Attachment 11-1
Draft Environmental Protection Plan

Manitoba Hydro

Bipole III Transmission Project

Draft Environmental Protection Plan

November 30, 2011

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

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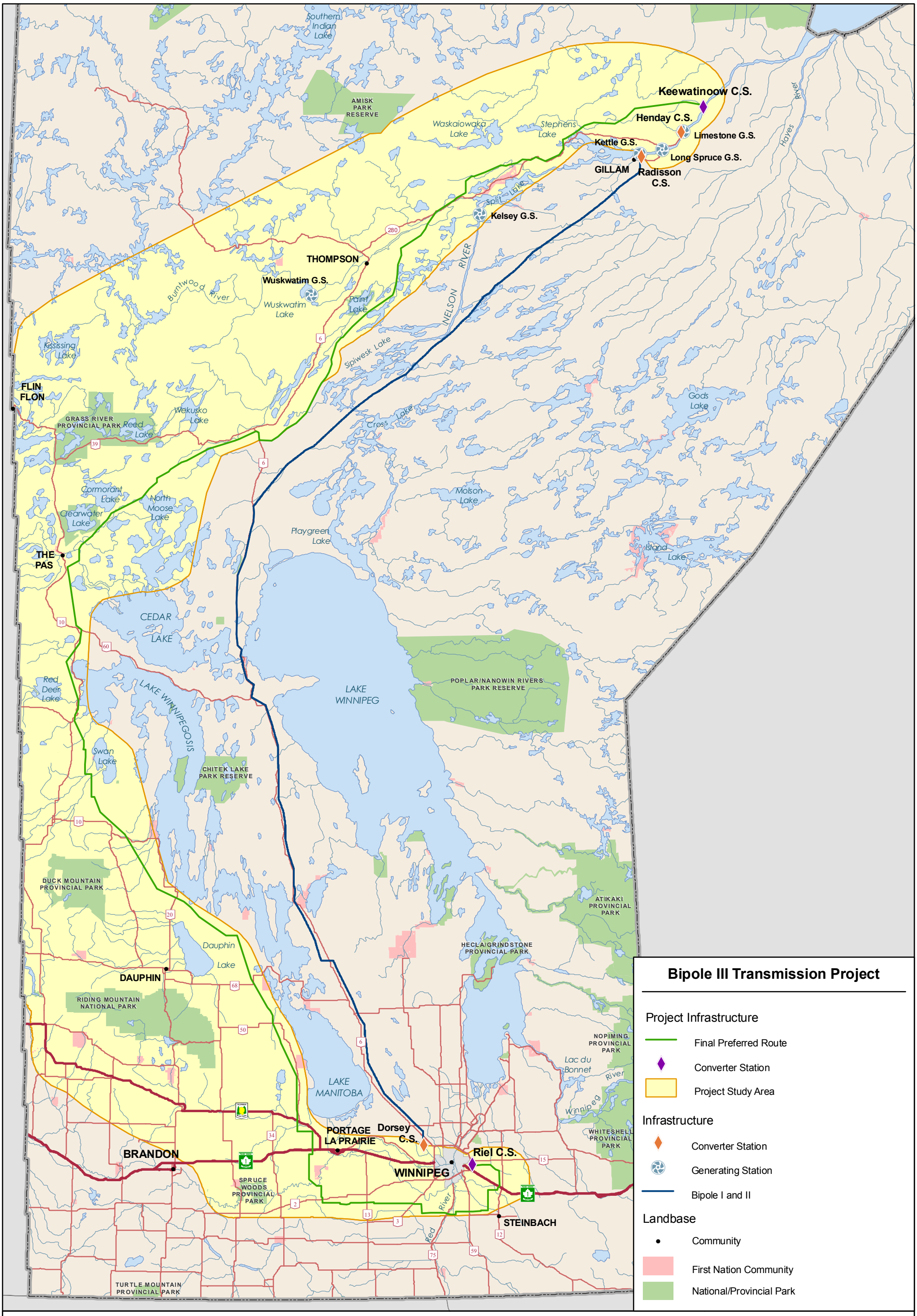
1. Introduction

1.1. Bipole III Transmission Project

Manitoba Hydro is proposing to construct a new 500 kV HVdc transmission line, known as Bipole III, on the west side of Manitoba (Map 1). The proposed Bipole III Transmission Project (the Project) will consist of a HVdc transmission line originating at a new Keewatinoow Converter Station to be located northeast of the Henday Converter Station along the Nelson River (Map 2) and terminating at a second new converter station to be located at the Riel Station site east of Winnipeg (Map 3). Each of the converter stations will require a separate ground electrode facility connected by a low voltage feeder line. The Project will also include new 230 kV transmission lines linking the Keewatinoow Converter Station to the existing 230 kV switchyards at the Henday Converter Station and Long Spruce Generating Station, as well as a northern construction camp, a 138 kV construction power transmission line and associated station facilities.

The Bipole III transmission line will be approximately 1,386 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. Construction is planned to commence in the winter of 2012 with a projected in-service date of October 2017. The Environmental Impact Statement for the Project (Project EIS) describes the Project, provides detailed technical information and outlines the project schedule.



Bipole III Transmission Project

Project Infrastructure

- Final Preferred Route
- Converter Station
- Project Study Area

Infrastructure

- Converter Station
- Generating Station
- Bipole I and II

Landbase

- Community
- First Nation Community
- National/Provincial Park

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, MMM, Stantec, ProvMB, NRCAN
Date Created: November 16, 2011

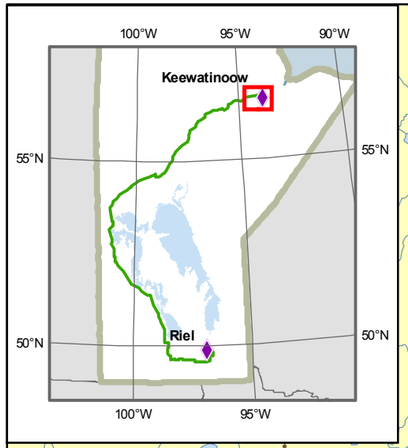
0 25 50 Kilometres
0 25 50 Miles

N

1:2,500,000

Project Study Area

Map 1



Bipole III Transmission Project

Project Infrastructure

- Final Preferred Route
- AC Collector Line
- Ground Electrode Line
- Ground Electrode Site
- Construction Power (KN36)
- Construction Power Site
- Construction Camp Site
- Start-up Camp Site
- Limestone Construction Power Station Site
- Manitoba Hydro and Contractor Work Area Site
- Limestone Stores Area
- Henday Storage
- Project Study Area

Infrastructure

- Converter Station
- Generating Station
- Bipole I and II
- Transmission Line

Landbase

- Community
- City / Town
- First Nation
- Wildlife Management Area

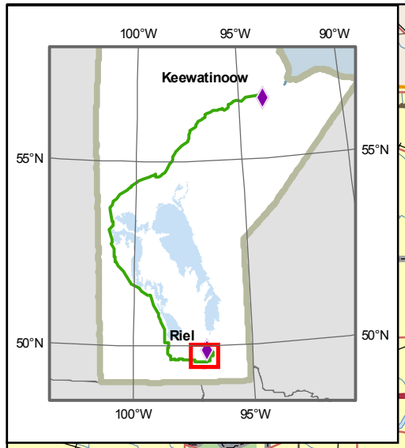
Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, MMM, Stantec, ProvMB, NRCAN
Date Created: November 16, 2011

N

0 5 10 Kilometres
0 3 6 Miles
1:250,000

Northern Project Components

Map 2



Bipole III Transmission Project

Project Infrastructure

- Final Preferred Route
- Converter Station Site
- Ground Electrode Site
- Project Study Area

Infrastructure

- Transmission Line
- Electrical Station

Landbase

- Community
- City / Town
- Rural Municipality
- First Nation
- National/Provincial Park

Coordinate System: UTM Zone 14N NAD83
Data Source: MBHydro, MMM, Stantec, ProvMB, NRCAN
Date Created: November 16, 2011

N

0 5 10 Kilometres
0 3 6 Miles

1:250,000

Southern Project Components

Map 3

1.2. Manitoba Hydro Environmental Policies

Manitoba Hydro's Corporate Vision (Manitoba Hydro 2010) is:

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

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

Manitoba Hydro is ISO 14001 certified and has a corporate Environmental Management System (EMS) consistent with that standard. The certificate scope of registration for the corporate EMS is the provision of environmental management guidance and direction from Manitoba Hydro's corporate office for the construction, generation, transmission and distribution of electricity and the distribution and retail sale of natural gas in Manitoba. The corporation's Environmental Management Policy (Manitoba Hydro 2008) states that:

> *"Manitoba Hydro is committed to protecting the environment. In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its businesses, thereby:*
>
> - *preventing or minimizing any adverse impacts, including pollution, on the environment, and enhancing positive impacts;*
> - *continually improving our Environmental Management System;*
> - *meeting or surpassing regulatory requirements and other commitments;*
> - *considering the interests and utilizing the knowledge of our customers, employees, communities, and stakeholders who may be affected by our actions;*
> - *reviewing our environment objectives and targets annually to ensure improvement in our environmental performance; and*
> - *documenting and reporting our activities and environmental performance."*

Manitoba Hydro's strategic objectives and goals, and environmental management policy have been incorporated into this Draft Environmental Protection Plan for the Project.

1.3. Environmental Impact Statement

The Bipole III Transmission Project Environmental Impact Statement (EIS) provides information on the Project's main components and activities, the environmental effects of the Project including accidents and malfunctions, measures to mitigate adverse effects, and follow-up requirements. The Bipole III Transmission Project EIS also provides information on regulatory requirements, environmental guidelines and best practices, and documents the results from stakeholder and Aboriginal consultations. Chapter 11 of the EIS describes how mitigation measures and follow-up will be implemented through an Environmental Protection Program. The Bipole III EIS is a major source of input to environmental protection measures for this Draft Environmental Protection Plan.

1.4. Environmental Protection Program

Manitoba Hydro's Environmental Protection Program (Manitoba Hydro 2011) is based on Manitoba Hydro's corporate commitments and policies, regulatory requirements, best practice guidance and stakeholder input. The Environmental Protection Program provides the framework for implementation, management, monitoring and evaluation of environmental protection activities in keeping with environmental effects identified in environmental assessments, regulatory requirements and public expectations. The Program outlines how Manitoba Hydro is organized and functions to deliver timely, effective, and comprehensive solutions and mitigations to predicted environmental issues and effects. The Program consists of an implementation framework outlining how environmental protection is delivered and managed, and environmental protection plans that prescribe measures and practices to avoid and minimize adverse environmental effects and evaluate the effectiveness of mitigation strategies.

1.5. Environmental Protection Plans

Environmental protection plans document environmental protection measures as part of the overall Environmental Protection Program to ensure compliance with regulatory and other requirements, and to achieve environmental protection goals consistent with corporate environmental policies. Environmental protection measures supplement project specifications to

avoid or minimize potential adverse environmental effects arising during the construction and operation phases of the project. Environmental protection plans are designed as “user-friendly” reference documents that provide Manitoba Hydro construction supervisors and site managers as well as contractors with detailed environmental protection measures. Environmental protection measures are organized by project component and activity, in addition to environmental component and issue. This is to assist project personnel in implementing mitigation measures for a variety of project components and activities, and ensuring the protection of environmentally sensitive sites. Environmental protection plans include monitoring programs and updating schedules to ensure that the environmental protection measures remain current and effective, and to enable continual improvement of environmental performance.

1.6. Purpose

The purpose of this Draft Environmental Protection Plan is to provide for the effective implementation of mitigation measures and follow-up actions as well as regulatory requirements, environmental guidelines and best practices identified in the Bipole III Transmission Project EIS. The draft plan is also intended to provide assurance to regulatory reviewers, environmental organizations, Aboriginal communities and the general public that commitments made in the EIS will be implemented, monitored, evaluated and reported on in a responsible and accountable manner. A Final Environmental Protection Plan will be prepared upon receipt of Environment Act Licence and other regulatory approvals for the Bipole III Transmission Project. It is anticipated that the final Plan, incorporating approval terms and conditions, will be completed in fall 2012.

2. Environmental Protection Program

2.1 Overview

This section outlines Manitoba Hydro's Environmental Protection Program for the Project. The Program provides a framework for the delivery, management and monitoring of environmental protection measures that satisfy corporate policies and commitments, regulatory requirements, environmental protection guidelines and best practices, and inputs from stakeholders, the Aboriginal community and the public. The Program describes how Manitoba Hydro is organized and functions to deliver timely, effective, and comprehensive solutions and mitigation measures to address potential environmental effects. Roles and responsibilities for Manitoba Hydro employees and contractors are defined, along with management, communication and reporting structures for implementation of the Program. The Environmental Protection Program includes the what, where and how aspects of protecting the environment during the pre-construction, construction, operation and decommissioning of the Project.

2.2 Organization

The organizational structure of the Environmental Protection Program includes senior Manitoba Hydro management, project management and implementation teams that work together to ensure timely and effective implementation of environmental protection measures identified in environmental protection plans and is broadly depicted in Figure 1.

