waste management legislation (i.e., Acts and Regulations);
- waste avoidance;
- waste re-use;
- waste recycling; and
- waste disposal (as a final option).

Prior to the start of construction, the contractor must ensure that the waste disposal grounds are willing and have the capacity to accommodate the projected waste volume. Waste disposal grounds must be registered with Manitoba Conservation and Water Stewardship and be in accordance with the Waste Disposal Grounds Regulation (150/91, July 9 1991).

Waste Management Activities

The Waste and Recycling Management Plan must also include waste management activities to address the following:

- waste avoidance, reuse and recycling;
- waste segregation, storage and handling;
- waste transport and disposal;
- tracking of waste volumes produced;
- waste monitoring and reporting; and
- spill response and reporting as per Manitoba Hydro's Spill Response and Reporting Plan.

Due to the remoteness of some of the Project worksites there will be differing levels of waste segregation due to the logistical challenges of waste management during the construction of the Project. Table D-2 reflects the expected waste stream handling capabilities for typical project worksites.

Other Plan Considerations

- Waste kept on-site must be stored in such a way as to not pose health and safety risks.
- Recyclables destined for depots in major centers in Winnipeg or Thompson) should be back-hauled to reduce transportation costs.
- Methods for disposal of cleared vegetation, including trees, shrubs and undergrowth resulting from clearing will be covered by the contract specifications
- Waste excavated material will be reused wherever possible and waste material is to be disposed of by a licensed waste contractor. Stockpiles and waste that must be stored temporarily on site will be stored on existing cleared areas away from drainage channels and slopes.

Waste and Recycling Management Plan Approval

A detailed Waste and Recycling Management Plan must be developed by the contractor and submitted for approval by the Senior Environmental Assessment Officer in the Transmission Line Construction Department. The W&R plan must address all applicable issues and concerns identified in this Waste and Recycling Management Plan framework. The detailed W&R plan submitted by the contractor must include all actions needed to effectively implement the Waste and Recycling Management Plan and its waste management hierarchy.

Table D-2: Preferred Waste Management Methods

Category	Items	Preferred Waste Management Methods
Hazardous Waste	Motor oils, oil filters, lead-acid batteries, hydraulic fluid, fuels, solvents, coolants, pesticides, other chemicals and their containers	Separate hazardous waste materials by type and store them segregated from the waste stream in approved containers and containment areas.
		Ensure that staff handling wastes is trained in the handling and transportation of hazardous waste.
		Inventory and account for hazardous waste leaving collection areas.
		Transportation off-site by licensed regulated waste transporter and disposal off-site by a regulated waste receiver, for recycling or proper disposal.
Construction Materials	Aluminum, copper, steel, scrap conductors	Collected and segregated on-site, transported for off-site recycling.
	Wood - timber off cuts, pallets, wooden boxes	Minimize waste by producing or using only the amount necessary. Off cuts and pallets to be burnt on-site or disposed of in landfills licensed by MCWS with capacity to accept and separate construction wastes.
	Cardboard packing and boxes	Collected and recycled at landfill
	Plastic bags and plastic packaging	Collected and disposed of at landfill
Food Services (Non-Hazardous Waste)	Beverage containers (aluminum, glass,), cardboard, boxboard, plastics, newsprint, office paper	Collected and recycled
Non-Hazardous Solid Waste	Grease Trap wastes and organic food waste	Store materials in wildlife-proof waste containers or in secure location. Waste will be taken off-site for disposal.
Electronic Wastes	Computers, circuitry, etc.	Electronic waste will be stored and transported off-site to a licensed e-waste receiver for recycling or disposal.
Construction Equipment	Rubber tires	Tires will be stored and transported off-site to a licensed regulated waste receiver for recycling or disposal.

Table D-2: Preferred Waste Management Methods

Category	Items	Preferred Waste Management Methods
Excavated Material	Excess material removed during construction	Refill any excavations and spread any excess over the nearby area and allow to re-vegetate. Waste materials will be reused as much as practicable to construct, haul roads, pads, etc.
Waste Concrete	Footing pours	Minimize waste by producing only the amount necessary. Disposal in designated area(s) for concrete washout. Regularly break-up and remove hardened concrete for proper disposal in landfill or used as fill on site.
Cleared Vegetation	Vegetation cleared during construction of yard sites, Access Roads and the ROW	Felling, chipping, mulching or burning. Salvage timber on Crown Land where practical and feasible. Follow burning procedures for non-salvaged timber. Vegetation mulch/chips may be retained on site for use in mitigation and site management works (e.g., erosion control). Mulch/chips may be utilized by local landowners where practical and feasible.

