BIPOLE III TRANSMISSION PROJECT

CONSTRUCTION ENVIRONMENTAL PROTECTION PLAN

Manitoba Hydro

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

Version – Final 3.09

List of Revisions

Number	Nature of Revision	Section(s)	Revised By	Date
Final 2.01	Addition of a Biosecurity Standard Operating Procedure	Appendix F	Manitoba Hydro	20150324
Final 2.02	Updated the sensitive timing windows for birds table to reflect the time period found in licence conditions	Appendix D	Manitoba Hydro	20150506
Final 2.03	Updated the sensitive timing window for the clearing General Mitigation measure (PA 3.10) to reflect the time period found in licence conditions	Page 5-13	Manitoba Hydro	20150506
Final 2.04	Updated the Effective Period Column from the Buffer and Setbacks table as it conflicted with the clearing timing windows found in licence conditions for moose and nesting and migratory birds	Appendix E	Manitoba Hydro	20150506
Final 2.05	Added PC-1.28 in General mitigation under Access Roads and Trails regarding traffic control within an MIT right-of-way	Page 5-6	Manitoba Hydro	20150508
Final 2.06	Added "*Generator Registrations and Carrier Licencing Regulation"* to Licences and Permits in Appendix C	Appendix C	Manitoba Hydro	20150508

Final 3.00	Changed EC-3.01 and the description of when MBH will contact DFO	Page 5-21	Manitoba Hydro	20150723
Final 3.01	Updated PA-5.02 general mitigation Draining	Page 5-17	Manitoba Hydro	20150918
Final 3.02	Updated EC 3.01 general mitigation under Fish Protection	Page 5-21	Manitoba Hydro	20150918
Final 3.03	Adjusted wording for EC 9.04 and PA 3.10 to provide clarity to statements of timing windows in General Mitigation Tables	Page 5-44, Page 5-13 and Appendix D	Manitoba Hydro	20150810
Final 3.04	Updated the order of the Appendix to reflect the order of appearance in the document	All affected pages	Manitoba Hydro	20150810
Final 3.05	Added 'Section 2.6.2 – Encountering Unexpected Contamination'. Added Appendix G – Guidance For Contaminated Soils or Groundwater Identification and Disposal. Added "and record is kept (Appendix B)" to Construction Inspector duties table. Updated Table of Contents and Table of Appendices.	Page 1-5, page 2-7, and Appendix G	Manitoba Hydro	20150810
Final 3.06	Updating the amendment process diagram and process description	Section 1-2	Manitoba Hydro	20150918
Final 3.07	Added copy of the BPIII Licence to Appendix C	Appendix C	Manitoba Hydro	20150918
Final 3.08	Addition of a clearing guidance diagrams	Appendix J	Manitoba Hydro	20151103
Final 3.09	Reinstated PA 3.15 regarding flagging ESS	Section 5-13	Manitoba Hydro	20151103

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 regulatory, 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.

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

1.0 INTRODUCTION

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

This CEnvPP provides guidance for the implementation of environmental protection measures for the Project. The Bipole III transmission line will be approximately 1,380 km in length and will cross diverse regions of Manitoba from the Boreal Forest in the north to agricultural and developed areas in the south. There are unique situations and general mitigations which are dependant on the region or construction section, however this document is meant to deliver information for all applicable areas. Construction is planned to commence in the winter of 2014 with a projected in-service date of October 2018. The Environmental Impact Statement for the Project (Manitoba Hydro, 2011) describes the Project, provides detailed technical information and outlines the project schedule.

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 the MH Environmental Inspector.

1.1 Document Amendment Process

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

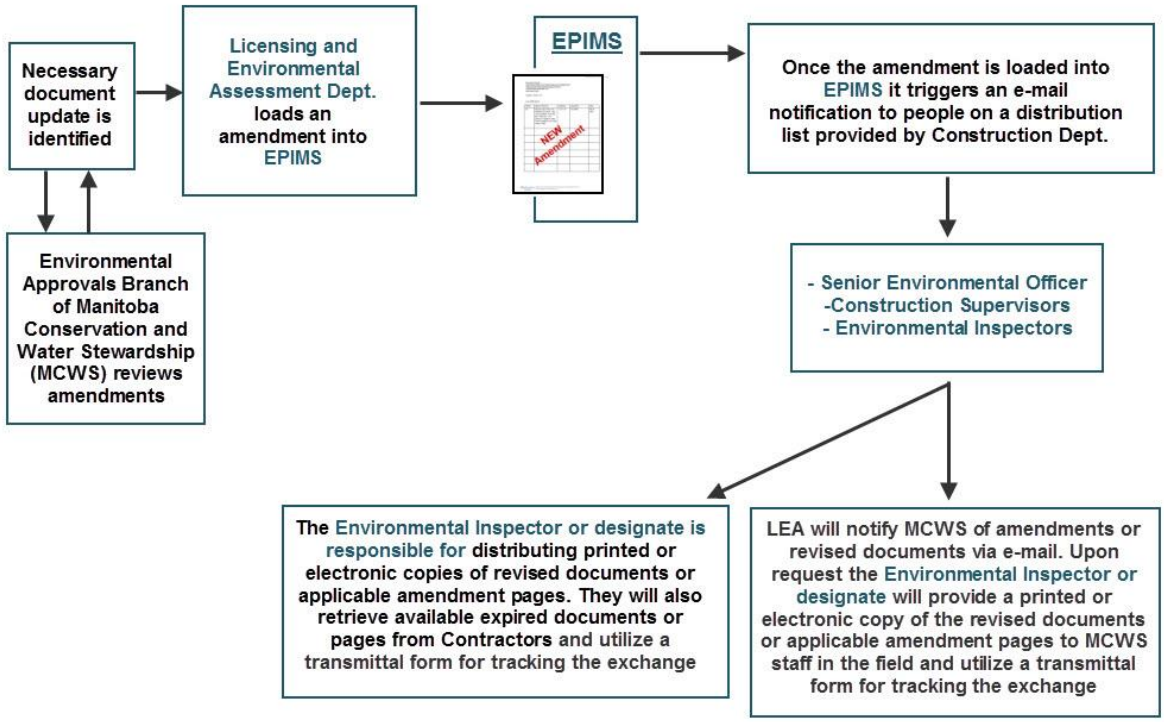


Figure 1-1: Document Ammendment Process

1.2 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 1-2). 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 project components and are intended for use by construction contractors and environmental staff.

A number of Environmentally Sensitive Sites (ESS) have been identified for the Project. ESS are locations, features, areas, activities or facilities that were identified in the 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.