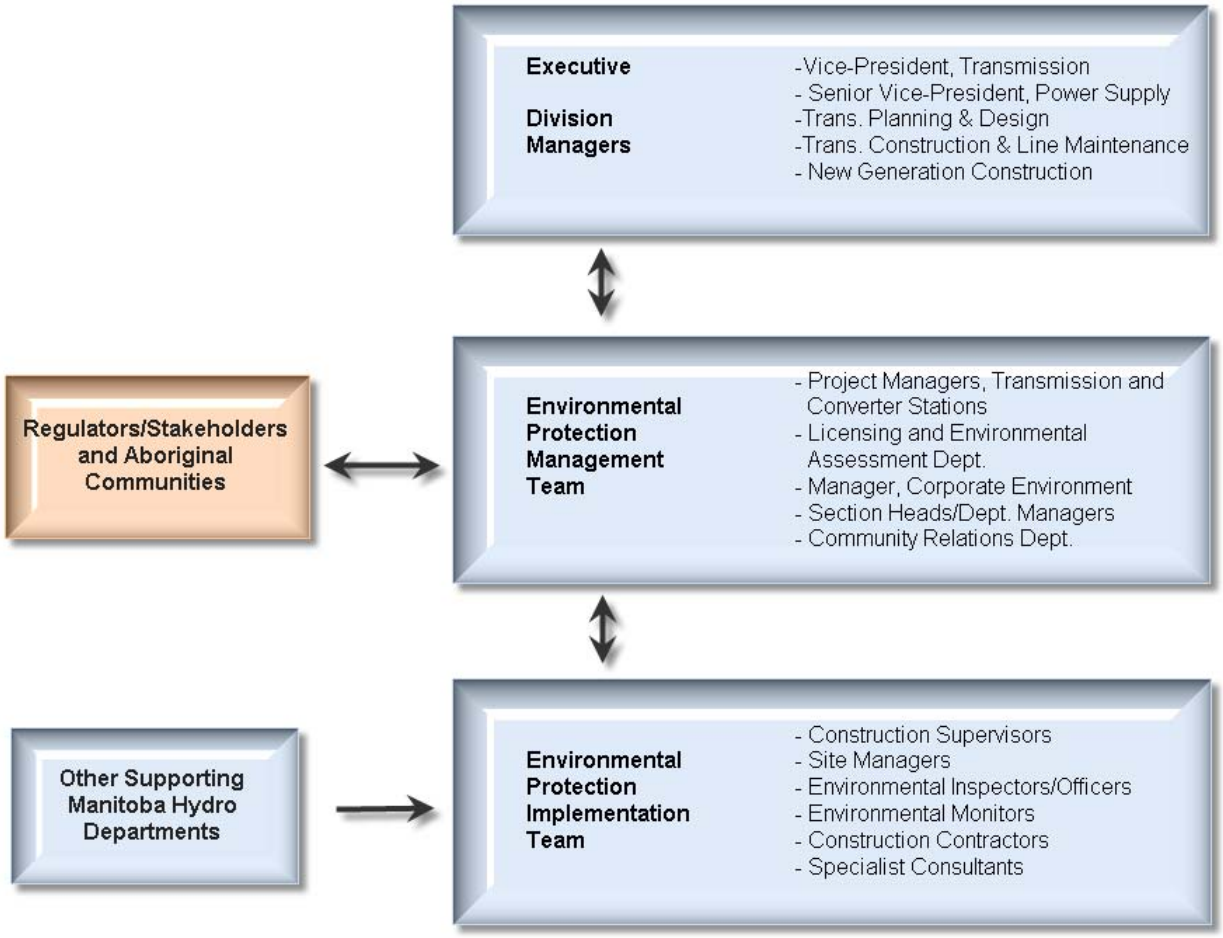


Figure 1: Environmental Protection Program Organizational Structure

2.2.1 Executive and Division Managers

Executive and Division Managers are responsible for the overall Environmental Protection Program including resourcing, management and performance, and are accountable for regulatory compliance, policy adherence and stakeholder satisfaction.

2.2.2 Environmental Protection Management Team

The Environmental Protection Management Team is composed of senior Manitoba Hydro staff and is responsible for the management of environmental protection plans including regulatory compliance, quality assurance and control, as well as consultation with regulators, stakeholders and aboriginal communities.

2.2.3 Environmental Protection Implementation Team

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

2.3 Roles and Responsibilities

Roles and reporting structure for implementation of environmental protection measures for the Bipole III Transmission Project are illustrated in general terms in Figure 2.

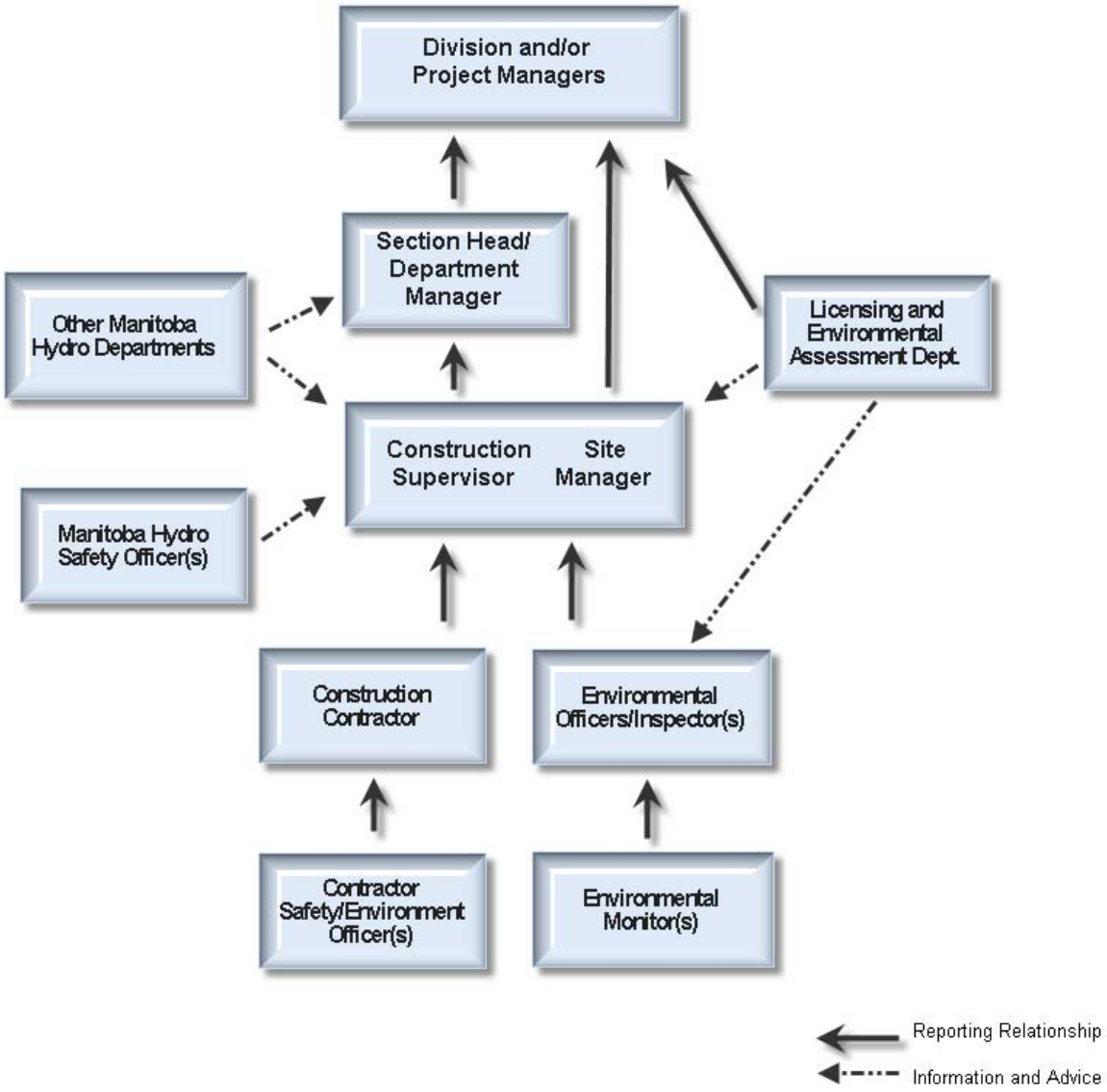


Figure 2: Typical Organizational Lines of Reporting and Communication

The responsibilities for key positions are described below:

2.3.1 Project Manager (Transmission)

Reports to the Transmission Projects Department Manager and is accountable for all aspects of the Transmission components of the Bipole III Transmission Project including regulatory compliance and environmental performance. They depend on each Section Head/Department Manager and Licensing and Environmental Assessment Department, to implement

environmental protection measures and provide information and advice on environmental matters.

2.3.2 Project Manager (Converter Station)

Reports to New Generation Construction Division Manager and is accountable for all aspects of the Converter Station components of the Bipole III Transmission Project including regulatory compliance and environmental performance. The Converter Station Project Manager relies on each Site Manager/Resident Engineer (Riel and Keewatinoow Converter Stations) to implement environmental protection measures, and the Licensing and Environmental Assessment Department to provide information and advice on environmental matters.

2.3.3 Section Head/Department Manager(s) (Transmission Only)

Reports to the Transmission Construction & Line Maintenance Division Manager or Transmission Planning & Design Division Manager.

Key Responsibilities:

- Accountable for all aspects of their applicable component of the Bipole III Transmission Project including regulatory compliance and environmental performance.
- Oversees Construction Supervisors who are responsible for implementing environmental protection measures and ensuring regulatory compliance.

2.3.4 Licensing and Environmental Assessment Department

Reports to the Transmission Planning and Design Division Manager

Key Responsibilities:

- Responsible for preparation of the Project EIS, obtaining an Environment Act Licence (Manitoba) and overall implementation of licence terms and conditions.
- Provides advice and guidance to the Transmission/Converter Station Project Managers, Construction Supervisors/Site Managers, and Environmental Officers on environmental protection matters.

- Provides training support for Environmental Officers/Inspectors and Environmental Monitors, develops field methods, and designs inspection and reporting systems for implementation.
- Reviews inspection reports and monitoring information, and prepares monitoring and other reports to satisfy regulatory requirements.
- Liaises with senior regulatory authorities, and provides advice and guidance to the Environmental Inspectors for non-compliance situations, environmental incidents and emergencies.

2.3.5 Construction Supervisor(s) (Transmission)

Reporting to the Section Head/Department Manager the Construction Supervisor works with the Construction Contractor to implement environmental protection measures and ensure regulatory compliance.

Key Responsibilities:

- Reviews inspection reports with the Construction Contractor, and remedial actions or responses to non-compliance situations or incidents are implemented as required.
- Works with the Environmental Officer and Inspectors to ensure implementation of environmental protection, management, monitoring and other plans, and ensures that appropriate authorities are notified in emergency or incident situations.
- Issues stop work orders.
- There may be several Construction Supervisors reporting to the Section Head/Department Manager due to the large size and complex nature of the Project.

2.3.6 Site Manager (s) (Converter Stations)

Reporting to the Converter Station Project Manager, the Site Manager works with the Construction Contractor to implement environmental protection measures and ensure regulatory compliance.

Key Responsibilities:

- Inspection reports are reviewed regularly with the Construction Contractor, and remedial actions or responses to non-compliance situations or incidents are implemented as required.

- Oversees the Environmental Officers to ensure implementation of environmental protection and other plans.
- Ensures that appropriate authorities are notified in emergency or incident situations.
- Issues stop work orders.
- There will be one Site Manager for each of the two Converter Stations (Keewatinoow and Riel).

2.3.7 Environmental Officer(s)/Inspectors

There will be three Environment Officers, one reporting to the Transmission Line and Civil Construction Department Manager and one for each Converter Station site reporting to the respective Site Managers.

The Transmission Environment Officer, reports to the Transmission Line Construction Section Head and due to the multiple construction sites supervises a team of Environmental Inspectors.

Key Responsibilities:

- Reviews inspection reports.
- Investigates incidents.
- Provides orientation training to MB Hydro staff and Contractors.
- Liaises with regulators and Aboriginal Communities.

The Environmental Inspectors report to the Transmission Environment Officer and provide advice and guidance to the Construction Supervisor.

Key Responsibilities:

- Conducts site inspections regularly and reports are submitted electronically to the Construction Supervisor.
- Weekly and monthly reports containing information on activities carried out, effectiveness of actions and outstanding issues are also submitted.
- Has the authority to resolve environmental issues on-site with the Construction Supervisor.

- Non-compliance situations and incidents are reported to the Construction Supervisor immediately.
- Due to the large size and complex nature of the Project there will a number of Environmental Inspectors.

The Converter Station Environment Officer report to the Site Manager, there will be one officer for each Converter Station site.

Key Responsibilities:

- Creates inspection reports,
- Investigates incidents,
- Provides orientation training to MB Hydro staff and Contractors.
- Liaises with regulators and Aboriginal Communities.
- Conducts site inspections regularly and reports are submitted electronically to the Site Manager.
- Weekly and monthly reports containing information on activities carried out, effectiveness of actions and outstanding issues are also submitted.
- Has the authority to resolve environmental issues on-site with the Site Manager.
- Non-compliance situations and incidents are reported to the Site Manager immediately.

2.3.8 Environmental Monitor(s)

The Environmental Monitor will report to an Environmental Inspector/Officer and receive training from the Licensing and Environmental Assessment Department.

Key Responsibilities:

- Environmental Monitors conduct field monitoring activities as outlined in the monitoring plans (access, wildlife, vegetation monitoring).
- Perform liaison duties with local communities on construction and environmental activities,
- Assists in the locating and delineating of environmentally sensitive sites.

2.3.9 Construction Contractor(s)

Reports to the Construction Supervisor/Site Manager and is responsible for conducting work in accordance with the construction contract, complying with all regulatory requirements, following best practice guidelines, and adhering to requirements in environmental protection plans.

Key Responsibilities:

- Maintains detailed records of environmental approvals and inventories of accidents, incidents, alterations, wastes, equipment maintenance, public complaints and other matters.
- Reports any discoveries of non-compliance, accidents or incidents to the Construction Supervisor/Site Manager.
- Discoveries of heritage resources, human remains, paleontological finds, environmentally sensitive sites, etc are reported to the Construction Supervisor/Site Manager.
- Responsible for preparing and implementing contract-specific hazardous materials management and emergency response plans in accordance with Manitoba Hydro plans and specifications.
- Contaminated site identification, assessment and remediation are also a responsibility of the Construction Contractor.
- There will be a number of Construction Contractors retained for major components of the Project, each reporting to a Construction Supervisor/Site Manager.

2.3.10 Construction Contractor's Safety and Environmental Officers

The Construction Contractors Safety Officer provides information and advice to the Construction Contractor employees on safety matters and is responsible for implementation of the emergency response and hazardous substances plans, and other related topics. The Construction Contractor's Environmental Officer provides information and advice to the Construction Contractor's employees on environmental protection matters and is responsible for the construction contractor's implementation of environmental protection and related topics.

The number of Safety and/or Environment officers required is based on project component, size, environmental issues and other factors. The Environmental Officer and Safety Officer must

be deemed as qualified environmental professional and/or qualified occupational safety and health professional.

2.3.11 Manitoba Hydro Safety, Health, Emergency Response Officers

Manitoba Hydro Field Safety, Health and Emergency Response Officers are responsible for the development and execution of the safety program and Occupational Health and Safety practices at the various construction sites. The officers provide information and advice to the Construction Supervisor/Site Manager.

2.3.12 Other Manitoba Hydro Departments

Other Manitoba Hydro groups including Engineers, Property Agents and technicians provide functional advice to the Construction Supervisor/Site Managers on an as required basis.

2.4 Resources

Ensuring that adequate resources are allocated to the environmental aspects of project planning, development, implementation and operation is key to successful implementation of environmental protection measures and follow-up including monitoring and other requirements. Manitoba Hydro commits resources early in the planning cycle to ensure effective environmental assessment, mitigation and monitoring. Teams of engineers and environmental professionals develop preventative or avoidance mitigation measures that include design, routing and siting alternatives. In addition, there are resource allocations for the delivery and implementation of specific environmental protection measures to meet corporate policy and government regulatory requirements. Manitoba Hydro is committed to staffing the Environmental Protection Program with sufficient Environmental Inspectors and providing required support including training, financial resources and equipment.