D.2 Erosion and Sediment Control Planning Framework

Introduction

Part of Manitoba Hydro's commitment to environmental protection includes the development of an Environmental Protection Program (EPP) for the Bipole III Transmission Project (the 'Project'). Aspects of this program include planning, monitoring and follow up for erosion and sediment control. This document provides the Framework for the development of Erosion and Sediment Control Plans (ESCP) by construction contractors for the project.

This Framework is intended to provide assurance to regulatory reviewers, environmental organizations, Aboriginal communities and the general public that commitments made in the Project Environmental Impact Statement (EIS) and Construction Environmental Protection Plans (CEnvPPs) will be implemented and monitored in a responsible and accountable manner.

Background

Land disturbing activities associated with the proposed construction of the Project may involve soil, rock, and vegetation removal. This surficial disturbance may result in soil erosion and/or sedimentation in the construction areas and beyond.

Erosion and sedimentation are naturally occurring processes involving the loosening, transport and deposition of soils. Erosion involves the wearing away of soil materials, caused by the action of wind or water, through detachment and transport of materials while sedimentation is the deposition of soil particles previously held in suspension by flowing water.

Water runoff is also part of the natural hydrological cycle, however, clearing, grading, and other construction activities that remove vegetation and compact the soil may result in increased runoff. Excessive runoff may cause erosion, sedimentation, or flooding.

Construction activities can result in a rapid increase in erosion and sedimentation rates that, if left uncontrolled, can reparably or irreparably harm the environment.

Purpose

It is important that land and water resources are protected from soil erosion. Manitoba Hydro recognizes the need to proactively address the issues of erosion and sedimentation. This document provides a framework to guide contractors in the preparation and implementation of an ESCP, which is a crucial step in managing and mitigating erosion and sedimentation.

Objectives

The objectives of the erosion and sediment control Framework are as follows:

- To provide a framework for erosion, sediment control and planning.
- To identify a process to develop an ESCP that meets regulatory requirements, industry standards and best practices.

- To provide guidance on the development of an ESCP that contains the necessary components to meet regulatory requirements, industry standards and best practices.

Roles and Responsibilities

The following table summarizes the roles and responsibilities of the main participants in the ESCP:

Manitoba Hydro	• Ultimate responsibility for ESC planning, design, implementation, inspection, monitoring, maintenance, operation, and decommissioning. • May delegate this responsibility to numerous design and construction professionals to construct/implement, maintain and inspect /monitor for the duration of the undertaking. • Signs agreements, approvals permits and Authorizations to which compliance is legally binding. • Ensure Contractors are aware of their responsibilities and are back charged for construction of ESC measures installed, maintained and specific restorations requirements. • Appoint an Environmental Inspector to confirm that regulatory criteria are being met by the ESCP.
Construction Contractor	• Erosion Protection and Sediment Control Plans will be prepared by the Contractor, approved by the Construction Supervisor and/or the Senior Environmental Assessment Officer and updated annually. • The Contractor will communicate erosion protection and sediment control information to all project staff and will ensure a copy of the Erosion and Sediment Control Plan will be made available at the project site. • The Contractor will be responsible for implementing and maintaining Erosion Protection and Sediment Control Plans and procedures. • The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness. • Vigilant for operation and maintenance of ESC measures. • Appoint a Construction Inspector to confirm that regulatory criteria are being met by the ESCP. • Respond promptly to feedback from the Environmental Inspector, Regulator, or Construction Supervisor.
Environmental Inspector	• Conduct regular monitoring of ESC measures to confirm proper implementation and effectiveness of controls. • Provide feedback to the Construction Contractor and the Licensing and Environmental Assessment Officer. • Document site inspections and corrective actions. • Maintain log books/ records.

Responsibilities for the development and implementation of an ESCP should be carried out in the order below:

- A project-specific Erosion Protection and Sediment Control Plan will be prepared prior to starting construction in erosion susceptible areas.