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

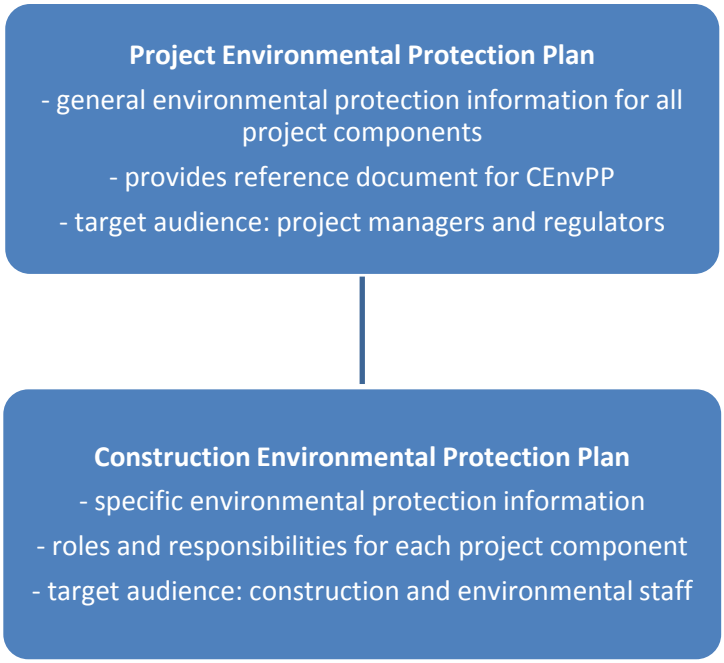


Figure 1-2: Relationship between Environmental Protection Documents

1.3 Roles, Responsibilities and Reporting

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

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

Role	Key Responsibilities
Project Engineer	• Accountable for all aspects of their construction component in the Project • Oversees Construction Supervisors who are responsible for construction activites
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	• Responsible for the implementation of Construction Environmental Protection Plan. • Liaises with Licensing and Environmental Assessment Department. • Liaises with Regional regulatory authorities and other regulatory authorities where required or applicable. • 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.

Role	Key Responsibilities
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 and record is kept (Appendix B). • 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. Both daily and weekly reports containing information on activities carried out, effectiveness of actions and outstanding issues are also submitted to Environmental Protection Information Management System. • Assists in developing solutions for environmental issues on-site with the Construction Supervisor and the Contractor and where applicable with the input from the Senior Environmental Assessement Officer. • 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.

Role	Key Responsibilities
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 C.
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 materials 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 liason 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.

1.3.1 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 licence/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.

1.3.2 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) to review environmental matters for the work. The dedicated on-site contractor 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.

1.3.3 Environmental Improvement Orders

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

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

The Contractor shall:

- Within the expiry date of the period specified in the order or any extension thereof , prepare a written report on the measures taken to remedy the contravention and on any measures yet to be taken;
- Send a copy of the report to the Manitoba Hydro Representative who made the order;
- 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.

1.3.4 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.

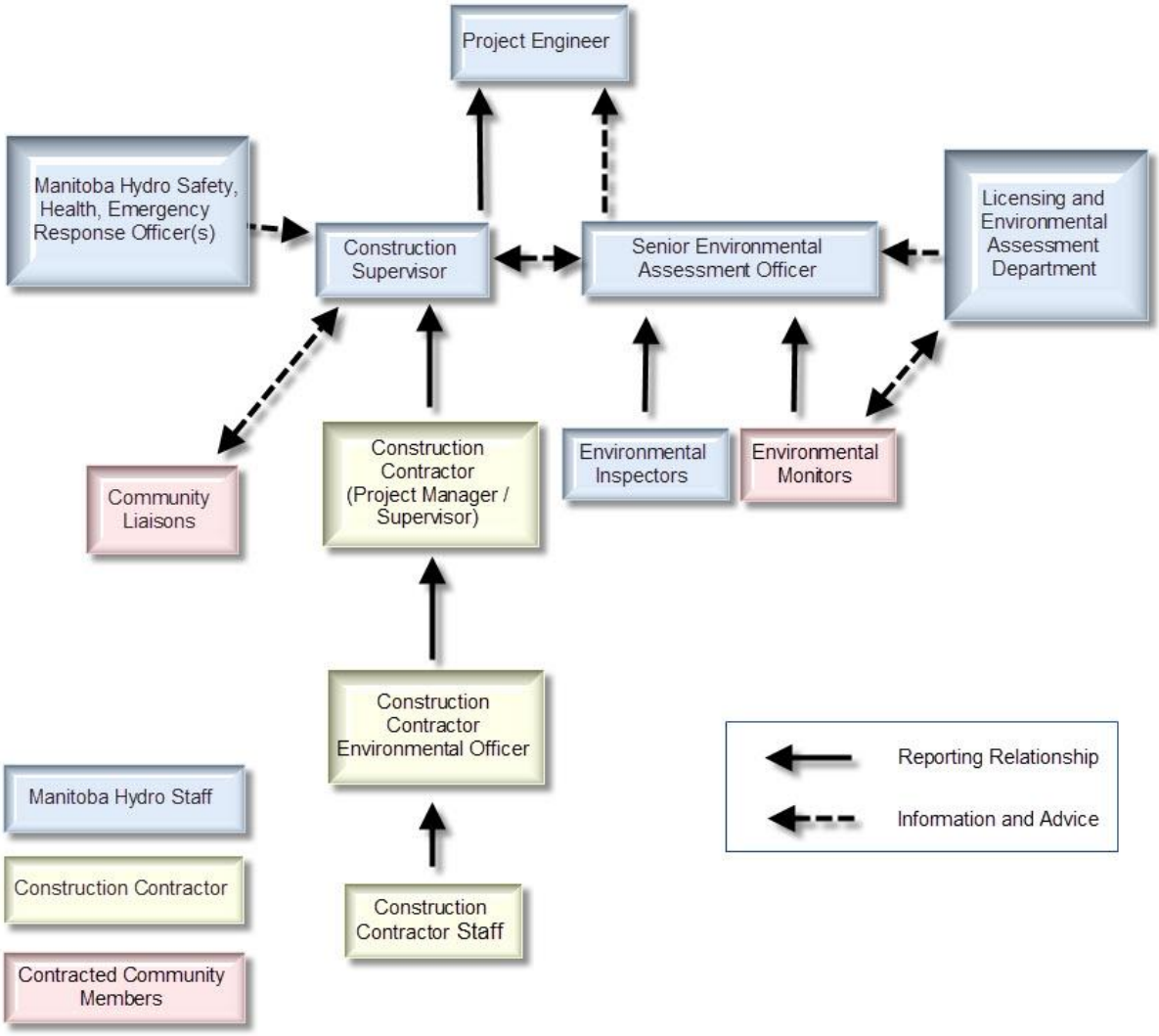


Figure 1-3: Environmental Communication Reporting Structure

1.4 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.