2.5 Environmental Management

Manitoba Hydro is certified under the ISO 14001 Environmental Management System standard and is subject to requirements of the standard including annual audits to verify its conformance to the standard. An Environmental Management System is a framework for developing and applying its environmental policy and includes articulation of organizational structure, responsibilities, practices, processes and resources at all levels of the corporation. The Environmental Management System includes commitments to comply with legislation, licenses,

permits and guidelines, conduct inspections and monitoring, and review the results for adherence to requirements. The ISO standard ensures quality, performance and continual improvement in the delivery of Manitoba Hydro's Environmental Protection Program.

2.6 Environmental Protection Documents

Several environmental protection planning documents are developed for different project phases, components and activities. The documents include environmental protection, management and monitoring plans. The level of detail captured in the various plans increases as the project advances through planning, design, construction and operation phases, and the environmental assessment and licensing process (Figure 4).

This Draft Environmental Protection Plan covers the period from submission of the Environment Act Proposal to receipt of an Environment Act Licence and other approvals for the Bipole III Transmission Project. At that time the Draft Environmental Protection Plan will be updated in "Final" form to include licence terms and conditions, and other regulatory requirements. Prior to the commencement of construction activities Construction Phase Environmental Protection Plans will be prepared. It is anticipated that several environmental protection plans will be prepared, each addressing separate project components or construction contracts. The Construction Phase Environmental Protection Plans will cover the construction period from beginning to end.

Operation Phase Environmental Protection Plans will be prepared prior to the project In-Service Date. One or more environmental protection plans will be prepared for this phase of the Project, each addressing separate project components. Operation Phase Environmental Protection Plans will cover the period post commissioning to the eventual decommissioning of the Project. A Decommissioning Phase Environmental Protection Plan would be prepared prior to the eventual decommissioning of the Project.

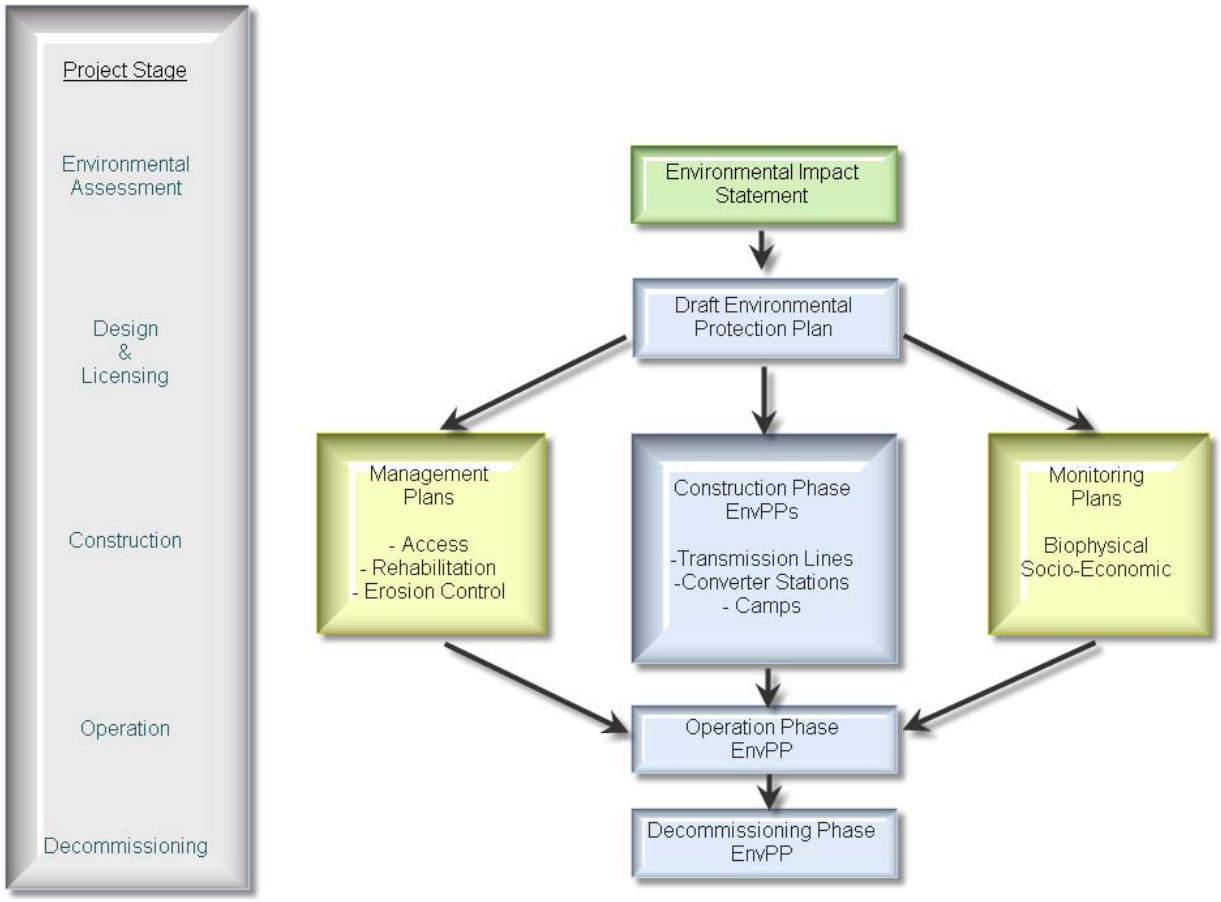


Figure 3: Typical Environmental Protection Documents

Management plans are prepared in response to specific environmental issues identified during the environmental assessment of the Project. Typical environmental issues include access, environmental protection and resource use. Management plans are structured documents that provide reasoned courses of action to address environmental issues and concerns. Management plans are also prepared in response to regulatory requirements and responsible management practices.

Monitoring plans are prepared in response to specific follow-up requirements identified during the environmental assessment of the Project. Follow-up requirements include those actions implemented to confirm compliance with regulatory requirements and to assess the effectiveness of the environmental assessment. Example follow-up actions include water quality, abundance monitoring, wildlife mortality and resource use.

2.7 Pre-construction Activities

Manitoba Hydro will undertake a number of activities prior to commencing construction of the Project to set the direction for environmental protection and compliance with legislated requirements.

Manitoba Hydro will obtain all licenses, permits, authorizations and other approvals in writing including property agreements, rights-of-way easements and water crossings prior to commencement of construction. Terms and conditions of these approvals will be incorporated into the Construction Phase Environmental Protection Plan. Additional approvals to be obtained by the Contractors will be identified and communicated to the successful bidders. Pre-construction contacts will be established with provincial and federal regulatory authorities including Manitoba Conservation, Manitoba Water Stewardship, Department of Fisheries and Oceans, Transport Canada and others, and formal points of contact will be identified.

Licensing and Environmental Assessment Department will typically participate in the tender/direct negotiated contract development process to ensure environmental requirements will be included as contract specifications. Potential bidders on work tenders may be required to attend a mandatory pre-bid meeting where environmental requirements are explained. All bidders are required to list and defend their environmental record and must have an environmental policy including a commitment to environmental protection.

Meetings will be held with the successful contractors to review environmental protection requirements, establish roles and responsibilities, management, monitoring and other plans, inspection and reporting requirements, and specified submittals. Prior to the start of construction, contractor employees will be trained and/or oriented on environmental protection requirements. Construction Supervisors/Site Managers, Manitoba Hydro employees, consultants and others working on the project will be required to attend orientation sessions.

The Licensing and Environmental Assessment Department will coordinate the training of environmental officers/inspectors for the Project. Training will be comprehensive and focused on environmental protection measures, inspection protocols, monitoring programs, computer systems, record keeping and emergency response procedures.

2.8 Construction Activities

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

2.8.1 Liaison with Regulators and Aboriginal Communities

The Construction Supervisor/Site Manager, and Licensing and Environmental Assessment staff will meet with regulatory and aboriginal community points of contact at the beginning of the Project to outline construction plans and schedules, and will request regular meetings to provide updates on project progress, environmental protection measure implementation and regulatory compliance. Manitoba Hydro will fulfill all regulatory requirements for submission of inspection, monitoring and other reports. Regulators will be notified immediately in case of emergency situations, environmental accidents or other incidents in accordance with regulatory requirements. Any proposed changes or alterations to the construction project environmental protection measures or monitoring activities will be reviewed in consultation with the appropriate regulatory authorities.

2.8.2 Inspection and Compliance

Manitoba Hydro will establish a comprehensive integrated environmental inspection program to comply with regulatory requirements, implement environmental protection measures and meet corporate environmental objectives. The inspection program involves hiring and training of environmental inspectors/officers, daily inspection of construction activities and regular reporting to Construction Supervisor/Site Managers and senior management as required.

Trained inspectors will visit active construction sites daily and inspect for compliance with regulatory requirements, license terms and conditions, contract specifications, and environmental protection measures. Specific mitigation measures will be inspected for adherence to specifications and effectiveness of operation. Environmental monitoring sites will be inspected routinely where information or data will be recorded and observations or

photographs will be taken. Any situations where unforeseen environmental effects are evident will be reported and mitigation measures will be identified for implementation in a timely manner.

Inspection activities will be recorded on a daily report form. Any non-compliance matters, emergency conditions or environmental accidents will be recorded on an incident report form and submitted immediately to the Licensing and Environmental Assessment Department and Construction Supervisor/Site Manager for follow-up action. Responses to enforcement actions will be in accordance with Manitoba Hydro's policy for processing legal documents (Appendix E). The Transmission/Converter Station Project Manager and senior management will be kept informed on any incidents and remedial actions taken. Weekly and monthly summary reports will document responses to incidents and their effectiveness.

Typical daily, weekly and monthly inspection report forms, as well as a detailed inspection report checklist and an incident report form are provided in Appendix K.

2.8.3 Work Stoppage

The duty to stop work rests with everyone encountering situations where the environment including biophysical, socio-economic, and heritage resources are threatened by an activity or occurrence that has not been previously identified, assessed and mitigated. Work stoppage is also to occur in the event of an environmental accident, extreme weather event (i.e. ice storm, wind sheer, tornado, heavy rainfall) or the exposure of human remains. Individuals discovering such situations are to inform their supervisor who will report the matter to the Construction Supervisor/Site Manager immediately who will issue a stop work order. The Contractor is also required to stop work voluntarily where construction activities are adversely affecting the environment or where mitigation measures are not effective in controlling environmental effects. Remedial action plans or other environmental protection measures will be developed and implemented immediately after discussion and prior to resumption of work if previously halted. Work is not to resume until the situation has been assessed and responded to and the Construction Supervisor/Site Manager approves the resumption of work. All stop work orders will be documented, reported to regulatory authorities (if applicable) and reviewed at construction meetings.

2.8.4 Emergency Preparedness and Response

Spills of hazardous substances, fires and explosions, environmental accidents, heritage resource discoveries and other emergency or contingency situations require immediate action and response in accordance with established response plans. Provincial, federal, First Nations and municipal authorities, and Manitoba Hydro personnel are to be notified in accordance with regulations and emergency preparedness and response plans. These plans provide names of emergency responders, up to date contact information and notification procedures. Contractors are required to have contract-specific emergency preparedness and response plans outlining contacts and response measures to emergency situations including hazardous materials spills, environmental accidents, fires or explosions, and heritage resource discoveries. These plans will be prepared in accordance with Manitoba Hydro plans and specifications. Manitoba Hydro also has emergency response coordinators to deal with spills of hazardous materials and other substances.

2.8.5 Heritage Resources

Heritage resources may be found in many different locations, and all workers on the Project will be aware of the protocols regarding the removal and handling of artifacts. Protection measures for heritage resources have been incorporated into this EnvPP as general and specific mitigation measures. Detailed actions and procedures for heritage discoveries will be developed into the CEnvPP's. All information regarding heritage resources and/or found human remains will be submitted to the Historic Resources Branch as per the terms of the Heritage Resources Act (1986) and heritage permit and to the local Aboriginal Communities. Ownership of all heritage objects found within Manitoba rests with the Province of Manitoba.

2.9 Tools and Resources

The environmental inspection program will employ modern electronic recording, reporting and communication systems using field computers, geographic positioning systems and digital cameras Field computers will have project and other reference information needed for effective implementation of environmental protection measures including regulations, guidelines, licences, permits, engineering drawings, specifications, maps, reports and data. An Environmental Protection Information Management System (EPIMS) will monitor and report on

environmental protection implementation, regulatory compliance and incident reporting. The EPIMS will be fully integrated with field inspection, monitoring and data collection

2.10 Communications

Manitoba hydro personnel will maintain ongoing communications with Manitoba Conservation, other provincial and federal departments, and aboriginal communities as necessary regarding implementation of the Project environmental protection plans. The Construction Supervisor/Site Manager and Environmental Inspectors will maintain ongoing communications with the Contractor and contract staff through daily tailboard meetings and weekly or otherwise scheduled construction meetings at the worksite. Daily, weekly and monthly inspection reports as well as incident, monitoring and other reports will be prepared and available on site thru EPIMS for the regulators, contractors and Manitoba Hydro staff. In addition, Manitoba Hydro will prepare summary information and activity reports related to environmental protection for the Project on an annual basis. These reports will be designed for a general readership and will provide opportunities for interested parties to provide feedback on the Project as it is constructed and eventually operated.

Manitoba Hydro will develop a communications strategy to ensure that all communication requirements are addressed in a timely and effective manner. Licensing and Environmental Assessment will provide the public with on-going opportunities to review and comment on the project as it is being developed. A dedicated Project website fed with information from the EPIMS will be developed to facilitate communication with the public. An environmental protection hotline (telephone and e-mail) will be established to facilitate reporting and response to environmental issues. All enquiries, reports or complaints received will be recorded and reviewed by the Environmental Protection Management Team for response or action.

2.11 Summary

This section outlined Manitoba Hydro’s Environmental Protection Program for the Project. The Program provides a framework for the delivery, management and monitoring of environmental protection measures consistent with corporate policies and commitments, regulatory requirements, environmental guidelines and best practices. The Program describes how Manitoba Hydro is organized and functions to deliver timely, effective, and comprehensive solutions and mitigation measures to address potential environmental effects. Roles and

responsibilities for Manitoba Hydro employees and contractors are defined, and management, communication and reporting structures are outlined for implementation of the Program.

3. General Environmental Protection Measures

3.1. Overview

This section of the Draft Environmental Protection Plan provides general environmental protection measures that address potential environmental issues and effects for the Project. Environmental protection measures are provided in tabular form for major Project components and activities, environmental components, and environmental issues or topics.