- Erosion Protection and Sediment Control Plans will be prepared by the Contractor, approved by the Construction Supervisor and/or the Senior Environmental Assessment Officer and updated annually.
- The Contractor will communicate erosion protection and sediment control information to all project staff and a copy of the Erosion and Sediment Control Plan will be made available at the project site.
- The Contractor will be responsible for implementing and maintaining Erosion Protection and Sediment Control Plans and procedures.
- The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness.
- The Contractor Environment Officer will conduct regular monitoring of erosion and sediment control measures to confirm implementation and continued effectiveness.
- The MH Environmental Inspector will make regular inspections of erosion protection and sediment control measures to confirm regulatory criteria are being met.

Erosion and Sediment Control Plan Components

The plan should include both temporary and permanent ESC's. Temporary ESC's are those that are in place during the construction phase, or a portion thereof, when exposed soils are vulnerable to increased erosion rates and streams are at risk of sedimentation. Permanent ESC's are those that are to be maintained throughout the operational phase of the Project.

General environmental protection components pertaining to erosion protection and sediment control are listed below.

1. Phase construction to limit soil exposure.
2. Minimize needless stripping and grading.
3. Stabilize exposed soils immediately.
4. Protect waterways and stabilize drainage ways.
5. Protect steep slopes and cuts.
6. Install perimeter controls.
7. Employ advanced sediment settling controls.
8. Ensure contractors are trained in ESC plan, implementation, inspections, maintenance and repairs.
9. Adjust ESC plan at construction site, as required.
10. Assess effectiveness of ESC control measures regularly and after storms, and repair, replace or upgrade, as required.
11. Respond to Environmental Improvement Orders related to erosion and sediment control, as required, if issued by Manitoba Hydro.

Monitoring and Inspection

Monitoring and Inspection is necessary to ensure the effectiveness of the plan. It provides confirmation of proper implementation and effectiveness of environmental protection measures, therefore contributing to the overall success of a project. Manitoba Hydro will provide Environmental Inspectors prior to the start of Project to conduct inspections of environmental components (soil and water) targeted for protection by erosion and sediment control measures in order to confirm that regulatory requirements are being achieved. Post-construction monitoring is often required to ensure the restoration, stabilization, and required monitoring of constructed features/habitats is established.

It is the duty of the contractor to ensure that the erosion and sediment control measures are properly installed, well maintained and functioning as intended on a daily basis. The ESCP should provide the framework for the inspection, maintenance including the need for repair, and record-keeping procedures during all stage of construction. The effectiveness of the ESCP depends directly on the frequency of monitoring and what actions are taken to address any failures that may occur. Documentation of all monitoring activities should be kept by the Contractor for a minimum of one (1) year after the development is substantially completed.

An effective construction monitoring program should include the following:

1. Construction drawings detailing the erosion and sediment controls installed which is updated through the construction period.
2. High risk areas should be identified on these drawings and routinely evaluated.
3. During inactive construction periods, where the site is left alone for 30 days or longer, a monthly monitoring should be conducted.
4. All damaged ESC measures should be repaired and/or replaced.
5. A monitoring schedule will be drawn up to include times, areas and person(s) responsible.

APPENDIX E: CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

Manitoba Hydro

E.1 Emergency Preparedness and Response Plan

Attach Contractor developed Emergency Preparedness and Response Plan

Manitoba Hydro

E.2 Waste and Recycling Management Plan

Attach Contractor developed Waste and Recycling Management Plan

Manitoba Hydro

E.3 Erosion and Sediment Control Plan

Attach Contractor developed Erosion and Sediment Control Plan

Manitoba Hydro

APPENDIX F: FISHERIES AND OCEANS CANADA OPERATIONAL STATEMENTS

Manitoba Hydro

ISOLATED OR DRY OPEN-CUT STREAM CROSSINGS

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 1.0

For the purpose of this Operational Statement, the term "Isolated Crossing" means a temporary stream crossing technique that allows work (e.g., trenched pipeline or cable installation) to be carried out "in-the-dry" while diverting the natural flow around the site during construction. These types of open trenched crossings are isolated using flume or dam and pump techniques (see *Pipeline Associated Watercrossings*, 2005 at **http://www.capp.ca/default.asp?V_DOC_ID=763&PubID=96717**). The term "Dry Open-cut Stream Crossing" means a temporary stream crossing work (e.g., trenched pipeline or cable installation) that is carried out during a period when the entire stream width is seasonally dry or is frozen to the bottom.