1.5 Regulatory Requirements

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

2.0 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. 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).

2.1 Timing Windows

2.1.1 Soil

Construction in southern Manitoba will be carried out during times of the year that minimize excessive soil disturbance. Where needed, construction will take place during the winter months (November to March) under frozen and snow-covered conditions to minimize surface disturbance.

2.1.2 Permafrost (If applicable)

In regions contacting permafrost, Project activities will be scheduled between November 1st and April 30th under frozen ground conditions to minimize surface disturbance and permafrost degradation except at Construction Power Station, Converter Station and Camp project components where some permafrost melting may be required.

2.1.3 Wildlife

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

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

2.1.4 Burning

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

2.1.5 Fish

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

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

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

Where applicable, site specific timing windows are prescribed in specific mitigation measures for each ESS.

2.2 Setbacks and Buffers for Wildlife and Anthropogenic Features

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

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

Setbacks are areas to be maintained from a given environmental feature where no work shall occur unless authorized by Senior Environmental Assessment Officer.

Buffers are work areas where restricted activities such as low disturbance clearing are permitted.

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

2.3 Riparian Management

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

Riparian Buffers (as shown in Table 2-1) are applied to riparian habitats, which include, streams, rivers, lakes and wetlands/permafrost areas 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 the Manitoba Hydro Senior Environmental Assessment Officer is required.**The Riparian Buffer is composed of two zones: a Management Zone (variable width based on Table 2-1) that allows equipment to conduct low disturbance clearing and a 7m Machine Free Zone which only allows reaching into zone with equipment but not entering the zone except at trail crossing (Figure 2-1).**

Table 2-1: Riparian Buffer Distances Based on Slope

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

Machine Free Zones are work areas where restricted activities such as low disturbance clearing are permitted by reaching into zone with equipment but not entering the zone. Where applicable, site specific setbacks are prescribed in specific mitigation measures for each feature.

Setbacks, Riparian Buffers and Machine Free zones distances from sensitive water features are provided in Appendix E. Setbacks are to be maintained from a defined riparian habitat where no work shall occur.

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

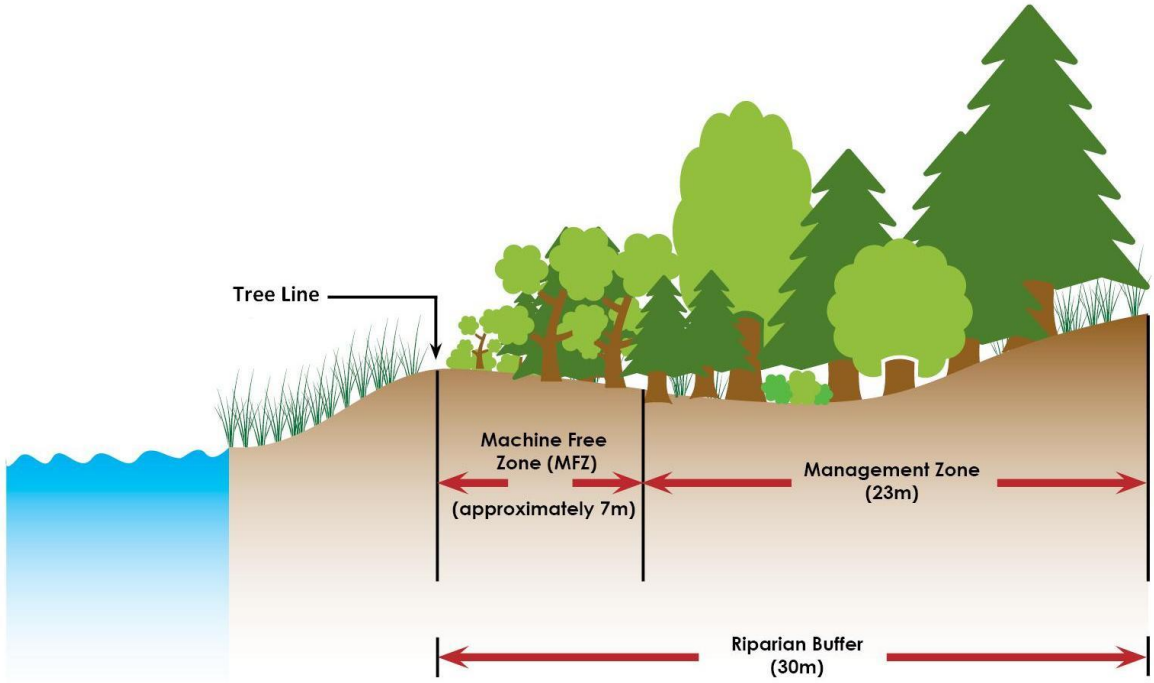


Figure 2-1: Example of Zones in a 30m Riparian Buffer

2.3.1 Riparian Mitigation

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

2.3.2 Tower Foundations within Riparian Buffers:

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

2.4 Wildlife and Habitat

2.4.1 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.

Potential Project effects of the project on birds include: mortality, habitat alteration and fragmentation, sensory disturbance, and disruption of movements. Increases in bird mortality can occur in a variety of forms including collisions with transmission wires and construction vehicles, electrocutions, increased predation and hunting. Bird-wire strikes are one of the most common causes of non-hunter related mortality for birds, particularly birds with short wings and large body masses. Collisions with wires are more likely over or near open water, the risk of collision would likely be greatest near rivers, to mitigate this bird diverters or aerial markers may be installed in high bird traffic areas.

2.4.2 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 breeding activities 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.
Potential Project effects on northern leopard frog and common snapping turtle during construction include habitat loss and alteration, which are threats to these populations. As these species are mainly found in riparian areas near large rivers, bodies of water or productive marshes, no habitat effects are anticipated with mitigation such as riparian buffers. Mortality could increase in the Project Study Area during construction due to increased road traffic. Northern leopard frogs are particularly susceptible to road mortality during migration and dispersal. The majority of clearing and construction will occur in winter, low mortality effects are anticipated.

2.4.3 Mammals

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

2.5 Agriculture

2.5.1 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) found in Appendix F.

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

The 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 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 transport of invasive species, pests or disease.

2.6 Soils and Terrain

2.6.1 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), permafrost (soil that remains frozen for more than one year) 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. In areas containing permafrost soils, compaction can impact their natural insulation causing the soil to become unstable. During construction, soil compaction and rutting can result from the movement of vehicles and equipment, storage of materials, and assembly and erection of towers. Effects of soil compaction and rutting can be mitigated by managing equipment traffic routes and activities for clearing of the transmission right-of-way (ROW), and installation of transmission towers to minimize the impact. Existing access routes are planned to be utilized wherever possible to avoid disturbing new areas.