3.2. General Environmental Protection Measures

General environmental protection measures include: 1) mitigation measures identified in the EIS; 2) regulatory requirements, environmental guidelines and best practices; 3) Manitoba Hydro policies and commitments; and 4) results from stakeholder and Aboriginal consultations that mitigate potential adverse effects on sensitive sites. The protection measures have wide-ranging application to the Project including the various project components and activities as well as important environmental components and issues. Specific environmental protection measures provided in the following section of the Draft Environmental Protection Plan relate to particular environmentally sensitive sites.

The general environmental protection measures are preliminary in nature and will be augmented as the Project moves through the regulatory process, Environment Act and other environmental approvals are obtained, and construction phase environmental protection plans are prepared. Application of the environmental protection measures will be reflected in contract specifications.

Each environmental protection measure is numbered for future reference and incorporation in to construction specifications. Wording of the protection measures is affirmative with the view of avoiding or minimizing adverse environmental effects, following an environmental guideline or complying with a regulatory requirement. References are provided to source legislation, environmental guidelines or best practices, or appendix information for buffer zones, setback distances or timing windows.

The environmental protection measures are provided under the following five categories: 1) Management; 2) Project Activity; 3) Project Component; 4) Environment Component; and 5) Environmental Topic/Issue, as follows:

1. **Management environmental protection measures** (MM) (Table 1) include management, contractual, administrative and other measures that are common to all environmental protection categories and topics.

2. **Project Activity environmental protection measures** (PA) (Tables 2 to 11) include construction activities that are likely to cause direct environmental effects. Project activities are action words or phrases, that that are carried out during construction of the Bipole III Transmission Project. Some project activities include related actions (e.g., drilling includes boring and pile driving) while others are unique (e.g., burning) and are often regulated or managed by one set of regulation or guidelines.

3. **Project Component environmental protection measures** (PC) (Tables 12 to 21) 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. Each project component has the potential to result in a variety of direct and indirect environmental effects which are managed by various means including regulations, guidelines, best practices and project-specific mitigation. Project component environmental protection measures address these situations, and also include protection measures from related project activities.

4. **Environmental Component protection measures** (EC) (Tables 22 to 30) 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. Each environmental component is managed by a variety of different regulations, guidelines, best practices, etc. Environmental component

environmental protection measures address these situations, and also include protection measures from related project components and activities.

5. **Environmental Issue and Topic protection measures (EI)** (Tables 31 to 40) 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. These issues and topics can cause substantial public concern and result in potentially significant adverse environmental effects. Each environmental issue and topic is managed by a variety of a set of particular regulations, guidelines, best practices, etc. Environmental issue and topic protection measures address these situations, and also include protection measures from related project and environmental components.

3.3. Management Measures (MM)

General management-related environmental protection measures are listed in Table 1.

Table 1. Management Environmental Protection Measures (MM)

No.	Environmental Protection Measures
MM-1	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-2	All licenses, permits, contracts, project specifications, guidelines and other applicable documents will be in the possession of both the Contractor and Manitoba Hydro prior to commencement of work.
MM-3	All project participants will ensure that project activities are carried out in compliance with applicable legislation (Appendix C), guidelines (Appendix D) contractual obligations and environmental protection plan provisions.
MM-4	The Contractor will review terms and conditions of all authorizations, contract specifications, agreements, etc prior to project start-up and will discuss any questions or concerns with Manitoba Hydro.
MM-5	Relevant documents including licenses, permits, approvals, legislation, guidelines, environmental protection plans, orthophotos maps, etc will be made available to all project participants.
MM-6	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-7	Manitoba Hydro will provide the contractor with a stakeholders list with names, organizations and contact information for the purpose of contacting stakeholders as necessary.
MM-8	Manitoba Hydro will contact local municipal authorities prior to project start-up to ensure that all environmental concerns are identified and addressed by the Contractor.
MM-9	Manitoba Hydro will contact First Nation and Aboriginal community representatives prior to project start-up.
MM-10	Manitoba Hydro will contact local resource users, lodge operators, outfitters and recreational resource users and associations prior to project start-up.
MM-11	Manitoba Hydro will contact Manitoba Conservation and Forest Management Licence Holders prior to clearing regarding timber use opportunities.
MM-13	Manitoba Hydro will contact mining companies, and mineral claim and licence holders prior to

Table 1. Management Environmental Protection Measures (MM)	
No.	**Environmental Protection Measures**
	project start-up.
MM-14	Manitoba Hydro Property Department will meet with landowners whose operations, facilities, woodlots, shelterbelts, etc may be directly or indirectly affected by clearing to discuss mitigation measures and residual effect concerns.
MM-15	Manitoba Hydro will notify trappers in advance of clearing and construction schedules in their trapline areas.
MM-16	A pre-project meeting will be held with all construction participants to review environmental issues, environmental protection measures, orthophoto maps, environmentally sensitive sites, safety protocols, reporting relationships, emergency procedures and other guidance materials.
MM-17	Project construction update meetings will be held weekly for the ongoing review of environmental and safety issues.
MM-18	Environmental concerns will be identified and discussed at planning meetings on an as required basis.
MM-19	Response to enforcement actions by regulatory authorities will be in accordance with Manitoba Hydro policy P602 (Appendix E).

3.4. Project Activity Measures

General environmental protection measures relating to project activities are listed in Tables 2 to 11.

3.4.1 Blasting and Exploding (PA-1)

General environmental protection measures related to blasting, exploding and related project activities are listed in Table 2. Also see Borrow Pits and Quarries (Table 13) and Transmission Lines and Conductors (Table 21).

Table 2. Blasting and Exploding Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-1.1	The Blasting Contractor will be in possession of valid licenses, permits and certificates required for blasting.
PA-1.2	The Blasting Contractor will submit all copies of all approval documents to the Construction Supervisor/Site Manager.
PA-1.3	The Blasting Contractor will transport, store, handle and use explosives in accordance with provincial and federal legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
PA-1.4	The Blasting Contractor will submit a Blasting Plan to the Construction Supervisor/Site Manager for review and approval prior to commencement of blasting operations.
PA-1.5	The Blasting Contractor will submit a Blasting Plan to the Department of Fisheries and Oceans for approval prior to blasting near waterbodies.
PA-1.6	Blasting in the vicinity of fish-bearing waters will be in accordance with Department of Fisheries and Oceans guidelines (Appendix D).
PA-1.7	Drillhole sites will be clearly marked with flagging tape and signs.
PA-1.8	Large explosive charges will be divided into smaller multiple time-delay charges, where practical
PA-1.9	Use of ammonium nitrate and fuel oil will not be permitted in or near waterways.
PA-1.10	Quarry blasting operations and conductor splicing will be scheduled to minimize disturbance to wildlife and area residents, and to ensure the safety of workers.

Table 2. Blasting and Exploding Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-1.11	Advance notice will be given to Manitoba Conservation, RCMP, municipalities, landowners, resource users and others prior to any blasting activities.
PA-1.12	Implode Compression conductor splicing will be minimized to extent possible on weekends and after normal working hours in residential areas
PA-1.13	Blasting will not be permitted in no blasting zones identified to prevent damage to infrastructure, minimize effects on natural resources and limit disturbance to communities or residences.
PA-1.14	Blasting in northern Manitoba will be carried out under frozen ground conditions to the extent possible to minimize surface disturbance and permafrost degradation.
PA-1.15	Blasting will not be permitted around caribou calving habitats during timing windows (Appendix F).
PA-1.16	Blasting will not be permitted during timing windows established for sensitive bird breeding, nesting and brood rearing months (Appendix F).
PA-1.17	Written and/or oral notification will be given to affected parties including project personnel and the general public prior to each blasting period.
PA-1.18	Signs will be posted around blasting sites to warn all project personnel and the public of safety hazards associated with blasting.
PA-1.19	Blast rock will be collected and stockpiled as soon as possible for either subsequent use or disposal off site.
PA-1.20	Blasting materials and debris that enter waterbodies will be removed immediately with minimum disruption to riparian zones and fish habitat.
PA-1.21	Site restoration will be completed as soon as possible after blasting in accordance with the Blasting Plan.

3.4.2 Burning (PA-2)

General environmental protection measures related to burning and related activities are listed in Table 3. Also see Clearing (Table 4), Rights-of-Way (Table 19) and Emergency Response (Table 32).

Table 3. Burning Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-2.1	Burning will only be carried out in accordance with contract specifications.
PA-2.2	Burning will not be carried out within riparian buffer zones or setbacks for stream crossings or waterbodies (Appendix G).
PA-2.4	Slash will be piled in a manner that allows for clean, efficient burning of all material. Mixing soil into the slash is to be avoided.
PA-2.5	Debris piles scheduled for burning will be piled on mineral soils or on areas having an average maximum depth of less than 15 cm of duff, where possible.
PA-2.6	Debris and wood chip piles located near habitation or highways will only be burned when weather conditions are favourable to ensure the safe dispersal of smoke.
PA-2.7	Burning slash in northern Manitoba will be carried out under frozen ground conditions during timing windows to minimize potential for wildfires (Appendix F).
PA-2.9	Any residue or unburned materials remaining post-burn is not to encumber operations or re-vegetating activities.
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	Burning will be monitored to ensure that fires are contained and subsequent fire hazards are not present. e.g. all burn piles will be scanned for hot spots using infrared scanning technology
PA-2.12	All occurrences of fire spreading beyond the debris pile will be reported immediately in accordance

Table 3. Burning Environmental Protection Measures	
No.	**Environmental Protection Measures**
	with fire protection procedures.
PA-2.13	Burning of solid wastes including kitchen wastes and treated wood will not be permitted.
PA2-14	Burning of slash on permafrost soils should be avoided. If it is unavoidable, the number and extent of debris piles scheduled to be burned on permafrost soils should be minimized.

3.4.3 Clearing (PA-3)

General environmental protection measures related to clearing and related activities are listed in Table 4. Also see Access Roads and Trails (Table 12) and Rights-of-Way (Table 19).

Table 4. Clearing Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-3.1	Where clearing is carried out on Crown land, timber salvaging will be conducted in accordance with provincial legislation (Appendix C) and guidelines (Appendix D) where practical and economically feasible.
PA-3.2	Clearing activities will be carried out in accordance with contract specifications.
PA-3.3	Prior to clearing, communities will be contacted to determine the demand for fuel wood and endeavour to make timber resources available locally.
PA-3.4	Access to clearing areas will utilize existing roads and trails to the extent possible.
PA-3.5	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-3.6	Right-of-way boundaries, centrelines, buffers and sensitive areas (where applicable) will be clearly marked with stakes and flagging tape prior to clearing.
PA-3.7	Clearing and disturbance will be limited to infrastructure sites, borrow pits, marshalling yards, transmission line rights-of-way and associated access routes.
PA-3.8	Requests for additional clearing outside original infrastructure sites and rights-of-way will be approved in writing by the Construction Supervisor/Site Manager. Additional clearing may require an amendment to the work permit and/or contract specifications.
PA-3.9	Clearing and construction equipment will remain within designated infrastructure sites, rights-of-way and associated access routes.
PA-3.10	Where practical, merchantable timber will be salvaged and brought to market. Timber that is not salvaged will be piled and burned during frozen conditions in accordance with timing windows (Appendix F).
PA-3.11	Clearing around environmentally sensitive sites, features and areas will be in accordance with established buffer zones and setbacks (Appendix G).
PA-3.12	All environmentally sensitive sites will be identified on maps and specific environmental protection measures will be provided. Environmentally sensitive sites, along the right-of-way will be clearly identified by signage as practical. Point sites along the right-of-way will be flagged.
PA-3.13	Areas identified for selective clearing (e.g., buffer zones, sensitive sites) will be flagged prior to clearing.
PA-3.14	Selective clearing will be carried out in erosion prone areas. Hand clearing or other low disturbance methods may be employed to minimize soil disturbance.
PA-3.15	Environmentally sensitive areas located adjacent to watercourses or located on rugged terrain will be cleared by approved methods according to the contract specifications.
PA-3.16	Trees within established buffer zones will be selectively cleared using methods that cause the least impact. Low growth vegetation such as grasses and shrubs within buffer zones will not be cleared.
PA-3.17	Clearing will occur in accordance with established timing windows to minimize rutting and erosion (Appendix F).
PA-3.18	Construction vehicles where possible will be wide-tracked or equipped with high floatation tires to

Table 4. Clearing Environmental Protection Measures	
No.	**Environmental Protection Measures**
	minimize rutting and limit damage and compaction to surface soils.
PA-3.19	The Construction Supervisor/Site Manager will issue a stop work order if extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies.
PA-3.20	Modifications to buffer zones will require prior approval and may require an amendment to the work permit and/or contract specifications.
PA-3.21	Construction vehicles, machinery and heavy equipment will not be permitted in designated machine-free zones except at designated crossings (Appendix G).
PA-3.22	Trees containing active nests and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied.
PA-3.23	Clearing will not be permitted within critical caribou and other large mammal habitats including associated buffer areas during established timing windows (Appendix F).
PA-3.24	Clearing will not be permitted within established setbacks (Appendix G) for bird nesting and rearing during established timing windows (Appendix F).
PA-3.25	Vegetated buffers in riparian areas will be maintained in accordance with riparian buffer zones and setbacks (Appendix G)
PA-3.26	Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated.
PA-3.27	Specified clearing methods will be carried out in a manner that minimizes disturbance to existing organic soil layer.
PA-3.28	Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using only “V” or “K-G” type blades, feller-bunchers and other means approved by the Construction Supervisor/Site Manager.
PA-3.30	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-3.31	Chemical control of vegetation is not permitted during clearing.
PA-3.32	Danger trees will be identified and removed by hand or other methods that do not damage soils and adjacent vegetation.
PA-3.33	Cleared trees and woody debris will not be pushed into or adjacent to standing timber, wetlands or waterbodies.
PA-3.34	Slash will be cut, chipped, piled, burned or disposed of as specified in contract specifications.
PA-3.35	Slash piles will not be placed on the surface of frozen waterbodies and will not be located within established setbacks from waterbodies or within the ordinary high water mark.
PA-3.36	Slash piles will be placed at least 15 m from forest stands.
PA-3.37	Chipped or mulched material may be collected for use in construction areas and sediment/erosion control.
PA-3.38	A 15 m (minimum) break will be provided along debris windrows every 100 m. Alternately, windrows may be varied from side to side along rights-of-way.

3.4.4 Demobilizing and Cleaning-up (PA-4)

General environmental protection measures pertaining to demobilizing, cleaning-up and related activities are listed in Table 5. Also see Rehabilitating and Re-vegetating (Table 10).