The risks to fish and fish habitat associated with isolated open cut stream crossings include the potential for direct damage to substrates, release of excessive sediments, loss of riparian habitat, stranding of fish in dewatered areas, impingement/ entrainment of fish at pump intakes, and disruption of essential fish movement patterns. Similarly, dry open-cut stream crossings pose a risk to fish and fish habitat due to potential harmful alteration of substrates, loss of riparian habitat, and release of excessive sediment once stream flows resume.

The order of preference for carrying out a cable or pipeline stream crossing, in order to protect fish and fish habitat, is: a) punch or bore crossing (see *Punch & Bore Crossings* Operational Statement); b) high-pressure directional drill crossing (see *High-Pressure Directional Drilling* Operational Statement); c) dry open-cut crossing; and d) isolated open-cut crossing. This order must be balanced with practical considerations at the site.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your isolated or dry open-cut stream crossing project without a DFO review when you meet the following conditions:

- for dry, open-cut crossings the watercourse is dry or frozen completely to the bottom at the site,
- for isolated crossings, the channel width of the watercourse at the crossing site is less than 5 meters from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- the isolated crossing does not involve the construction or use of an off-stream diversion channel, or the use of earthen dams,
- the isolated crossing ensures that all natural upstream flows are conveyed downstream during construction, with no change in quality or quantity,
- the site does not occur at a stream location involving known fish spawning habitat, particularly if it is dependent on groundwater upwelling,
- the use of explosives is not required to complete the crossing, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-cut Stream Crossing* listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (SARA) (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated or Dry Open-Cut Stream Crossing

1. Use existing trails, roads or cut lines wherever possible as access routes to avoid disturbance to the riparian vegetation.

2. Locate crossings at straight sections of the stream, perpendicular to the banks, whenever possible. Avoid crossing on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.

3. Complete the crossing in a manner that minimizes the duration of instream work.

4. Construction should be avoided during unusually wet, rainy or winter thaw conditions.

5. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the utility right-of-way.

6. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use. Operational Statements are also available for *Ice Bridges and Snow Fills*, *Clear-Span Bridges*, and *Temporary Stream Crossing*.

    6.1. 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.
    6.2. Grading of the stream banks for the approaches should not occur.
    6.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.
    6.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Manitoba In-Water Construction Timing Windows*).
    6.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

7. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.

    7.1. Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
    7.2. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
    7.3. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
    7.4. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

8. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. 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.

    10.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Measures to Protect Fish and Fish Habitat when Carrying Out an Isolated Crossing

Temporary isolation is used to allow work "in-the-dry" while maintaining the natural downstream flow by installing dams up and downstream of the site and conveying all of the natural upstream flow into a flume, or pumping it around the isolated area. In addition to measures 1 to 10, the following measures should be carried out when conducting an isolated stream crossing:

11. Time isolated crossings to protect sensitive fish life stages by adhering to fisheries timing windows (see Measure 6.4).

12. Use dams made of non-earthen material, such as water-inflated portable dams, pea gravel bags, concrete blocks, steel or wood wall, clean rock, sheet pile or other appropriate designs, to separate the dewatered work site from flowing water.

    12.1. If granular material is used to build dams, use clean or washed material that is adequately sized (i.e., moderately sized rock and not sand or gravel) to withstand anticipated flows during the construction. If necessary, line the outside face of dams with heavy poly-plastic to make them impermeable to water. Material to build these dams should not be taken from below the HWM of any water body.
    12.2. Design dams to accommodate any expected high flows of the watercourse during the construction period.

13. Before dewatering, rescue any fish from within the isolated area and return them safely immediately downstream of the worksite.

    13.1. You will require a permit from DFO to relocate any aquatic species that are listed as either endangered or threatened under SARA. Please contact the DFO office in your area to determine if an aquatic species at risk is in the vicinity of your project and, if appropriate, use the DFO website at **www.dfo-mpo.gc.ca/species-especes/permits/sarapermits_e.asp** to apply for a permit.