2.6.2 Encountering Unexpected Contamination

Manitoba Hydro considers any of its electrical stations as potentially containing contaminated soils and/or groundwater; subsequently, there is potential to encounter contamination during construction activities. Contamination at Manitoba Hydro Stations may have resulted from historical spills or leaks of fuels, oils, lubricants, and coolants. Manitoba Hydro may conduct environmental site assessments at a Station any prior to construction to determine if contamination exists within the construction footprint. If contamination exists, Remedial Action Plans will be prepared.

There is also potential to encounter non-Manitoba Hydro owned sites that may contain contaminated soils and/or groundwater; however, due to the majority of Project routing transecting agricultural lands, the potential is low.

Please see Appendix G (Guidance for Contaminated Soils or Groundwater Identification and Disposal) for more info.

2.6.3 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.

2.7 Cultural

2.7.1 Heritage

Archaeological sites, or sites where historic and pre-historic artifacts of human activity are found, are sensitive to disturbance and loss from ground disturbance activities, such as clearing and excavation. Artifacts may include tools and objects, such as arrowheads, pottery shards or bottles, or burial sites and human remains. These sites and objects are protected under legislation as a part of our common heritage. Manitoba Hydro is committed to protecting and preserving natural environmental environments, cultural landscapes, and heritage resources affeceted by the Project to the extent possible. 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.

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

2.8 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. In conjunction with mitigation measures a stand alone document called the "access management plan" (AMP) has been developed to safeguard and support the preservation of environmental, socio-economic, cultural and heritage values within the Projects' area of direct impact in the creation of new access.

3.0 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 H 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 I) and be included as Appendix H 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 I) and be included as Appendix H 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 5.2)** and **specific mitigation measures (see detailed maps and specific mitigation in the Construction Section Mapbook "Part 2").**

5.1 General Mitigation Requirements

Construction considerations required for all Project areas are considered general mitigation and are applicable to all construction areas. **There is overlap and duplication of mitigation measures amongst the above categories, this allows the user to look up the actions they must perform by different categories.**

The general mitigation measures are provided under the following five categories: 1) Management (MM); 2) Project Activity (PA); 3) Project Component (PC); 4) Environment Component (EC); and 5) Environmental Issue (EI), as follows:

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

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

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

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 accommadate 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-1.09	Contractor will be restricted to established roads and trails, and cleared construction areas in accordance with the Access Management Plan.
PC-1.10	During winter construction, where necessary (i.e. unfrozen wetlands, creeks), equipment will be wide-tracked or equipped with high flotation tires to minimize rutting and limit damage and compaction to surface soils.
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	The Contractor shall check that rock utilized for access road construction does not have acid or alkali generating properties.
PC-1.24	All constructed access points onto Manitoba Infrastructure 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.

Access Roads and Trails (PC-1)

PC-1.27	Any temporary constructed access within an MIT roadway will need to be removed once the project is completed.
PC-1.28	All works undertaken within the MIT right-of-way (ROW) will adhere to the MIT traffic control policies.

Agricultural Areas (EC-1) [If applicable]

ID	Mitigation
EC-1.01	All fences and gates will be left in "as-found" condition.
EC-1.02	Any necessary access on agricultural lands will be discussed in advance with the landowner.
EC-1.03	Construction areas and sites will be assessed for compaction and if required will be 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 altered, any anticipated diversions of surface water will require authorization under The Water Rights Act. This applies to creating new drainage, blocking natural drainage or diverting flows around a site.

Aircraft Use (EI-1) [If applicable]

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

Blasting and Exploding (PA-1)

ID	Mitigation
PA-1.01	A communication protocol will be developed to notify affected parties of blasting operations and conductor splicing. Affected parties may include Manitoba 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-1.03	Blasting will not be permitted around idenitified caribou calving habitats during calving season (May 1 to June 30).
PA-1.04	Blasting will not be permitted during timing windows established for sensitive bird breeding, nesting and brood rearing months.
PA-1.05	Explosives will be stored, transported and handled in accordance with federal requirements through the Explosives Act and Transportation of Dangerous Goods Act and provincial regulations stated in The Workplace Safety and Health Act.
PA-1.06	Implode Compression conductor splicing will be minimized to extent possible on weekends and after normal working hours in residential areas.
PA-1.07	Quarry blasting operations and conductor splicing will be scheduled to minimize disturbance to wildlife and area residents, and to ensure the safety of workers.
PA-1.08	The Blasting Contractor will be in possession of valid licenses, permits and certificates required for blasting in Manitoba.
PA-1.09	The Blasting Contractor will submit a Blasting Plan to the Construction Supervisor for review and approval prior to commencement of blasting operations.
PA-1.10	Use of ammonium nitrate and fuel oil will not be permitted in or near waterways. Only DFO approved explosives shall be permitted in or near waterways.
PA-1.11	Warning signals will be used to warn all project personnel and the public of safety hazards associated with blasting.
PA-1.12	Written and/or oral notification will be outlined in the Communication Plan prior to each blasting period.
PA-1.15	The Blasting Contractor shall check that blast rock does not have acid or alkali generating properties.

Borrow Pits and Quarries (PC-2)

ID	Mitigation
PC-2.01	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	The Blasting Contractor shall check that blast rock does not have acid or alkali generating properties.

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

ID	Mitigation
EC-2.01	Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations.
EC-2.02	Mud, dust and vehicle emissions will be managed in a manner that ensures safe and continuous public activities near construction sites where applicable.
EC-2.03	Noisy construction activities where noise and vibration may cause disturbance and stress in built-up areas will be limited 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-2.03	Burning of slash on permafrost soils should be avoided. If it is unavoidable, the utilization of other methods such as a metal container that can be removed from site.
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	. 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 (i.e. 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 is allowed only within the Reduced Risk Time Period for Wildlife illustrated in Appendix D. If clearing within the Sensitive Time Period for Wildlife, further mitigation and approvals may be would be required.
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	During clearing Environmentally sensitive sites, along the right of way will be clearly identified by signage or flagging
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 a shear blade "V" or "K-G" type blades, feller-bunchers, hydro ax and other means approved by the Senior Enviornmental Assessment Officer.
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.

ID	Mitigation
PA-3.22	If extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies, a stop work order may be issued.
PA-3.23	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
PA-3.24	Trees will be felled toward the middle of rights-of-way or cleared area to avoid damage to standing trees. Trees will not be felled into waterbodies.
PA-3.25	Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated at identified Environmentally Sensitive Sites.
PA-3.26	Where practical, merchantable timber will be salvaged and brought to market. As per Annual Harvest Plan, timber that is not salvaged will be piled and burned during frozen conditions in accordance with timing windows, 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.