Table 5. Demobilizing and Cleaning-up Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-4.1	Construction areas and sites no longer required will be demobilized and cleaned up and rehabilitated in accordance with contract specifications and restored to near natural conditions.
PA-4.2	Buildings, structures, trailers, equipment, utilities, waste materials, etc will be removed from

Table 5. Demobilizing and Cleaning-up Environmental Protection Measures	
No.	**Environmental Protection Measures**
	construction areas and sites when work is completed.
PA-4.3	Construction access roads/trails that are no longer required will be decommissioned and rehabilitated to prevent access.
PA-4.4	Access to roads/trails required for ongoing operations and maintenance will be managed in accordance with an Access Management Plan.
PA-4.5	Demobilized construction areas and sites will be decommissioned and aggregate will be removed. Sites will be graded and contoured to original profile as required, and provided with drainage, erosion and sediment control measures as required.
PA-4.6	Stream crossings and drainages will be left free of obstructions so as not to impede natural runoff.
PA-4.7	Petroleum product and other hazardous substances storage areas will be cleaned up, assessed and, if necessary, remediated in accordance with provincial guidelines (Appendix D) and Manitoba Hydro guidelines (Appendix E).
PA-4.8	The Environmental Inspector will inspect demobilized construction areas and sites after demobilization and clean-up for adherence to environmental protection measures and effectiveness.
PA-4.9	Construction areas and sites will be rehabilitated and re-vegetated as appropriate immediately after demobilizing and clean-up.

3.4.5 Draining (PA-5)

General environmental protection measures related to draining, dewatering and related project activities are listed in Table 6. Also see Stream Crossings (Table 20), Waterbodies (Table 28) and Wetlands (Table 29).

Table 6. Draining Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-5.1	Drainage at construction sites will be maintained, managed or controlled in accordance with contract specifications.
PA-5.2	Existing, natural drainage patterns and flows will be maintained to the extent possible.
PA-5.3	Drainage channels and ditches will be identified and flagged prior to construction.
PA-5.4	Disturbance of natural drainages including seepage areas, discharge and recharge areas, wetlands, and ephemeral and permanent watercourses will be avoided.
PA-5.5	Where construction must be carried out within a drainage channel, water will be diverted around the work until completed in accordance with the contract specifications.
PA-5.6	Drainage water from construction areas will be diverted through vegetated areas prior to entering a waterbody.
PA-5.7	Dewatering discharges will be directed into vegetated areas at such a rate and have adequate flow dissipation at the outlet to ensure it does not cause erosion at the discharge point or at any point downstream.
PA-5.8	Dewatering of excavations or alterations to drainage will be done so that it avoids entering natural water systems unless sediment is controlled.
PA-5.9	Blockage of natural drainage patterns by construction activities will be avoided.
PA-5.10	Drainage ditches will be provided with elevation controls to prevent water ponding.
PA-5.11	Drainage channels will be kept free of slash and debris
PA-5.12	Erosion protection and sediment control will be provided in accordance with the Erosion Protection and Sediment Control Plan.
PA-5.13	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines

Table 6. Draining Environmental Protection Measures	
No.	**Environmental Protection Measures**
	and DFO Operation Statement on Culvert Maintenance (Appendix D).
PA-5.14	Drainage ditches and culverts will be installed during periods with minimal or no stream flows.

3.4.6 Drilling (PA-6)

General environmental protection measures related to drilling and related activities are listed in Table 7. Also see Groundwater (Table 25).

Table 7. Drilling Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-6.1	Drilling at construction sites will be carried out in accordance with contract specifications.
PA-6.3	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-6.4	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-6.5	Drilling will not be permitted during established timing windows (Appendix F) for caribou calving areas.
PA-6.6	Drilling will not be permitted within established buffer zones and setback distances from waterbodies (Appendix G).
PA-6.7	Drilling fluids and waste materials will not be allowed to drain into waterbodies, riparian areas or wetlands.
PA-6.8	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.
PA-6.9	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	Abandoned drill holes will be sealed with bentonite or other effective sealers to prevent interconnection and cross-contamination of ground and surface waters.
PA-6.11	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-6.12	Drilling equipment and machinery will not be serviced within 100 m of waterbodies or riparian areas.
PA-6.13	An Emergency Preparedness and Response Plan, and spill control and clean-up equipment will be provided at all drilling locations.
PA-6.14	Drilling sites will be demobilized and rehabilitated including the replacement of drill cuttings in the borehole, upon completion of work in accordance with contract specifications.

3.4.7 Grading (PA-7)

General environmental protection measures related to grading and related activities are listed in Table 8.

Table 8. Grading Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-7.1	Grading at construction sites will be in accordance with contract specifications.
PA-7.2	Grading will only be permitted within rights-of-ways and construction areas.

Table 8. Grading Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-7.3	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-7.4	Gravel pads will be graded so the surface runoff is directed away from waterbodies, riparian areas and wetlands.
PA-7.5	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.
PA-7.6	Grading will not be permitted within established buffer zones and setback distances from waterbodies (Appendix G).
PA-7.7	In northern Manitoba, grading of soils will not be permitted in organic areas where removal or disturbance of surface materials would damage permafrost.
PA-7.8	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-7.9	Grading for site rehabilitation and restoration will be in accordance with a site Rehabilitation Plan.

3.4.8 Grubbing (PA-8)

General environmental protection measures related to grubbing and related activities are listed in Table 9.

Table 9. Grubbing Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-8.1	Grubbing at construction sites will be in accordance with contract specifications.
PA-8.2	The extent of grubbing will be minimized to the extent possible.
PA-8.3	Grubbing will not be permitted within established buffer zones and setback distances from waterbodies (Appendix G).
PA-8.4	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-8.5	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-8.6	Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils.
PA-8.7	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-8.8	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.9	Construction areas requiring extensive grubbing will be stabilized as soon as possible to minimize erosion.
PA-8.10	Windrows of grubbed materials will be piled at least 15 m from standing timber.

3.4.9 Rehabilitating and Re-vegetating (PA-9)

General environmental protection measures pertaining to rehabilitation, re-vegetation and related activities are listed in Table 10. Also see Demobilizing and Cleaning-up (Table 5) and Erosion Protection and Sediment Control (Table 33).

Table 10. Rehabilitating and Re-vegetating Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-9.1	Rehabilitation and re-vegetation of construction areas will be in accordance with contract specifications.
PA-9.2	Project-specific Rehabilitation Plans will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
PA-9.3	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-9.4	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-9.5	Where appropriate, regional native grass mixtures identified in rehabilitation Plans 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.
PA-9.6	A terrestrial ecologist will provide rehabilitation and re-vegetation requirements, specifications and advice as required during rehabilitation.
PA-9.7	Rehabilitation Plans for borrow pits and quarries will also be provided to Manitoba Industry, Economic Development and Mines.
PA-9.8	Construction areas no longer required will be re-contoured, stabilized, re-vegetated and restored to near natural conditions in accordance with Rehabilitation Plans.
PA-9.9	Organic material, topsoil and subsoil stripped from construction areas will be stockpiled separately for future site rehabilitation.
PA-9.10	Stockpiled organic materials, topsoil and subsoil will be spread over restored construction areas to encourage re-vegetation.
PA-9.11	Stockpiled soils will be protected from wind erosion by location, wetting and, if necessary, by covering.
PA-9.12	Soil/site preparation consisting of scarification, grading and fertilizing will be conducted if necessary to re-establish vegetation.
PA-9.13	Highly erodible eolian (wind-blown) deposits will be stabilized immediately after disturbance by the addition of surface cover.
PA-9.14	Rehabilitation of construction areas will incorporate erosion protection and sediment control measures in accordance with the Erosion Protection and Sediment Control Plan as required.
PA-9.15	Rehabilitation measures for temporary stream crossings will be implemented as soon as possible after crossings are removed.
PA-9.16	Excavations will be left at a maximum slope of 4:1 (horizontal: vertical) for erosion and sediment control purposes.
PA-9.17	Compensatory measures such as tree planting and habitat enhancement will be considered for construction areas and sites where important habitat is removed.
PA-9.18	Compacted soil on agricultural lands will be tilled prior as part of demobilization activities in accordance with the Rehabilitation Plan.
PA-9.19	The Environmental Inspector will inspect rehabilitated construction areas in accordance with the site Reclamation Plan to assess effectiveness and determine if additional restoration activities are required.

3.4.10 Stripping (PA-10)

General environmental protection measures related to stripping and related activities are listed in Table 11.

Table 11. Stripping Environmental Protection Measures	
No.	**Environmental Protection Measures**
PA-10.1	Stripping at construction areas will be in accordance with contract specifications.
PA-10.2	Stripping in northern Manitoba will normally be carried out under frozen ground conditions during established timing windows to minimize rutting and erosion (Appendix F).
PA-10.3	The extent of stripping will be minimized to the extent possible.
PA-10.5	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. Where problem subsoils (e.g., saline, gravelly, stony) are encountered in agricultural landscapes, three-lift soil handling will be used to segregate the problem subsoils from higher quality subsoils. Once replaced, soils will be compacted similar to pre-disturbed condition."
PA-10.6	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-10.7	Stripping will not be permitted within established buffer zones and setback distances from waterbodies except where approved in work permits, authorizations or contract specifications (Appendix G).
PA-10.8	Erosion protection and sediment control measures will put be in place prior to stripping in accordance with the Erosion Protection and Sediment Control Plan as required.
PA-10.9	In areas of known salinity, excavated or stripped soil will be stored on liners or in designated areas were possible.
PA-10.10	The Contractor will stabilize construction areas requiring extensive stripping as soon as possible to minimize erosion.
PA-10.11	Stockpiled materials from stripping will not block natural drainage patterns.

3.5. Project Component Measures

General environmental protection measures relating to project components are listed in Tables 12 to 21.

3.5.1 Access Roads and Trails (PC-1)

General environmental protection measures for access roads, trails and related project activities are listed in Table 12. Also see Clearing (Table 4), Grading (Table 8), Rights-of-Way (Table 19) and Stream Crossings (Table 20).

Table 12. Access Roads and Trails Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-1.1	Access roads and trails will be located, constructed, operated and decommissioned in accordance with contract specifications.
PC-1.2	Public use of access roads and trails during construction will be controlled through the Access Management Plan.
PC-1.3	Permission for access to Crown Land will be obtained from provincial regulatory authorities prior to the commencement of the project.
PC-1.4	Existing access roads, trails or cut lines will be used to the extent possible. Permission to use existing roads will be obtained by Construction Supervisor/Site Manager prior to construction.
PC-1.5	Access roads and trails will be kept as short and narrow as possible.
PC-1.7	Access roads and trails will not be permitted within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats except for watercourse

Table 12. Access Roads and Trails Environmental Protection Measures	
No.	**Environmental Protection Measures**
	crossings (Appendix G).
PC-1.6	Access roads and trails, sensitive sites and buffer areas will be clearly marked prior to clearing.
PC-1.7	Vehicle, machinery and pedestrian traffic will be restricted to established roads and trails, and cleared construction areas in accordance with the Access Management Plan.
PC-1.8	Access roads and trails will be provided with erosion protection and sediment control measures along shoulders, ditches and at stream crossings in accordance with the Erosion Protection and Sediment Control Plan.
PC-1.9	Construction vehicles will be wide-tracked or equipped with high flotation tires to minimize rutting and limit damage and compaction to surface soils.
PC-1.10	Grades for access roads and trails should follow natural terrain contours to the extent possible and should be minimized adjacent to and approaching waterbodies.
PC-1.11	Approach grades to waterbodies will be minimized to limit disturbance to riparian areas.
PC-1.12	Surface water runoff will be directed away from disturbed and erosion sensitive areas but not directly into waterbodies.
PC-1.13	Equipment, machinery and vehicles will only travel on cleared access roads and trails, and will cross waterways at established temporary and permanent crossings.
PC-1.14	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-1.15	Clean abrasives may be used as alternatives to chemical melting agents.
PC-1.16	The Environmental Inspector will inspect access roads and trails regularly for adherence with environmental protection measures and unforeseen effects.
PC-1.17	Access roads and trails no longer required will be decommissioned and rehabilitated in accordance with the site Rehabilitation Plan.
PC-1.18	The Environmental Inspector will inspect access roads and trails prior to decommissioning to evaluate adherence to environmental protection measures and to document areas of potential contamination
PC-1.19	Access roads and trails required for future monitoring, inspection or maintenance will be maintained in accordance with the Access Management Plan.
PC-1.20	Public use of decommissioned access routes will be controlled through the Access Management Plan.
PC-1.21	Vegetation control along access roads and trails will be in accordance with contract specifications and Manitoba Hydro guidelines (Appendix E).
PC-1.22	The Environmental Inspector will inspect rehabilitated access roads and trails in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

3.5.2 Borrow Pits and Quarries (PC-2)

General environmental protection measures pertaining to borrow pits and quarries are listed in Table 13. Also see Blasting and Exploding (Table 2), Clearing (Table 4), Grubbing (Table 9), Stripping (Table 11), Grubbing, Soil Contamination (Table 37) and Rehabilitating and Re-vegetating (Table 10).