OVERHEAD LINE CONSTRUCTION

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 3.0

Overhead lines are constructed for electrical or tele-communication transmission across many watercourses that range in size from small streams and ponds to large rivers, lakes and reservoirs. This Operational Statement applies to selective removal of vegetation along the right-of-way to provide for installation and safe operation of overhead lines, and passage of equipment and materials across the water body.

Although fish habitat occurs throughout a water system, it is the riparian habitat that is most sensitive to overhead line construction. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover, and spawning and food production areas. It is important to design and build your overhead line project to meet your needs while also protecting riparian areas. Potential impacts to fish and fish habitat include excessive loss of riparian vegetation, erosion and sedimentation resulting from bank disturbance and loss of plant root systems, rutting and compaction of stream substrate at crossing sites, and disruption of sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your overhead line project without a DFO review when you meet the following conditions:

- it does not require the construction or placement of any temporary or permanent structures (e.g. islands, poles, crib works, etc.) below the ordinary high water mark (HWM) (see definition below), and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines* listed below in this Operational Statement.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial or federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Constructing Overhead Lines

1. Installing overhead lines under frozen conditions is preferable in all situations. On wet terrains (e.g., bogs), lines should be installed under frozen conditions, where possible, or using aerial methods (i.e., helicopter).

2. Design and construct approaches so that they are perpendicular to the watercourse wherever possible to minimize loss or disturbance to riparian vegetation.

3. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or overhead line structures.

3.1. Wherever possible, locate all temporary or permanent structures, such as poles, sufficiently above the HWM to prevent erosion.

4. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to accommodate the overhead line. This removal should be kept to a minimum and within the road or utility right-of-way.

5. Machinery fording the watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and should occur only if an existing crossing at another location is not available or practical to use. A *Temporary Stream Crossing* Operational Statement is also available.

5.1. 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.

5.2. Grading of the stream banks for the approaches should not occur.

5.3. If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment fording, then a temporary crossing structure or other practice should be used to protect these areas.

5.4. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows (see the *Manitoba In-Water Construction Timing Windows*).

5.5. Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding.

6. Operate machinery on land and in a manner that minimizes disturbance to the banks of the watercourse.

6.1. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

6.2. Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent any deleterious substance from entering the water.

6.3. Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

6.4. Restore banks to original condition if any disturbance occurs.

7. Install effective sediment and erosion control measures before starting work to prevent entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

7.1. Avoid work during wet, rainy conditions or use alternative techniques such as aerial methods (i.e., helicopter) to install overhead lines.

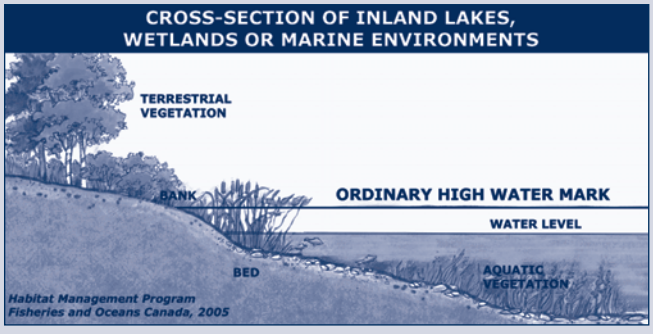
8. Stabilize any waste materials removed from the work site to prevent them from entering the watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.

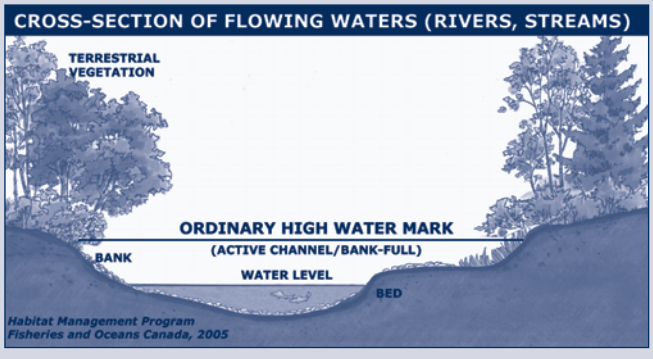
9. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.

9.1. Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

Ordinary high water mark (HWM) – The usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (rivers, streams) this refers to the "active channel/bank-full level" which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (Full Supply Level).