Construction Camps (PC-3) [If applicable]

ID	Mitigation
PC-3.01	A food handling permit will be obtained from the local Public Health Inspector prior to the operation of kitchens.
PC-3.02	Bear-proof garbage containers and electric fencing along with regular removal of food waste to approved waste disposal grounds will be used to manage food waste in northern and rural areas.
PC-3.03	Construction camp sites will be kept tidy at all times. Waste materials including litter will be collected for disposal.
PC-3.04	Construction camps will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-3.05	Crown land permits will be obtained for construction camps as required.
PC-3.06	Erosion protection, sediment control and drainage management measures will be put in place prior to construction where applicable.
PC-3.07	Feeding or harassment of any wildlife is prohibited.
PC-3.08	Firebreaks will be constructed around camp locations where there is a risk of fire.
PC-3.09	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
PC-3.10	Liquid and solid sewage wastes held in tanks will be removed in accordance with the solid waste management plan by a licensed contractor and taken to licensed or approved disposal areas.
PC-3.11	Problem wildlife will be reported immediately to the nearest Manitoba Conservation and Water Stewardship office.
PC-3.12	Propane tanks for camp use will be stored in dedicated, secure areas at a safe distance from kitchen and sleeping quarters in accordance with provincial legislation and national codes.
PC-3.13	Sewage and grey water holding tanks will be sited in accordance with provincial legislation, and federal and provincial guidelines, and a minimum of 100 m from the ordinary high water mark of any waterbody.
PC-3.14	Sewage and grey water will be collected in holding tanks, sullage pits, chemical toilets or pit privies.
PC-3.15	Spill control and clean-up equipment and materials will be provided for construction camps in accordance with the Emergency Preparedness and Response Plan.
PC-3.16	The Environmental Inspector will inspect rehabilitated construction camps in accordance with the site Reclamation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-3.17	Vegetation control at construction camps will be in accordance with the Rehabilitation and Vegetation Management Plan.
PC-3.18	Waste and recyclables will be removed in accordance with the Waste and Recycling Management Plan to a licensed or approved waste disposal site and/or recycling facility.
PC-3.19	Food, greases and wastes will be stored in sealed, air-tight containers and managed as per PA-3.2.

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 (i.e. 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.
PA-5.02	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines and relevant provincial and municipal acts, regulations and bylaws.
PA-5.03	Dewatering discharges from construction activities will be directed into vegetated areas, existing drainage ditch(s) or a means of sediment control at such a rate that will have adequate flow dissipation at the outlet to ensure it does not cause erosion at the discharge point or at any point downstream.
PA-5.04	Drainage water from construction areas will be diverted through vegetated areas, existing drainage ditch(s) or a means of sediment control prior to entering a waterbody.
PA-5.05	Erosion protection and sediment control will be provided 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 right-of-way will managed through Erosiosn and Sediment Control Plans.

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 to drain into waterbodies, riparian areas or wetlands.
PA-6.05	Drilling in environmentally sensitive sites, features and areas will not be permitted unless approved in advance by Environmental Inspector and mitigation measures are implemented.
PA-6.07	Drilling will not be permitted within established buffer zones and setback distances from waterbodies.
PA-6.08	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	The drilling contractor will inspect drilling equipment and machinery for fuel and oil leaks prior to arrival at the project site, and will inspect for fuel and oil leaks and spills regularly.
PA-6.11	Where there is potential for mixing of surface and groundwater, 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 releases for a site location.
EI-2.13	Temporary construction camps will have a designated fire marshal in accordance with the Emergency Preparedness and Response Plan.
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	When a work, undertaking or activity results in the deposit of a deleterious substance or creates the potential for such a deposit, Manitoba Hydro has a requirement to advise DFO of the situation
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. A Beaver Dam Clearing Permit is required by Manitoba Conservation and Water Stewardship.
EC-3.06	Project personnel will be prohibited from fishing at project locations or along rights-of-way.

Grading (PA-7)

ID	Mitigation
PA-7.01	A thick gravel layer (1.2 m) or compacted snow layer (0.6 m) will be used in temporary workspaces or marshalling yards located in permafrost areas where required to prevent damage to surface materials.
PA-7.02	Grading for gravel pads for construction areas and access roads will be limited to areas where it is needed for the safe and efficient operation of vehicles, machinery and construction equipment.
PA-7.03	Grading for site rehabilitation and restoration will be in accordance with the 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 groundwater, 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 roadway (MIT) right-of-way, 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 byt the contractor.
EI-4.10	Hazardous materials storage sites will be secured, and signs will be posted that include hazard warnings, contacts in case of a release, access restrictions and under whose authority the access is restricted.
EI-4.11	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 materials 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 materials including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-4.23	The Contractor will monitor containers of hazardous substance containers regularly for leaks and to ensure that labels are 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-04	Manitoba Hydro will contact First Nation and Aboriginal community representatives prior to project start-up.
MM-05	Manitoba Hydro will contact local municipal authorities prior to project start-up.
MM-06	Manitoba Hydro will contact local resource users, lodge operators, outfitters and recreational resource users and associations to the extent feasible and practical prior to project start-up.
MM-07	Manitoba Hydro will contact Manitoba Conservation and Forest Management Licence Holders prior to clearing regarding timber use opportunities.
MM-08	Manitoba Hydro will meet the Contractor at the beginning of each new contract to review environmental protection requirements including mitigation measures, inspections and reporting.
MM-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 authorization are acquired and will discuss any questions or concerns with Manitoba Hydro.

Marshalling Yards (PC-5) [If applicable]

ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.02	Emergency Preparedness and Response Plan and procedures for 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 materials 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	Hazardous waste materials, 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.

Permafrost (EC-6) [If applicable]

ID	Mitigation
EC-6.01	Alterations to natural drainage patterns by rutting and scouring of surface materials in permafrost areas will be avoided to the extent possible.
EC-6.02	Construction activities in northern Manitoba will normally occur under frozen ground conditions during established timing windows to minimize disturbanceand rutting.
EC-6.06	Environmental protection measures for permafrost areas located in site specific mitigation tables and maps will be reviewed with the Contractor and employees prior to commencement of any construction activities as well as the methods used to achieve them.
EC-6.07	Excavations of permafrost areas in northern Manitoba will be minimized to the extent possible.
EC-6.08	Permafrost areas in northern Manitoba will be identified and mapped in advance of project construction activities.
EC-6.09	Clearing activities will ensure that thetop layer of vegetation and organic materials will be retained as an insulating layer in permafrost areas (ie no clearing down to the organic layer will be allowed).

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 where 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 is subject to MCWS approval
PC-8.04	Clearing and disturbance will be limited to defined rights-of-way and associated access routes to the extent possible.
PC-8.05	Clearing of rights-of-way will occur under frozen or dry ground conditions 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 where applicable.
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.