Table 13. Borrow Pits and Quarries Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-2.1	Borrow pits and quarries will be located, constructed, operated and decommissioned in accordance with contract specifications.
	Borrow pits and quarries will be designed, constructed and operated in compliance with provincial

Table 13. Borrow Pits and Quarries Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-2.2	legislation (Appendix C) and guidelines (Appendix E).
PC-2.3	A Rehabilitation Plan will be approved prior to borrow pit development and will be provided to Manitoba Industry, Economic Development and Mines and Manitoba Conservation.
PC-2.4	Previously developed borrow sites and quarries will be used before new sites are developed if suitable materials are available.
PC-2.5	Borrow pits will be located in areas where a minimum amount of overburden will need to be removed to the extent possible.
PC-2.7	Borrow pits will be located close to existing access routes and rights-of-way to the extent possible.
PC-2.8	Vegetated buffer areas will be left in place when borrow pits are cleared in accordance with provincial guidelines (Appendix D).
PC-2.9	Borrow pits located outside rights-of-way will be clearly flagged before clearing takes place.
PC-2.10	The work face of active quarries will be oriented away from wildlife areas, recreation areas and settlements.
PC-2.11	Borrow pits and quarries will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats, salt flats, heritage resources (Appendix G).
PC-2.12	Borrow pits and quarries will not be permitted within established buffer zones and setback distances from waterbodies, wetlands, and riparian areas (Appendix G).
PC-2.13	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-2.14	Existing borrow pits and quarries will be inspected and certified weed free by Environmental Inspector prior to use.
PC-2.15	Vegetation in borrow pits and quarries will be maintained as per the Vegetation Management Plan
PC-2.15	Dust control at borrow pits and quarries will be by approved dust control methods only in accordance with contact specifications.
PC-2.17	Erosion protection and sediment controls will be put in place before borrow pit excavation commences.
PC-2.18	Surface drainage will be redirected away from the borrow pits and quarries before excavation commences.
PC-2.19	Discharges from dewatering operations will be carried out so that it avoids entering natural water systems unless sediment is controlled.
PC-2.20	Drainage water from borrow pits and quarries will be diverted through vegetated areas prior to entering a waterbody.
PC-2.21	Organic material, topsoil and subsoil will be stripped and stockpiled for use in future site rehabilitation.
PC-2.22	Fuel storage will not be permitted in borrow pits and quarries.
PC-2.23	Garbage, debris or refuse will not be discarded into borrow pits and quarries.
PC-2.24	Signs will be posted at borrow pits and quarries to warn all persons of safety hazards.
PC-2.25	The Environmental Inspector will inspect active borrow pits and quarries regularly for adherence with environmental protection measures and unforeseen effects.
PC-2.26	All waste materials, equipment and structures will be removed from borrow pits prior to abandonment.
PC-2.27	Worked out borrow pits and quarries will be left with maximum 4:1 (horizontal to vertical) side slopes.
PC-2.28	Organic layer will be replaced on pit slopes and bottoms once the sites are ready to be decommissioned
PC-2.29	Access to abandoned borrow pits and quarries will be managed in accordance with the Access Management Plan.
PC-2.30	Vegetation control at borrow pits and quarries will be in accordance with the Vegetation Management Plan.
PC-2.31	The Environmental Inspector will inspect borrow pits and quarries prior to decommissioning to

Table 13. Borrow Pits and Quarries Environmental Protection Measures	
No.	**Environmental Protection Measures**
	evaluate adherence to environmental protection measures and to document areas of potential contamination.
PC-2.32	The Environmental Inspector will inspect rehabilitated borrow pits and quarries in accordance with the site Reclamation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

3.5.3 Construction Camps (PC-3)

General environmental protection measures pertaining to construction camps (start-up, main and mobile bush camps) and related activities are listed in Table 14. Also see Clearing (Table 4), Demobilizing and Cleaning-up (Table 5), Wildlife Protection (Table 30), Safety and Health (Table 36) and Waste Management (Table 40).

Table 14. Construction Camps Environmental Protection Measures	
No.	**Environmental Protection Measures**
All Construction Camps	
PC-3.1	Construction camps will be located, constructed, operated and decommissioned in accordance with contact specifications.
PC-3.2	Crown land permits will be obtained for construction camps as required.
PC-3.3	Construction camps will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-3.4	Previously developed construction camp locations will be used before new camps are developed where possible.
PC-3.5	Where previous construction camp locations are used the area will be assessed for potential contamination before the camp is developed.
PC-3.6	Construction camps will be located in existing clearings or natural openings to the extent possible.
PC-3.7	Construction camps will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats and heritage resources (Appendix G).
PC-3.8	Construction camps will not be located within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats (Appendix G).
PC-3.9	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-3.10	Construction camp boundaries will be clearly marked prior to clearing.
PC-3.11	Firebreaks will be constructed around camp locations where there is a risk of fire.
PC-3.12	Feeding or harassment of any wildlife will be prohibited.
PC-3.13	Problem wildlife will be reported immediately to Manitoba Conservation.
PC-3.14	Construction camp sites will be kept tidy at all times. Waste materials including litter will be collected for disposal.
PC-3.15	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 (Appendix C) and national codes (Appendix D).
PC-3.16	Bear-proof garbage containers will be used to store garbage and other solid waste materials in northern and rural areas.
PC-3.17	Food, greases and wastes will be stored in sealed, air-tight containers.
PC-3.18	All outdoor food storage lockers, containers and freezers will be locked.
PC-3.19	Garbage, recyclables and other waste materials will be removed in accordance with the solid waste management plan to a licensed or approved waste disposal site and/or recycling facility.

Table 14. Construction Camps Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-3.20	The Environmental Inspector will inspect construction camps regularly for adherence with environmental protection measures and unforeseen effects
PC-3.21	Construction camps no longer required will be decommissioned and rehabilitated in accordance with the site Reclamation Plan.
PC-3.22	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.
Stationary Construction Camps	
PC-3.23	Fishing/Hunting will not be permitted at the construction camp for the Keewatinoow Converter Station.
PC-3.24	A food handling permit will be obtained from the local Public Health Inspector prior to the operation of kitchens.
PC-3.25	Wastewater treatment systems will be designed, constructed and operated in accordance with provincial legislation (Appendix B) and national standards (Appendix D).
PC-3.26	Effluents and residues from water treatment systems will be disposed of in accordance with provincial legislation and guidelines, and permit requirements.
PC-3.27	Spill control and clean-up equipment and materials will be provided for construction camps in accordance with the Emergency Preparedness and Response Plan.
PC-3.28	Vegetation control at construction camps will be in accordance with the Vegetation Management Plan
Mobile Construction Camps	
PC-3.29	Sewage and grey water will be collected in holding tanks, sullage pits, chemical toilets or pit privies.
PC-3.30	Sewage and grey water holding tanks will be registered with Manitoba Conservation and will comply with provincial legislation (Appendix C) and national standards (Appendix D).
PC-3.31	Sewage and grey water holding tanks will be sited in accordance with provincial legislation (Appendix D), and federal and provincial guidelines (Appendix D), and a minimum of 100 m from the ordinary high water mark of any waterbody.
PC-3.32	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.

3.5.4 Facilities and Buildings (PC-4)

General environmental protection measures pertaining to facilities and buildings are listed in Table 15.

Table 15. Facilities and Buildings Environmental Protection Measures	
No.	**Environmental Protection Measures**
All Facilities/Buildings	
PC-4.1	Facilities, buildings and other structures built in construction areas will be located, constructed, operated and decommissioned in accordance with contract specifications.
PC-4.2	All required licences, permits and approvals will be obtained prior to construction of facilities and buildings.
PC-4.3	Facilities and buildings will be designed and constructed in accordance with national and provincial building, electrical and fire codes (Appendix D).
PC-4.4	Facilities and buildings will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats, heritage resources (Appendix G).
PC-4.5	Facilities and buildings will not be located within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats (Appendix G).

Table 15. Facilities and Buildings Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-4.6	In northern Manitoba, facilities and buildings in permafrost areas will employ insulation techniques to protect frozen ground from damage and subsequent melting.
PC-4.7	Construction materials for facilities and buildings will conform to Manitoba Hydro's sustainable development principles (Appendix E).
PC-4.8	Erosion protection, sediment control and drainage management will be put in place prior to construction.
PC-4.9	Construction waste will be managed and disposed of in accordance with provincial legislation (Appendix C), provincial guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E) (See Waste Management – Table 43).
PC-4.10	Solid and hazardous wastes will be collected in approved containers and disposed of at licensed or approved facilities that have sufficient capacity.
PC-4.11	Solid, liquid and gaseous wastes and emissions from facilities and buildings will conform to provincial and national guidelines (Appendix D).
PC-4.12	Sewage and grey water disposal for facilities and buildings will be in accordance with provincial legislation (Appendix C) and national guidelines (Appendix D).
PC-4.13	Fuel and hazardous substance storage and handling will be in accordance with provincial legislation and guidelines.
PC-4.14	Emergency Preparedness and Response Plans and procedures for facilities and buildings will be put in place prior to commissioning.
PC-4.15	Vegetation control at facilities and buildings will be in accordance with the Vegetation Management Plan.
PC-4.16	The Environmental Inspector will inspect facilities and buildings regularly for adherence with environmental protection measures and unforeseen environmental effects.
PC-4.17	Facilities and buildings will be decommissioned when no longer required in accordance with a Decommissioning Plan. Decommissioned sites will be cleaned up and restored to near natural conditions.

3.5.5 Marshalling Yards (PC-5)

General environmental protection measures pertaining to marshalling yards are listed in Table 16. Also see Emergency Response (Table 32), Hazardous Substances (Table 34), Petroleum Products (Table 35), Soil Contamination (Table 37), and Safety and Health (Table 36).

Table 16. Marshalling Yards Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-5.1	Marshalling yards will be located, constructed, operated and decommissioned in accordance with contact specifications.
PC-5.2	Marshalling yards will be located in existing clearings or natural openings.
PC-5.3	Marshalling yards will be located based on criteria that consider soils, topography, land form type, permafrost, wildlife habitat and other environmental factors.
PC-5.4	Marshalling yards will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats, heritage resources (Appendix G).
PC-5.5	Marshalling yards will not be located within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats (Appendix G).
PC-5.6	Fire breaks will be established around marshalling yards in areas where there is a risk of fire.
PC-5.7	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.8	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.

Table 16. Marshalling Yards Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-5.9	Hazardous substances entering and leaving the marshalling yards will be inventoried and accounted for.
PC-5.10	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.11	Hazardous substances will be stored in accordance with provincial legislation (Appendix C), and provincial and national codes and standards (Appendix D).
PC-5.12	Petroleum products will only be stored, handled and dispensed in designated areas within marshalling yards in accordance with provincial legislation (Appendix C) and guidelines (Appendix D).
PC-5.13	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within marshalling yards.
PC-5.14	Welding mats will be used to minimize the risk of fire.
PC-5.15	Emergency Preparedness and Response Plan and procedures for marshalling yards will be developed.
PC-5.16	Spill control and clean-up equipment to be located at designated areas within marshalling yards.
PC-5.17	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved waste disposal site.
PC-5.18	Waste hazardous substances, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste disposal facilities by a licensed carrier.
PC-5.19	Vegetation control at marshalling yards will be in accordance with contract specifications and Manitoba Hydro guidelines (Appendix E).
PC-5.20	The Environmental Inspector will inspect marshalling yards regularly for adherence with environmental protection measures during construction and operation.
PC-5.21	Once marshalling yards are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.22	Marshalling yards no longer required will be decommissioned and rehabilitated in accordance with the site Reclamation Plan.
PC-5.23	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.

3.5.6 Potable Water and Wells (PC-6)

General environmental protection measures pertaining to potable water and wells are listed in Table 17. Also see Drilling (Table 7), Groundwater (Table 25) and Safety and Health (Table 36).

Table 17. Potable Water and Wells Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-6.1	Potable water wells will be located, drilled, operated and decommissioned in accordance with contact specifications.
PC-6.2	Potable water wells will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats, heritage resources (Appendix G).
PC-6.3	Potable water wells will not be located within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats (Appendix G).
PC-6.4	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PC-6.5	Water wells will be marked, provided with signage and protected with bollards from damage by vehicles or equipment.
PC-6.6	Water well heads will be a minimum of 30 cm above ground and above the 100-year flood level,

Table 17. Potable Water and Wells Environmental Protection Measures	
No.	**Environmental Protection Measures**
	and be mounded to direct water away from the well.
PC-6.7	Surface water will be prevented from draining into the well by grouting the annulus of the well casing to the surface.
PC-6.8	Water wells will be capped, secured and either sealed or vented.
PC-6.9	Potable well water will be in compliance with the requirements outlined in Canadian Drinking Water Standards (Appendix D).
PC-6.10	Potable well water treatment/storage facilities/tanks will comply with provincial legislation (Appendix C) and guidelines (Appendix D).
PC-6.11	Potable well water holding tanks will be cleaned and disinfected with approved disinfectants prior to use.
PC-6.12	Super-chlorinated water used for disinfection of storage tanks and equipment will not be released into the environment without de-chlorination.
PC-6.13	The treatment of potable well water will be in compliance with provincial legislation (Appendix C) and guidelines (Appendix D).
PC-6.14	Well water samples will be collected every two weeks and submitted for analysis according to provincial sampling and analysis protocols (Appendix D).
PC-6.15	Potable water samples will be taken from the holding tank and from two different faucets at the end of the distribution piping.
PC-6.16	Potable water samples will be analyzed for total coliforms, metals, hydro carbons , *Escherichia coli* and free chlorine, twice per year

3.5.7 Power Supply Stations (PC-7)

General environmental protection measures pertaining to the supply of power for project activities (e.g. generators) are listed in Table 18. Also see Emergency Response (Table 32).

Table 18. Power Supply Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-7.1	Power supply facilities for construction purposes will be located, constructed, operated and decommissioned in accordance with contact specifications.
PC-7.2	Power supply facilities will be designed and constructed in accordance with national and provincial building, electrical and fire codes (Appendix D).
PC-7.3	All required licences, permits and approvals will be obtained prior to construction of power supply facilities.
PC-7.4	Land owners, occupiers and users within 5 km of proposed power supply facilities will be consulted prior to construction.
PC-7.5	Power supply facilities will not be located within established buffer zones and setback distances from sensitive sites including important wildlife habitats, heritage resources (Appendix G).
PC-7.6	Power supply facilities will not be located within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats (Appendix G).
PC-7.7	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-7.8	Construction materials for power supply facilities will conform to Manitoba Hydro's sustainable development principles (Appendix E).
PC-7.9	Construction waste will be managed and disposed of in accordance with the Solid Waste Management Plan and in conformance with provincial legislation (Appendix C), provincial guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
PC-7.10	Solid and hazardous wastes will be collected in approved containers and transported to licensed or approved facilities by a licensed carrier.

Table 18. Power Supply Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-7.11	Solid, liquid and gaseous wastes and emissions from power supply facilities will conform to provincial and national guidelines (Appendix D).
PC-7.12	Sewage and grey water disposal for power supply facilities will be in accordance with provincial legislation (Appendix C) and guidelines (Appendix D).
PC-7.13	Fuel and hazardous substance storage and handling will be in accordance with provincial legislation (Appendix C) and guidelines (Appendix D).
PC-7.14	Emergency Preparedness and Response Plans and procedures will be put in place for power supply facilities prior to commissioning.
PC-7.15	The Environmental Inspector will inspect power supply facilities regularly for adherence with environmental protection measures and unforeseen effects.
PC-7.16	Power supply facilities will be decommissioned when no longer required in accordance with a Decommissioning Plan.

3.5.8 Rights-of-Way (PC-8)

General environmental protection measures pertaining to rights-of-way are listed in Table 19. Also see Clearing (Table 4), Access Roads and Trails (Table 12), Stream Crossings (Table 20) and Transmission Towers and Conductors (Table 21).