FISHERIES AND OCEANS CANADA OFFICES IN MANITOBA

Winnipeg Office
Fisheries and Oceans Canada
Freshwater Institute
501 University Crescent
Winnipeg, Manitoba
R3T 2N6
Tel: (204) 983-5163
Fax: (204) 984-2402

Dauphin Office
Fisheries and Oceans Canada
135 2 Avenue NE
Dauphin, Manitoba
R7N 0Z6
Tel: (204) 622-4060
Fax: (204) 622-4066

Aussi disponible en français

http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_f.asp

DFO/2007-1329

TEMPORARY STREAM CROSSING

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 1.0

A temporary stream crossing consists of i) a one-time ford in flowing waters, ii) a seasonally dry streambed ford, or iii) a temporary bridge (e.g., Bailey bridge or log stringer bridge). Temporary stream crossings are employed for short term access across a watercourse by construction vehicles when an existing crossing is not available or practical to use. They are not intended for prolonged use (e.g., forest or mining haul roads). The use of temporary bridges or dry fording is preferred over fording in flowing waters due to the reduced risk of damaging the bed and banks of the watercourse and downstream sedimentation caused by vehicles. Separate Operational Statements are available for *Ice Bridges and Snow Fills* used for temporary access during the winter and for non-temporary *Clear Span Bridges*.

The risks to fish and fish habitat associated with temporary stream crossings include the potential for direct harm to stream banks and beds, release of excessive sediments and other deleterious substances (e.g., fuel, oil leaks), loss of riparian habitat and disruption to sensitive fish life stages.

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the *Fisheries Act* no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by DFO. By following the conditions and measures set out below you will be in compliance with subsection 35(1) of the *Fisheries Act*.

The purpose of this Operational Statement is to describe the conditions under which it is applicable to your project and the measures to incorporate into your project in order to avoid negative impacts to fish habitat. You may proceed with your temporary stream crossing project without a DFO review when you meet the following conditions:

- the bridge is no greater than one lane in width, and no part of its structure is placed within the wetted portion of the stream,
- the work does not include realigning the watercourse,
- for fording in flowing waters and temporary bridges, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark (HWM) (see definition below),
- disturbance to riparian vegetation is minimized,
- the work does not involve dredging, infilling, grading or excavating the bed or bank of the watercourse,
- all crossing materials will be removed prior to the spring freshet, or immediately following project completion if this occurs earlier,
- fording involves a one time event (over and back) and will not occur in areas that are known fish spawning sites,
- the crossing will not result in erosion and sedimentation of the stream, or alteration (e.g., compaction or rutting) of the bed and bank substrates,
- the crossing does not involve installation of a temporary culvert, and
- you incorporate the *Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing* listed below.

If you cannot meet all of the conditions listed above and cannot incorporate all of the measures listed below then your project may result in a violation of subsection 35(1) of the *Fisheries Act* and you could be subject to enforcement action. In this case, you should contact the DFO office in your area if you wish to obtain DFO's opinion on the possible options you should consider to avoid contravention of the *Fisheries Act*.

You are required to respect all municipal, provincial and federal legislation that applies to the work being carried out in relation to this Operational Statement. The activities undertaken in this Operational Statement must also comply with the *Species at Risk Act* (SARA) (**www.sararegistry.gc.ca**). If you have questions regarding this Operational Statement, please contact the DFO office in your area (see Manitoba DFO office list).

We ask that you notify DFO, preferably 10 working days before starting your work, by filling out and sending the Manitoba Operational Statement notification form (**www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/index_e.htm**) to the DFO office in your area. This information is requested in order to evaluate the effectiveness of the work carried out in relation to this Operational Statement.

Measures to Protect Fish and Fish Habitat when Carrying Out a Temporary Stream Crossing

1. Use existing trails, roads or cut lines wherever possible, as access routes to avoid disturbance to the riparian vegetation.

2. Locate crossings at straight sections of the stream, perpendicular to the bank, whenever possible. Avoid crossing on meander bends, braided streams, alluvial

fans, or any other area that is inherently unstable and may result in the erosion and scouring of the stream bed.

3. While this Operational Statement does not cover the clearing of riparian vegetation, the removal of select plants may be necessary to access the construction site. This removal should be kept to a minimum and within the road or utility right-of-way. When practicable, prune or top the vegetation instead of uprooting.