Staging Areas (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-5.03	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 staging and work storage 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 hazardous wastes leaving the staging and work storage areas will be inventoried and provided to Manitoba Hydro.
PC-5.07	Hazardous materials will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Staging and work storage areas will be located based on criteria that consider soils, topography, land form type, wildlife habitat and other environmental factors.
PC-5.10	Staging and work storage areas 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 staging and work storage areas 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 staging and work storage areas in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within staging and work storage areas.
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 staging and work storage areas.
PC-5.18	Hazardous waste materials, 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.
PC-5.20	The Site Environmental Officer will inspect rehabilitated staging and work storage areas in accordance with the site Rehabilitation and Vegetation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

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	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.
PC-9.03	Construction vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings.
PC-9.04	Construction of stream crossings will follow the Manitoba Stream Crossing Guidelines For The Protection of Fish and Fish Habitat.
PC-9.05	Ice bridges are constructed of clean (ambient) water, ice and snow and snow fills are constructed of clean snow, materials such as gravel, rock and loose woody material are NOT used. Crossings do not impede water flow at any time of the year.
PC-9.06	The withdrawal of any water will not exceed 10% of the instantaneous flow, in order to maintain existing fish habitat. Water flow is maintained under the ice, where this naturally occurs, and If water is being pumped from a lake or river to build up the ice bridge, the intakes are sized and adequately screened to prevent debris blockage and fish mortality.
PC-9.07	Where logs are required for use in stabilizing shoreline approaches, they are clean and securely bound together, and they are removed either before or immediately following the spring freshet.
PC-9.08	When the crossing season is over and where it is safe to do so, create a v-notch in the centre of the ice bridge to allow it to melt from the centre and also to prevent blocking fish passage, channel erosion and flooding. Compacted snow and all crossing materials will be removed prior to the spring freshet.
PC-9.09	No logs or woody debris are to be left within the water body or on the banks or shoreline where they can wash back into the water body.
PC-9.10	Grading of the stream banks for the approaches should not occur. Establish a single entry and exit. If minor rutting is likely to occur, stream bank and bed protection methods (e.g., swamp mats, pads) should be used provided they do not constrict flows or block fish passage. Disturbance to riparian vegetation is minimized
PC-9.11	Fording should occur under low flow conditions, 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. Time the one-time fording to prevent disruption to sensitive fish life stages by adhering to appropriate fisheries timing windows and not in areas that are known fish spawning sites.
PC-9.12	Fording should occur under low flow conditions and not when flows are elevated due to local rain events or seasonal flooding, the channel width at the crossing site is no greater than 5 metres from ordinary high water mark to ordinary high water mark.

Stripping (PA-10)

ID	Mitigation
PA-10.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-10.02	Erosion protection and sediment control measures will be put in place prior to stripping in accordance with the Erosion and Sediment Control Plan as required.
PA-10.03	In areas of known salinity, excavated or stripped soil will be stored on liners or in designated areas 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-10.06	Stripping in northern Manitoba will normally be carried out under frozen ground conditions during established timing windows to minimize rutting and erosion.
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
EI-8.01	Salvage and disposal of treated wood products will be in accordance with Manitoba Hydro guidelines.
EI-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.
EI-8.03	Treated wood products will not be used indoors and will not be burned.
EI-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 repair 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 garbage containers and electric fencing along with regular removal of food waste to approved waste disposal grounds will be used to manage food waste in northern and rural areas.
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	Wetland areas will be prescribed riparian buffers in site specific mitigation tables in which understory low-growth vegetation will be maintained where possible. Environmental protection measures for working in and around wetlands will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-8.03	Natural vegetated buffer areas of 30 m will be established around wetlands and riparian zones will be maintained to the extent possible.
EC-8.04	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 injured or killed wildlife encountered on the transmission line ROWs and associated access roads/trails 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 (ie. Mineral licks and Stick nests) will be identified in mapsheets and flagged prior to clearing.
EC-9.04	Clearing is allowed only within the Reduced Risk Time Period for Wildlife illustrated in Appendix D. If clearing within the Sensitive Time Period for Wildlife, further mitigation and approvals may be would be required.
EC-9.05	Construction activities will not be carried out during prescribed timing windows for wildlife species.
EC-9.06	Bear-proof garbage containers and electric fencing along with regular removal of food waste to approved waste disposal grounds will be used to manage food waste in northern and rural areas.
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 and Water Stewardship will be notified if animal traps are encountered and must be removed for project activities.
EC-9.10	MB Conservation and Fisheries and Oceans Canada will be notified if beaver dams must be cleared along rights-of-way and access roads and trails.
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-9.14	Trails through or near important habitat types will be managed in accordance with the Access Management Plan.
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.
EC-9.23	New occurances of any listed rare, threatened or endangered species will be documented and provided to Manitoba Conservation and Water Stewardship.
EC-9.21	Understory vegetation will be managed at access routes to limit line of sight.
EC-9.22	New by-pass trails and access routes will be sited where possible to utilize existing natural terrain features and existing vegetation to minimize line of site.
EC-9.23	New occurances of any listed rare, threatened or endangered species will be documented and provided to Manitoba Conservation and Water Stewardship.

6.0 MAP SHEETS AND MITIGATION TABLES

The map sheets and specific mitigation tables are presented in Part 2 in a "map book" format. There are eight separate mapbooks to serve each of the eight construction segments. Key index maps of each construction segment can be found in Appendix K. The map sheets provide an overview of Environmentally Sensitive Sites (ESS), while the associated mitigation tables provide specific mitigation requirements related to these ESS.

APPENDICES

APPENDIX A: CONTACT LIST

Contact	Name	Phone Number(s)
Construction Contractor		
Contractor Project Manager		
Contractor Field Lead		
Contractor Safety 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		
24 hr Environmental Emergency Response reporting line		1-204-944-4888 or Toll free at 1-855-944-4888
District Office		
First Nations and Metis Contacts		

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

APPENDIX C: ENVIRONMENTAL LICENCES, APPROVALS AND PERMITS

Table C-1: List of Potential Approvals required for Construction		
Approval required (Applicable Legislation / Regulation)	**Type of Approval needed**	**Responsibility**
Environment Act Licence (Class 3)	Licence	LEA
Crown Lands Act (Work Permit)	Permit	TLCC
Crown Lands Act (General Permit)	Permit	Property Dept.
Permit to cut timber on Crown Lands (Forest Act)	Permit	TLCC
Wildfires Act (Work Permit)	Permit	TLCC
Permit to burn wood (Wildfires Act) – outside of timing windows only	Permit	TLCC
Wildlife Management Area Permit (Wildlife Act)	Licence	LEA
Annual Harvest Plan (Environment Act Licence)	Forestry Branch Director Approval	TLCC
Storage and Handling of Gasoline and Associated Products Regulation, Generator Registration and Carrier Licencing Regulation (Dangerous Goods Handling and Transportation Act)	Permit	Contractor
Highways Protection Act	Permit	TLCC
The Heritage Resources Act (when required)	Permit	LEA
Rail line crossing at temporary access road intersections	Permit	Property Dept.
A permit from Manitoba Infrastructure 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: TIMING WINDOWS