Table 19. Rights-of-Way Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-8.1	Rights-of-way for transmission and distribution lines, access roads and other purposes will be located, cleared, maintained and decommissioned in accordance with contract specifications.
PC-8.2	Access to transmission line rights-of-way for clearing and construction will utilize existing roads and trails to the extent possible.
PC-8.3	Clearing of rights-of-way will occur under frozen or dry ground conditions during established timing windows to minimize rutting and erosion where applicable (Appendix F).
PC-8.4	Geotextile fabric and aggregate material or construction mats will be utilized along portions of the right-of-way that are unable to be targeted during frozen or dry ground conditions.
PC-8.5	Clearing and disturbance will be limited to defined rights-of-way and associated access routes to the extent possible.
PC-8.6	Additional clearing outside established rights-of-way will be approved by the Construction Supervisor/Site Manager prior to clearing and may require an amendment to contract specifications.
PC-8.7	Environmentally sensitive sites, features and areas will be identified and mapped prior to clearing.
PC-8.8	Access to transmission line rights-of-way will be closed, signed and/or controlled in accordance with an Access Management Plan.
PC-8.9	Construction vehicles will be wide-tracked or equipped with high floatation tires to minimize rutting and limit damage and compaction to surface soils.
PC-8.10	Vegetation control along rights-of-way during construction will be in accordance with the Vegetation Management Plan.
PC-8.11	The Environmental Inspector will inspect rights-of-way regularly for adherence with environmental protection measures and unforeseen environmental effects.
PC-8.12	Disturbed areas along transmission line rights-of-way will be rehabilitated in accordance with site Rehabilitation Plan.
PC-8.13	The Environmental Inspector will inspect rehabilitated areas along rights-of-way in accordance with the Site Rehabilitation Plan to assess the success of any re-vegetation and to determine if additional rehabilitation is required.

3.5.9 Stream Crossings (PC-9)

General environmental protection measures pertaining to stream crossings are listed in Table 20. Also see Access Roads and Trails (Table 12), Fish Protection (Table 24), Waterbodies (Table 28) and Erosion Protection and Sediment Control (Table 33).

Table 20. Stream Crossings Environmental Protection Measures

No.	Environmental Protection Measures
PC-9.1	Watercourse crossings will be located, constructed, operated and decommissioned in accordance with contract specifications.
PC-9.2	Right-of-way and access road planning will minimize the number of watercourse crossings.
PC-9.3	Existing trails, roads or cut lines will be used to the extent possible
PC-9.4	Watercourse crossings will be made in accordance with federal legislation (Appendix C) and federal, provincial guidelines (Appendix D).
PC-9.5	Construction of transmission line stream crossings will follow the DFO Operational Statement for Overhead Line Construction (Appendix D) and will be constructed under frozen conditions whenever possible.
PC-9.6	Where crossing a stream is necessary, fording or construction of temporary stream crossings will follow the DFO Operational Statement for Temporary Stream Crossings, and if appropriate conditions exist for Ice Bridges and Snow Fills (Appendix D).
PC-9.7	Where applicable, the DFO Operational Statement for Isolated or Dry Open Cut Stream Crossings and/or High-pressure Directional Drilling will be adhered to (Appendix D). The crossing site must be less than 5 m wide (between high water marks) and construction must be conducted in isolation of flowing water if not constructed during dry or frozen conditions.
PC-9.8	Saturated marshy floodplains of streams will be avoided as watercourse crossings to the extent possible. Where marshy floodplain areas must be crossed, the work will be carried out under frozen conditions.
PC-9.9	No in-stream work will be undertaken during timing windows prescribed by federal guidelines for spring, summer and fall spawners by DFO Operation Statement for Timing Windows (Appendix F).
PC-9.10	Rights-of-way and access road crossings will be at right angles to waterbodies to the extent possible.
PC-9.11	Approach gradients to waterbodies will not exceed 5% to control erosion and minimize sedimentation. This gradient may be achieved using log ramps or other methods, but will not include grading
PC-9.12	Vehicles, machinery and equipment working on watercourse crossings will be kept in good working condition and free of fluid leaks.
PC-9.13	Clearing for stream crossings will follow riparian buffers and setbacks for the Protection of Fish and Fish Habitat (Appendix G).
PC-9.14	Clearing for stream crossings will only remove tree species by hand or other low impact methods in accordance with contact specifications. Shrub understory will be retained and soils will not be disturbed in riparian areas.
PC-9.15	Trees will be felled away from waterbodies. Trees and debris that fall into waterbodies will be removed immediately.
PC-9.16	Cleared debris will be piled above the ordinary high water mark except as required for temporary erosion control in accordance with federal guidelines (Appendix D)
PC-9.17	Existing woody debris will not be removed from stream beds unless required for the stream crossing and approved by the Construction Supervisor/Site Manager.
PC-9.18	Aggregate materials will not be removed from the bed or bank of any stream or waterway.
PC-9.19	Branches, sawdust, soil or organic materials will not to be used as bank or bridge fill. Only approved materials including bundled logs will be used at stream crossings.
	Only clean, well-graded aggregate fill be used to backfill excavations adjacent to watercourse

Table 20. Stream Crossings Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-9.20	crossings.
PC-9.21	Erosion protection and sediment control measures will be put in place prior to the commencement of construction activities.
PC-9.22	The bed or banks of watercourses will not be disturbed during removal of snow fills.
PC-9.23	A deep V-shaped notch will be cut at the centre of ice bridges prior to the start of the spring thaw. The notch will be deep enough to permit the ice to melt from the centre and also to prevent blocking fish passage, channel erosion and flooding.
PC-9.24	After removal of temporary watercourse crossings, banks will be restored to near natural conditions and protected from erosion, and flows will be returned to pre-construction conditions.
PC-9.25	Riparian vegetation along rights-of-way will be maintained in accordance with the DFO Operational Statement Maintenance of Riparian Vegetation in Existing Rights-of-Way (Appendix D).
PC-9.26	Disturbed stream banks will be stabilized and re-vegetated with low growth vegetation as soon as practical.
PC-9.27	Abandoned stream crossings will be clearly marked to prevent vehicle access and subsequent environmental damage in accordance with the Access Management Plan.
PC-9.28	The Environmental Inspector will inspect watercourse crossings in accordance with approval terms and conditions to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
PC-9.29	The Environmental Inspector will be present when winter stream crossings are being pulled out prior to breakup.
PC-9.30	The Environmental Inspector will inspect rehabilitated watercourse crossings in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-9.31	Stream crossing environmental protection measures identified by aquatic specialists will be adhered to.

3.5.10 Transmission Towers and Conductors (PC-10)

General environmental protection measures pertaining to transmission towers, guy wires and conductors are listed in Table 21. Also see Rights-of-Way (Table 19).

Table 21. Transmission Towers and Conductors Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-10.1	Transmission towers will be constructed in accordance with contract specifications.
PC-10.2	Transmission tower locations will avoid riparian areas, floodplains, wetlands, permafrost and unstable soil conditions to the extent possible.
PC-10.3	Transmission towers will be located above the ordinary high water mark and outside the riparian zone to the extent possible, wherever feasible
PC-10.4	Transmission towers will not be located on steep slopes near watercourses to the extent possible.
PC-10.5	Transmission towers will not be located within municipal drains or other drainage structures.
PC-10.6	Transport of equipment and materials for tower construction will be along pre-defined access corridors
PC-10.7	Transmission tower construction will normally occur under frozen or dry ground conditions.
PC-10.8	Where thawing occurs, construction equipment, tires and loadings, and access routes will be reviewed to ensure that there will be minimum damage to the soils.
PC-10.9	Transmission towers will not be located within established buffer zones and setback distances from sensitive sites including, protected areas and heritage resources whenever feasible (Appendix G).

Table 21. Transmission Towers and Conductors Environmental Protection Measures	
No.	**Environmental Protection Measures**
PC-10.10	Transmission towers will not be located within established buffer zones and setback distances from waterbodies, wetlands and riparian areas (Appendix G).
PC-10.11	Transmission tower construction will not be permitted within established buffer zones (Appendix G) for bird nesting and rearing during established timing windows (Appendix F).
PC-10.12	Construction of transmission line stream crossings will follow the DFO Operational Statement for Overhead Line Construction (Appendix D) and will be constructed under frozen conditions whenever possible.
PC-10.13	Overhead lines across watercourses will not be installed during wet, rainy conditions in accordance with the DFO Operational Statement for Overhead Line Construction (Appendix D).
PC-10.14	The Construction Supervisor/Site Manager 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.
PC-10.15	Excavations required for tower installations will be restricted to the minimum required footprint.
PC-10.16	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-10.17	Areas where soil was disturbed will be stabilized and re-vegetated with low growth vegetation as soon as practical.
PC-10.18	The Environmental Inspector will inspect tower locations regularly to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
PC-10.19	The Environmental Inspector will inspect rehabilitated tower locations in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
PC-10.20	Vegetation control around transmission towers will be in accordance with contract specifications and Manitoba Hydro guidelines (Appendix E).

3.6. Environmental Component Measures

General environmental protection measures relating to environmental components are listed in Tables 22 to 30.

3.6.1 Agricultural Areas (EC-1)

General environmental protection measures pertaining to agricultural areas are listed in Table 22. Also see Clearing (Table 4), Access Roads and Trails (Table 12), Transmission Towers and Conductors (Table 21) and Soil Contamination (Table 37).

Table 22. Agricultural Areas Environmental Protection Measures

No.	Environmental Protection Measures
EC-1.1	Any necessary access on privately-owned agricultural lands will be discussed with and agreed to in advance by the landowner.
EC-1.2	Project plans will be reviewed with senior and supervisory contractor staff to ensure that environmental protection measures are communicated and understood.
EC-1.3	Existing access to agricultural lands will be utilized to the extent possible.
EC-1.4	All fences and gates will be left in “as-found” condition and gates will be closed upon entering or existing fence lines.
EC-1.5	Vehicular travel on agricultural lands will follow existing roads, trails and paths to the extent possible.
EC-1.6	Required travel off existing roads will be minimized and restricted to previously designated and approved routes.
EC-1.7	Clearing will avoid potholes, wetlands, ditches, dugouts and other such areas on agricultural lands.
EC-1.8	Construction activities will be carried out away from farm residences, farmyards, crop areas and other land uses to the extent possible.
EC-1.9	Erosion protection and sediment control measures will be established before construction work commences in agricultural areas where necessary.
EC-1.10	The Environmental Inspector will inspect construction in agricultural areas regularly to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
EC-1.11	Surface granular materials will be removed from construction sites and areas located on agricultural lands, and replaced with clean topsoil.
EC-1.12	At least 300 mm of topsoil will be spread over any restored or reclaimed construction site or area.
EC-1.13	Construction areas and sites will be deep ploughed by the contractor to mitigate any compaction prior to returning them to agricultural use.
EC-1.14	The Environmental Inspector will inspect rehabilitated agricultural areas in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.
EC-1.15	Any property damages will to be documented and dealt with in accordance with Manitoba Hydro policies and procedures (Appendix E).

3.6.2 Built-up and Populated Areas (EC-2)

General environmental protection measures related to working in built-up or populated areas are listed in Table 23. Also see Blasting and Exploding (Table 2), Facilities and Buildings (Table 15) and Transmission Towers and Conductors (Table 21).

Table 23. Built-up and Populated Areas Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-2.1	Contractor and Manitoba Hydro employees will respect municipal and local by-laws in built-up areas.
EC-2.2	Orientation for project staff working in construction areas will include awareness of environmental protection measures for built-up areas.
EC-2.3	Proposed project activities will be reviewed with local city, town and municipal authorities to identify issues and mitigate concerns.
EC-2.4	Construction schedules, equipment and methods will be adapted to comply with municipal and local requirements.
EC-2.5	Noisy construction activities where noise and vibration may cause disturbance and stress in built-up areas will be limited to daylight hours.
EC-2.6	Construction methods and timing will be designed to minimize local traffic disruption and adhere to municipal by-laws.
EC-2.7	Construction traffic and activities will be limited to daylight hours or as provided by municipal by-laws
EC-2.8	Construction site lighting will be directed onto the site and will minimize light and glare on surrounding areas.
EC-2.9	Linear access and sight lines will be taken into account when crossing public roads and traffic lanes.
EC-2.10	Construction activities and equipment will be managed to avoid damage and disturbance to adjacent properties, structures and operations.
EC-2.11	Mud, dust and vehicle emissions will be managed in a manner that ensures safe and continuous public activities near construction sites where applicable.
EC-2.12	Natural landscape features located adjacent to construction sites will be protected from disturbance and damage.
EC-2.13	Vegetation screens and buffers using natural or planted vegetation will be incorporated into the design of facilities in built-up areas to the extent possible.
EC-2.14	Disturbance to adjacent cultural areas, heritage resources and green spaces will be avoided.
EC-2.15	The Environmental Inspector will inspect construction work in built-up areas to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.

3.6.3 Fish Protection (EC-3)

General environmental protection measures related to fish and fish habitat are listed in Table 24. Also see Stream Crossings (Table 20), Fish Protection (Table 24), Waterbodies (28) and Erosion Protection and Sediment Control (Table 33).

Table 24. Fish Protection Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-3.1	Construction activities in or near to fish bearing waters will be conducted in accordance with contact specifications.

Table 24. Fish Protection Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-3.2	Fish and fish habitat will be protected in accordance with federal legislation (Appendix C) and federal and provincial guidelines (Appendix D).
EC-3.3	Construction activities will not be carried out within established buffer zones and setback distances from waterbodies, wetlands and riparian areas (Appendix G) without prior written notification of Department of Fisheries and Oceans.
EC-3.4	Construction activities will not be carried out within established buffer zones (Appendix G) for fish spawning during established timing windows (Appendix F).
EC-3.5	No work will carried out in watercourses during timing windows prescribed by provincial and federal guidelines for spring, summer and fall spawners (Appendix F).
EC-3.6	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-3.7	Manitoba Conservation and Department of Fisheries and Oceans will be notified if beaver dams must be cleared along rights-of-ways and along access roads and trails. Clearing of dams will be carried out in accordance of the DFO Operational Statement on Beaver Dam Removal (Appendix D).
EC-3.8	Disturbances to waterbodies, shorelines, riparian areas, etc. will be rehabilitated immediately upon completion of construction activities.
EC-3.9	Project personnel will be prohibited from fishing at project locations or along rights-of-way
EC-3.10	The Contractor will submit Blasting Plans to the Department of Fisheries and Oceans for approval prior to blasting near waterbodies.
EC-3.11	Blasting near fish-bearing waters will be in accordance with Department of Fisheries and Oceans guidelines (Appendix D).
EC-3.12	The Environmental Inspector will inspect construction in or adjacent to waterbodies regularly to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
EC-3.13	The Environmental Inspector will inspect rehabilitated riparian areas in accordance with the site Reclamation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

3.6.4 Groundwater (EC-4)

General environmental protection measures related to groundwater are listed in Table 25. Also see Draining (Table 6), Drilling (Table 7), Borrow Pits and Quarries (Table 13), Potable Water and Wells (Table 17), Soil Contamination (Table 37) and Safety and Health (Table 36).