4. Generally, there are no restrictions on timing for the construction of bridge structures or fording seasonally dry streambeds, as they do not involve in-water work. However, if there are any activities with the potential to disrupt sensitive fish life stages (e.g., fording of the watercourse by machinery) these should adhere to appropriate fisheries timing widows (see the *Manitoba In-Water Construction Timing Windows*).

5. Machinery fording a flowing watercourse to bring equipment required for construction to the opposite side is limited to a one-time event (over and back) and is to occur only if an existing crossing at another location is not available or practical to use.

- **5.1.** 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.
- **5.2.** Grading of the stream banks for the approaches should not occur.
- **5.3.** If the stream bed and banks are steep and highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation are likely to occur as a result of equipment fording, then a temporary bridge should be used in order to protect these areas.
- **5.4.** The one-time fording should adhere to fisheries timing windows (see Measure 4).
- **5.5.** Fording should occur under low flow conditions, and not when flows are elevated due to local rain events or seasonal flooding.

6. Install effective sediment and erosion control measures before starting work to prevent the entry of sediment into the watercourse. Inspect them regularly during the course of construction and make all necessary repairs if any damage occurs.

7. For temporary bridges also employ the following measures:

- **7.1.** Use only clean materials (e.g., rock or coarse gravel fill, wood, or steel) for approaches to the bridge (i.e., not sand, clay or organic soil) and install in a manner that avoids erosion and sedimentation.
- **7.2.** Design temporary bridges to accommodate any expected high flows of the watercourse during the construction period.
- **7.3.** Restore the bank and substrate to pre-construction condition.
- **7.4.** Completely remove all materials used in the construction of the temporary bridge from the watercourse following the equipment crossing, and stabilize and re-vegetate the banks.

8. Operate machinery in a manner that minimizes disturbance to the watercourse bed and banks.

- **8.1.** Protect entrances at machinery access points (e.g., using swamp mats) and establish single site entry and exit.
- **8.2.** Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.
- **8.3.** Wash, refuel and service machinery and store fuel and other materials for the machinery away from the water to prevent deleterious substances from entering the water.
- **8.4.** Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

9. Stabilize any waste materials removed from the work site, above the HWM, to prevent them from entering any watercourse. This could include covering spoil piles with biodegradable mats or tarps or planting them with preferably native grass or shrubs.

10. Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent soil erosion and to help seeds germinate. 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.

- **10.1.** Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

Definition:

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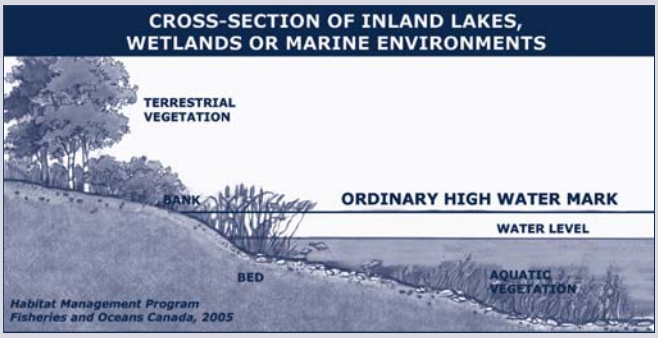

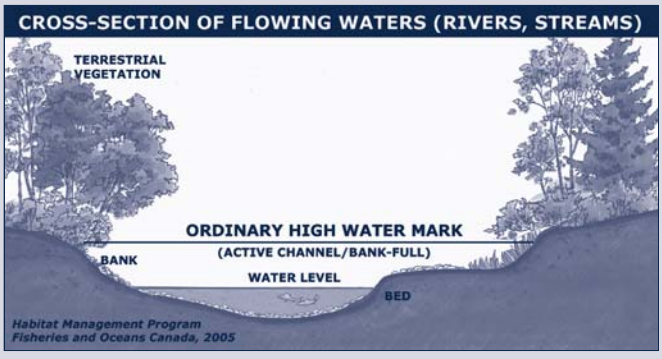

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Winnipeg Office
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Freshwater Institute
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R3T 2N6
Tel: (204) 983-5163
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DFO/2007-1329

TIMING WINDOWS

Fisheries and Oceans Canada
Manitoba Operational Statement

Version 3.0

MANITOBA IN-WATER CONSTRUCTION TIMING WINDOWS FOR THE PROTECTION OF FISH AND FISH HABITAT

Restricted activity timing windows have been identified for Manitoba lakes, rivers and streams to protect fish during spawning and incubation periods when spawning fish, eggs and fry are vulnerable to disturbance or sediment. During these periods, no in-water or shoreline work is allowed except under site- or project-specific review and with the implementation of protective measures. Restricted activity periods are determined on a case by case basis according to the species of fish in the water body, whether those fish spawn in the spring, summer or fall, and whether the water body is located in Northern or Southern Manitoba.