APPENDIX E: BUFFERS AND SETBACKS

Table E 1 Setbacks and Buffers

Feature	Activity	Non Frozen Ground Setback Distance (No work allowed)	Frozen Ground Setback Distance (No work allowed)	Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Rationale
Vegetation					
Plant Species at Risk	Tower Foundation Siting	100m	100m		Protect from disturbance
	Clearing And Construction	30m		30m	Protect from disturbance
	Maintenance	30m		30m	Protect from disturbance
	Access Trail	30m	30m		Protect from disturbance
Anthropogenic					
Recreational and Commercial Lots	All	50-200m	50-200m		Visual and aesthetic screening
Trapper's Cabins (Away from water)	All	50-200m	50-200m		Visual and aesthetic screening
Research and Permanent Sample Plots	All	100m	100m		Maintain integrity of research
Heritage and Cultural	All	Varies	Varies	Varies	Protect from Disturbance
Designated Recreational Trails	All	0-50m			Visual and aesthetic screening
Amphibians					
Northern Leopard Frog * (known breeding pond, watering site)	Tower Foundation Siting	30m	30m		Protect from disturbance
	Clearing And Construction	30m		30m	Protect from disturbance
	Maintenance	30m			Protect from disturbance
	Access Trail	30m	30m		Protect from disturbance
Plains Spadefoot Toad ** (known breeding, living, hibernating ponds)	Tower Foundation Siting	30m	30m		Protect from disturbance
	Clearing And Construction	30m		30m	Protect from disturbance

Table E 1 Setbacks and Buffers

Feature	Activity	Non Frozen Ground Setback Distance (No work allowed)	Frozen Ground Setback Distance (No work allowed)	Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Rationale
	Maintenance	30m			Protect from disturbance
	Access Trail	30m	30m		Protect from disturbance
Reptiles					
Garter Snake Hibernaculum	Tower Foundation Siting	200m	200m		Protect from disturbance
	Clearing And Construction	200m		200m	Protect from disturbance
	Maintenance	200m		200m	Protect from disturbance
	Access Trail	200m			Protect from disturbance
Northern Prairie Skink (burrow)	Tower Foundation Siting	200m	200m		Protect from disturbance
	Clearing And Construction	100m		100m	Protect from disturbance
	Maintenance	100m		100m	Protect from disturbance
	Access Trail	100m	100m		Protect from disturbance
Landforms					
Wetlands	Clearing And Construction	30m		30m	Protect from disturbance
	Maintenance	30m		30m	Protect from disturbance
	Access Trail	30m		30m	Protect from disturbance
	Hazardous Material Handling/Storage	100m	100m		Protect from disturbance
	Soil Stockpiles	30m		30m	Protect from disturbance
Unique Soil/Terrain Features	All Off ROW activities	100m			Protect from disturbance
Steep or Unstable Slopes	Establishment or use of borrow pits	100m	100m		Protect from disturbance

Feature	Activity	Non Frozen Ground Setback Distance (No work allowed)	Frozen Ground Setback Distance (No work allowed)	Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Rationale	
Mammals						
Mineral Licks	All	120m		120m	Protect from disturbance	
Occupied Mammal Dens	All	50m	50m		Protect from disturbance	
Invertebrates						
Ottoe and Uncas Skippers	All			30m	Protect habitat	

All measurements are from edge of feature

Table E - 2 Riparian Setbacks, Buffers and Zones

Feature	Activity	Setback (No work allowed)	Riparian Buffer	Machine Free Zone (No machines allowed except at trail crossing)	Rationale
Wetland/Lake/River/Creek/ Stream					
Waterbodies/Fish Habitat Outside ROW	Clearing and Construction	15-30m			Protect from sedimentation and erosion
	Maintenance	15-30m			Protect from sedimentation and erosion
	Access Trail	15-30m			Protect from sedimentation and erosion
Waterbodies/Fish Habitat Inside ROW	Tower Foundation Siting	15-30m			Protect from sedimentation and erosion
	Clearing and Construction		30m	7m	Protect from sedimentation and erosion
	Maintenance		30m	7m	Protect from sedimentation and erosion

All zones and buffers are measured from Ordinary High Water Mark or defined riparian area by Aquatic specialist

APPENDIX F: AGRICULTURAL BIOSECURITY STANDARD OPERATING PROCCEDURE

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

Guidance for Contaminated Soils or Groundwater Identification and Disposal

Identifying Contaminated Soils

Manitoba Hydro properties may be impacted with Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), and Glycol due to current and historical activities on-site. Any Manitoba Hydro property should be suspect and excavated soils either sampled prior to disposal at a licensed facility or directly transported to a licensed facility, where the soil will be sampled by the facility and held within their compound prior to their formal acceptance of the soils. Additionally, non-Manitoba Hydro properties may have similar contaminants or other contaminants present.

Soils and groundwater which may have come into contact with transformer oil, diesel, gasoline, and lubricants may have an obvious hydrocarbon odour and/or grey-black "staining" (see Photos 1 to 4) that appears unnatural. Soils exhibiting these characteristics should be segregated for disposal in a licensed facility. Similarly, contaminated groundwater should be removed from the excavation and disposed of at a licensed facility.

Photo 1: Grey-black PHC, PAH, and/or PCB soil staining

Photo 2: Black PHC, PAH, and/or PCB soil staining

Photo 3: PHC (oil) staining on surface gravel

Photo 4: PHC contaminated water (note sheen on water), and soil staining

Worker Health and Safety

Workers will wear appropriate personal protective equipment (PPE) if they are handing contaminated soils and/or groundwater. Appropriate PPE, depending on the contaminant and contaminant concentration, may include nitrile gloves, half-mask respirator, safety boots, protective clothing, and protective eyewear.

An experienced environmental officer or consultant will confirm, and subsequently characterize and conduct an assessment of the potential impacted soils using appropriate field screening techniques and scientific instruments. The environmental officer or consultant will monitor ambient air in the general area of excavation to ensure worker health and safety.

Communications / Notifications

If contaminated soils are encountered during construction, all personnel would stop work, leave the contaminated area, and notify the on-site environmental officer. Additional notifications would then be made to internal and external personnel as required.