Timing windows are just one of many measures used to protect fish and fish habitat when carrying out a work or undertaking in or around water. Be sure to follow all of the measures outlined in the Operational Statements to avoid negative impacts to fish habitat.

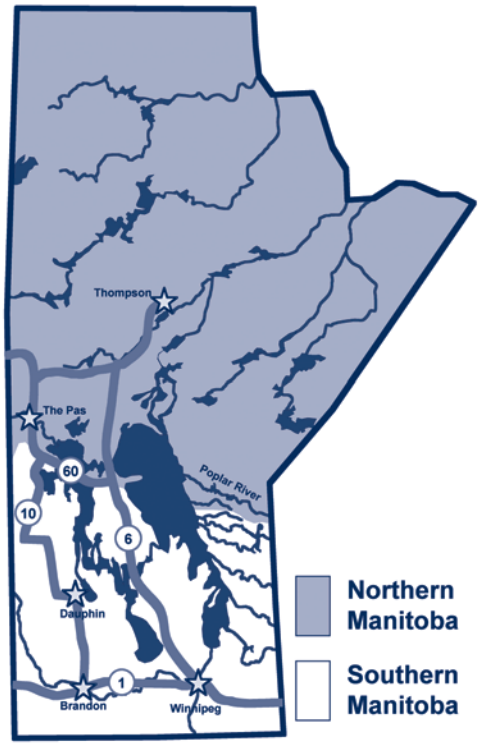

Figure 1:
Northern and Southern Manitoba boundaries for spawning timing windows.

How To Determine Timing Windows

1. Determine the fish species living in the water body where you wish to do work. Consult the Province of Manitoba Angling Map (available from the Government of Manitoba map sales) which details the fish present in most Manitoba lakes and streams, or contact your local Fisheries and Oceans Canada (DFO) office. Pictures of most of these fish species can be found in the Manitoba Angler's Guide (sport fishing regulations).

2. Determine if the fish living in the water body spawn in the spring, summer, or fall according to Table 1. You can have one, two or all three fish spawning types in one water body. In Manitoba, essentially all lakes and streams contain one or more of the spring spawning fish listed, however far fewer contain summer or fall spawning fish.

3. Determine if the water body is located in Northern or Southern Manitoba according to Figure 1.

4. Use Table 2 to determine the in-water work timing restrictions according to the location of a water body (North or South) and the type of fish found within (spring, summer or fall spawners). During these periods no in-water work (below the ordinary high water mark) is to occur without site- or project-specific review by DFO.

Table 1:
Common spring, summer and fall spawning fish.

Spring Spawning Fish	Summer Spawning Fish	Fall Spawning Fish
▸ Northern Pike	▸ Channel Catfish	▸ Brook Trout
▸ Walleye, Sauger	▸ Lake Sturgeon	▸ Lake Trout
▸ Yellow Perch	▸ Goldeye, Mooneye	▸ Arctic Char
▸ Suckers	▸ White Bass	▸ Lake Whitefish
▸ Smallmouth Bass	▸ Freshwater Drum	
▸ Arctic Grayling	▸ Carmine Shiner*	

Table 2:
Timing Windows when no in-water work is to occur in order to protect spawning fish and developing eggs and fry.

	Spring Spawning Fish	Summer Spawning Fish	Fall Spawning Fish
Northern Manitoba	April 15 – June 30	May 15 – July 15	September 1 – May 1
Southern Manitoba	April 1 – June 15	May 1 - June 30*	September 15 – April 30

* Carmine Shiner – This is a Species At Risk found only in Southern Manitoba in the Whitemouth River and its tributaries, the Bird River and its tributaries and the Pinawa Channel. This fish spawns from May15 to July 15 and this extended summer spawning timing window should be applied to those water bodies where it is found.

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