Prior to the disposal of contaminated soils, a Remedial Action Plan is required to be completed and submitted to Manitoba Conservation and Water Stewardship for their approval. At the conclusion of the remedial activities, a closure report will also be submitted. The Remedial Action Plan(s) and Closure Report(s) will be in accordance with the *Manitoba Contaminated Sites Remediation Act,* and its associated regulations and guidance documents.

Soil and Water Handling and Disposal

In the event that contamination is encountered during construction the following measures to protect worker health and safety, transport and manage excavated soil to designated staging areas, characterize the soils for waste disposal, and ensure that all soils are managed in accordance with provincial and federal regulations and guidelines will be undertaken:

- Limit personnel working within the contamination area during excavation activities.
- Excavation of contaminated soils will be overseen and directed by the environmental officer or consultant.
- If soil is not directly placed into truck, contaminated soils will be stockpiled on impermeable sheeting and roped off to prevent unauthorized entry (at Dorsey Station, soil must not leave the station prior to soil characterization.).
- Soil and/or groundwater samples will be sent to a Canadian Association for Laboratory Accreditation (CALA) accredited Laboratory for waste characterization.
- Soils will be characterized for waste disposal and appropriate truck placarding.
- Contaminated soils and/or groundwater will be transported in accordance with the Manitoba *Dangerous Goods Handling and Transportation Act* and associated Regulations.
- Decontamination of equipment, as required.

Soils will be disposed of at a licensed Municipal Waste Disposal Ground (Landfill) if laboratory analysis indicates that it is below the Canadian Council of Minister of the Environment (CCME) Industrial Land Use Guidelines and upon approval of the Waste Disposal Ground. However, if soil samples are above these Guidelines, soils must be disposed of at a Licensed Soil Treatment Facility. Options include the following facilities:

Contaminated Soil Disposal		
MidCanada Soil Treatment Facility	1373 Bernat Road, Grand Pointe, MB	(204) 987-9600
Miller Environmental Corporation	Hwy 14 & 75, Saint Jean Baptiste, MB	(204) 925-9600
City of Brandon Landfill	3300 Victoria Avenue East, Brandon, MB	(204) 729-2281
Virden Municipal & Industrial Waste Facility	236 Wellington Street South, Virden, MB	(204) 204-512-0816 or (204) 748-6033
Contaminated Water Disposal		
A1 Environmental Services	1447 Dugald Road, Winnipeg, MB	(204) 515-2473

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

Manitoba Hydro's Waste Generator Number for Waste Movement Manifests is MBG00799.

APPENDIX H: CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

H.1 Emergency Preparedness and Response Plan

Attach Contractor developed Emergency Preparedness and Response Plan

H.2 Waste and Recycling Management Plan

Attach Contractor developed Waste and Recycling Management Plan

H.3 Erosion and Sediment Control Plan

Attach Contractor developed Erosion and Sediment Control Plan

APPENDIX I: FRAMEWORKS FOR CONTRACTOR-DEVELOPED ENVIRONMENTAL PLANS

I.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 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 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 I-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, plastic 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 I-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 I-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 I-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, plastic and 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 I-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 right-of-way	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.

I.3 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 Manitoba Hydro 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 the 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.

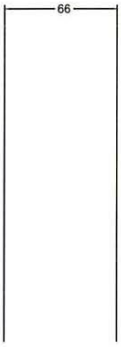
It is the duty of the contractor to ensure that the erosion and sediment control measures are properly installed, well maintained and functioning as intended on a daily basis. The ESCP should provide the framework for the inspection, maintenance including the need for repair, and record-keeping procedures during all stages 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, 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 J:CLEARING GUIDELINE DIAGRAMS

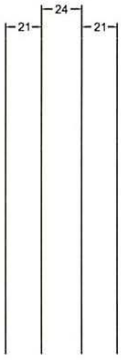
GENERAL



- Shearblade the full 66m ROW width

- Rake and pile minimum 15m from standing timber for burning

PERMAFROST

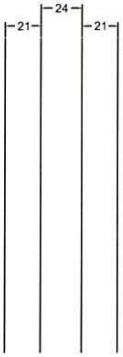


- Shearblade 12m on both sides of centerline
- Low disturbance clearing outside of the center 24m area -- trampling, hand clearing, feller buncher, hydro axe

- Rake and pile material from the 24m centerline where needed -- no raking outside of the middle 24m area

- minimum 15m from standing timber for burning -- use nearest tower site if needed

CARIBOU



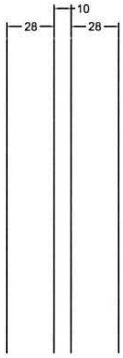
- Shearblade 12m on both sides of centerline

- Selective clearing of danger trees (>5m) or potential danger trees outside of the center 24m area -- hand clearing, feller buncher, hydro axe

- Rake and pile material from the 24m centerline where needed -- no raking outside of the middle 24m area

- minimum 15m from standing timber for burning -- use nearest tower site if needed

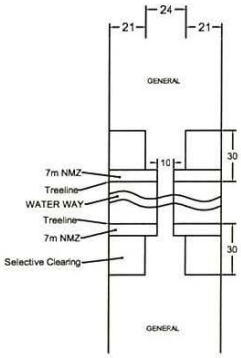
HARVEST



- Shearblade centerline for access

- Feller bunchers and skidders to harvest and stack timber for processing

WATER CROSSING



- Shearblade 12m on both sides of centerline up to the 7m NMZ
- 10m max width through NMZ and across the channel

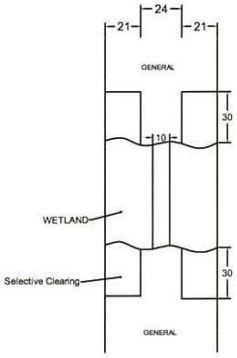
- ONLY hand clearing or reaching in with the feller buncher allowed in the NMZ

- Select clearing outside of the center 24m area in the buffer zone -- trampling, hand clearing, feller buncher, hydro axe

- skid and pile material from the buffer zone where needed -- no raking

- minimum 15m from standing timber and 100m from the buffer zone for burning

WETLAND



- Shearblade 12m on both sides of centerline up to wetland area

- Select clearing outside of the center 24m area within the buffer zone -- trampling, hand clearing, feller buncher, hydro axe

- Rake and pile material from the 24m centerline where needed -- no raking outside of the middle 24m area

- minimum 15m from standing timber for burning

Note: Riparian Buffers for Water Crossings and Wetlands are a minimum of 30m but increase in size based on slope of land entering waterway. (See Riparian Bufffer Table in CEnvPP)

Note: These diagrams are to be used as a field guideline only on how to perform clearing in certain ESS types. They do not cover all scenarios. Please note that all mitigation measures must be adhered to as outlined in the EPP.

APPENDIX K: CONSTRUCTION SECTION INDEX MAPS

Manitoba Hydro