Table 25. Groundwater Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-4.1	Well location will be marked with flagging tape prior to construction.
EC-4.2	The risk of accidental releases of petroleum products and other hazardous substances will be minimized by compliance with provincial and federal legislation (Appendix C) and guidelines (Appendix D).
EC-4.3	Where there is potential for mixing of surface and ground water, precautions will be taken to prevent the interconnection of these waters.
EC-4.4	Where groundwater is used for project purposes groundwater usage, quality and levels will be monitored.
EC-4.5	Where groundwater is used for potable water samples will be collected every two weeks and submitted for analysis according to provincial guidelines (Appendix D).
EC-4.6	Potable water samples will be analyzed for total coliforms, heavy metals, hydrocarbons, *Escherichia coli* and free chlorine.

3.6.5 Heritage Resources (EC-5)

General environmental protection measures related to heritage resources are listed in Table 26. Also see Clearing (Table 4), Stripping (Table 11), Access Roads and Trails (Table 12) and Borrow Pits and Quarries (Table 13).

Table 26. Heritage Resources Environmental Protection Measures

No.	Environmental Protection Measures
EC-5.1	Environmental protection measures for heritage resources will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-5.2	Provincial legislation (Appendix C) and guidelines (Appendix D) protecting heritage resources will be adhered to during pre-construction and construction activities.
EC-5.3	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-5.4	Orientation information will include typical heritage resource materials and reporting procedures.
EC-5.5	Construction activities will not be carried out within established buffer zones for heritage resources except as approved by Project Archaeologist.
EC-5.6	The Environmental Inspector will inspect borrow pits and other excavations regularly for the presence of heritage resource materials.
EC-5.7	The Environmental Inspector will inspect routine stream crossings for the presence of heritage resource materials and will report any findings immediately to the Project Archaeologist.
EC-5.8	The Project Archaeologist will inspect major stream and large river crossings for the presence of heritage resource materials.
EC-5.9	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-5.10	The Contractor will report heritage resource materials immediately to the Construction Supervisor/Site Manager and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.
EC-5.11	Project Archaeologist will report heritage resource discoveries to the appropriate First Nation or Aboriginal community.
EC-5.12	The Project Archaeologist will visit the site, confirm the presence of heritage resources, establish a buffer zone, conduct an evaluation and determine protection/salvage requirements.
EC-5.13	Any culturally significant heritage resource materials discovered during construction will be inventoried and/or salvaged by the Project Archaeologist as per standard archaeological best practices
EC-5.14	The Contractor will stop work immediately in the immediate vicinity if human remains are discovered during construction activities. The finding will be reported to the Construction Supervisor/Site Manager who will contact the Project Archaeologist. The project archaeologist will report immediately to the Historic Resources Branch (HRB) who will, in turn, contact the RCMP and Medical Officer. The closest First Nation community will also be notified by the Project Archaeologist. . A site visit will take place immediately along with the RCMP and Medical Officer to confirm the presence of human remains and determine the forensic/non-forensic nature of the human remains. The Project Archaeologist will work closely with the HRB once the status of the human remains is determined.
EC-5.15	Major heritage resource sites including burial sites discovered during construction will be protected by erecting a snow fence around the site, designating the site off-limits, posting signage, directing water away from the site and placing barricades on access routes, until a permanent solution is agreed upon..

3.6.6 Permafrost (EC-6)

General environmental protection measures related to permafrost in northern Manitoba are listed in Table 27. Also see Clearing (Table 5), Access Roads and Trails (Table 14), and Erosion Protection and Sediment Control (Table 36).

Table 27. Permafrost Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-6.1	Environmental protection measures for permafrost areas in northern Manitoba will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-6.2	Permafrost areas in northern Manitoba will be identified and mapped in advance of project construction activities.
EC-6.3	Construction activities in northern Manitoba will normally occur under frozen ground conditions during established timing windows to minimize disturbance and rutting (Appendix F).
EC-6.4	Disturbance to ground cover vegetation and organic soils in permafrost areas will be minimized.
EC-6.5	The top layer of vegetation and organic materials will be retained as an insulating layer in permafrost areas.
EC-6.6	Excavations of permafrost areas in northern Manitoba will be minimized to the extent possible.
EC-6.7	Alterations to natural drainage patterns by rutting and scouring of surface materials in permafrost areas will be avoided to the extent possible.
EC-6.8	Damage to permafrost areas at watercourse crossings will be minimized by conducting work under frozen conditions.
EC-6.9	Construction projects in permafrost areas of northern Manitoba will employ insulation techniques to protect frozen ground from melting.
EC-6.10	The Environmental Inspector will inspect work regularly in permafrost areas to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
EC-6.11	Following construction, the Environmental Inspector will inspect permafrost areas to assess effectiveness of environmental protection measures and to determine if additional measures are required.

3.6.7 Waterbodies (EC-7)

General environmental protection measures related to waterbodies (lakes, ponds, rivers, streams, etc.) are listed in Table 28. Also see Draining (Table 6), Stream Crossings (Table 20), Fish Protection (Table 24), Wetlands (Table 29) and Erosion Protection and Sediment Control (Table 33).

Table 28. Waterbodies Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-7.1	Construction activities in or near to waterbodies will be conducted in accordance with work permits and/or contract specifications.
EC-7.2	Waterbodies will be identified and mapped in advance of project construction activities.
EC-7.3	Environmental protection measures for working around waterbodies will be reviewed with the Contractor and employees prior to commencement of any construction activities.

Table 28. Waterbodies Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-7.4	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for working around waterbodies.
EC-7.5	Construction activities will not be carried out within established buffer zones and setback distances from waterbodies, wetlands and riparian areas (Appendix G) except at waterbody crossings.
EC-7.6	No work will be carried out in watercourses during timing windows prescribed by provincial and federal guidelines for spring, summer and fall spawners (Appendix F).
EC-7.7	Erosion protection and sediment control measures will be put in place at all project locations where surface drainage is likely to flow into waterbodies.
EC-7.8	Construction in and around waterbodies will be designed and conducted to protect shorelines, minimize clearing of riparian vegetation, prevent disruption to natural drainage and flow patterns, and avoid disturbance and destruction of fish habitat, and interference to fish passage.
EC-7.9	Drainage at construction sites will be directed away from waterbodies.
EC-7.10	Direct discharge of waste waters from construction activities into waterbodies is prohibited
EC-7.11	Erosion protection and sediment control measures will be put in place prior to working in and adjacent to waterbodies.
EC-7.12	Surface and groundwater quality will not be degraded whether or not they contain fish or other aquatic biota.
EC-7.13	Construction activities will not be carried out within established setback distances from waterbodies, wetlands and riparian areas, except at stream crossings (Appendix G).
EC-7.14	Manitoba Conservation and Department of Fisheries and Oceans will be notified if beaver dams must be cleared along rights-of-way and access roads and trails. Clearing of dams will be carried out in accordance of the DFO Operational Statement on Beaver Dam Removal (Appendix D).
EC-7.15	The Environmental Inspector will inspect construction work in and around waterbodies regularly to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.
EC-7.16	The Environmental Inspector will inspect sites in and around waterbodies post construction in accordance with the site Reclamation Plan and approval terms and conditions to assess effectiveness of environmental protection measures and to determine if additional measures are required.

3.6.8 Wetlands (EC-8)

General environmental protection measures pertaining to wetlands including bogs, fens, peatlands and marshes are listed in Table 29. Also see Draining (Table 6), Stream Crossings (Table 20), Fish Protection (Table 24), Wildlife Protection (Table 30), and Erosion Protection and Sediment Control (Table 33).

Table 29. Wetlands Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-8.1	Construction activities in or near to wetlands will be conducted in accordance with contract specifications.
EC-8.2	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for working around wetlands.
EC-8.3	Wetlands will be identified and mapped in advance of project construction activities.
EC-8.4	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.

Table 29. Wetlands Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-8.5	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-8.6	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-8.7	Construction of buildings, facilities and other structures in wetland areas will be avoided. If avoidance of wetlands is not practical, steel or concrete structures or CCA treated poles/timbers will be used.
EC-8.8	Natural vegetated buffer areas around wetlands and riparian zones will be maintained to the extent possible.
EC-8.9	Manitoba Conservation and Department of Fisheries and Oceans will be notified if beaver dams must be cleared along rights-of-way and access roads and trails. Clearing of dams will be carried out in accordance of the DFO Operational Statement on Beaver Dam Removal (Appendix D).

3.6.9 Wildlife Protection (EC-9)

General environmental protection measures related to wildlife (mammals, birds, amphibians, reptiles) and wildlife habitat are listed in Table 30. Also see Blasting and Exploding (Table 2), Clearing (Table 4), Access Roads and Trails (Table 12), Construction Camps (Table 14), Transmission Towers and Conductors (Table 21), Wetlands (Table 29), Vehicles and Equipment (Table 39), and Waste Management (Table 40).

Table 30. Wildlife Protection Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-9.1	Construction activities in or near to wildlife and wildlife habitat will be conducted in accordance with contact specifications.
EC-9.2	Wildlife and wildlife habitat will be protected in accordance with provincial and federal legislation (Appendix C) and provincial and federal guidelines (Appendix D),
EC-9.3	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for wildlife and wildlife habitat.
EC-9.4	Clearing will occur during late fall and winter to the extent possible to avoid the spring/summer nesting season for birds and parturition times for mammal species and breeding windows for frog species
EC-9.5	Construction activities will not be carried out within established buffer zones and setback distances for wildlife species (Appendix G).
EC-9.6	Long-term storage of cleared vegetation will be avoided to allow for unrestricted wildlife movements
EC-9.7	Construction activities will not be carried out during prescribed timing windows for wildlife species (Appendix F).
EC-9.8	Boundaries of important wildlife habitats will be flagged by prior to commencement of construction.
EC-9.9	Bird Diverters or aerial markers may be installed in high bird traffic areas.
EC-9.10	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-9.11	Trails through or near important habitat types will be managed in accordance with the Access Management Plan.
EC-9.12	Low, non-danger trees will be maintained in high quality lichen production areas within caribou ranges.

Table 30. Wildlife Protection Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-9.13	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-9.14	Manitoba Conservation and Department of Fisheries and Oceans will be contacted if beaver dams must be cleared along rights-of-ways or access roads and trails. Clearing of dams will be carried out in accordance of the DFO Operational Statement on Beaver Dam Removal (Appendix D).
EC-9.15	Manitoba Conservation will be notified if animal traps are encountered and must be removed for project activities.
EC-9.16	Wildlife will not be fed, befriended or harassed at construction areas.
EC-9.17	Construction camps will be kept clean, food will be kept in sealed storage areas, and kitchen wastes will be stored in bear-proof containers in northern and rural areas.
EC-9.18	Problem wildlife will be reported immediately to Manitoba Conservation.
EC-9.19	Hunting and harvesting of wildlife by project staff will not be permitted while working on the project sites.
EC-9.20	No firearms will be permitted at construction sites.
EC-9.21	Vehicles will not exceed posted speed limits and wildlife warning signs will be installed in high density areas and at known crossings locations.
EC-9.22	Any wildlife killed or injured by vehicles will be reported to Manitoba Conservation.
EC-9.23	The Environmental Inspector will inspect important wildlife habitats and environmentally sensitive sites regularly to ensure that environmental protection measures are implemented and effective, and unforeseen effects are addressed.

3.7. Environmental Issue/Topic Measures

General environmental protection measures relating to environmental issues and topics are listed in Tables 31 to 40.

3.7.1 Aircraft Use (EI-1)

General environmental protection measures related to aircraft use are listed in Table 31. Also see Wildlife Protection (Table 30) and Safety and Health (Table 36).

Table 31. Aircraft Use Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-1.1	Pre-defined aircraft landing locations will include construction camps, marshalling yards, borrow pits, right-of-way corridor and designated landing sites.
EI-1.2	Temporary aircraft landing sites for operational purposes along the right-of-way will be approved by the Construction Supervisor prior to use.
EI-1.3	Fuel storage, handling and dispensing at aircraft landing areas will conform to provincial legislation (Appendix C) and guidelines (Appendix D).
EI-1.4	Contractors and researchers using aircraft will submit flight plans in advance of flying to the Construction Supervisor/Site Manager.
EI-1.5	Aircraft movements as part of ongoing research associated with the project will require prior review by the Construction Supervisor/Site Manager.

3.7.2 Emergency Response (EI-2)

General environmental protection measures pertaining to emergency response are listed in Table 32. Also see Blasting and Exploding (Table 2), Burning (Table 3), Construction Camps (Table 14), Marshalling Yards (Table 16), Hazardous Substances (Table 34), Petroleum Products (Table 35) and Safety and Health (Table 36).

Table 32. Emergency Response Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-2.1	A project-specific Emergency Preparedness and Response Plan will be prepared in accordance with provincial and federal legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-2.2	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-2.3	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-2.4	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include emergency response awareness.
EI-2.5	Contractors will take reasonable precautions to prevent fuel, lubricant, fluids or other products from being spilled during equipment operation, fuelling and servicing.
EI-2.6	Emergency spill response and clean-up materials and equipment will be available at construction sites, marshalling yards, fuel storage facilities and standby locations.

Table 32. Emergency Response Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-2.7	All vehicles hauling petroleum products will carry spill containment and clean-up equipment.
EI-2.8	Spill response and clean-up equipment will be capable of containing and recovering the largest release possible and be suitable for the site location.
EI-2.9	All spills at construction sites will be reported in accordance with provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro Guidelines (Appendix E).
EI-2.10	The on-site Emergency Spill Response Coordinator will be notified of hazardous substance releases immediately in accordance with the Emergency Preparedness and Response Plan.
EI-2.11	The Manitoba Hydro hazardous materials incident report form will be completed when reporting a spill.
EI-2.12	Clean-up and the disposal of contaminated materials will be managed in accordance with provincial guidelines (Appendix D) and Manitoba Hydro guidelines (Appendix E).
EI-2.13	Start-up and main construction camps will have a fire brigade designated in accordance with the Emergency Preparedness and Response Plan.
EI-2.14	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-2.15	Project emergency response and evacuation procedures in the Emergency Preparedness and Response Plan will be adhered to in the event of forest fires.
EI-2.16	All fires will be reported in accordance with fire reporting procedures in the Emergency Preparedness and Response Plan.
EI-2.17	Safety Officers will make regular inspections of emergency responses procedures and equipment and stores of materials and supplies to ensure that they are current and readily available.
EI-2.18	Post audit assessments will be carried out for all major spills and fires reported to ensure that procedures are followed and plans remain effective.

3.7.3 Erosion Protection and Sediment Control (EI-3)

General environmental protection measures pertaining to erosion protection and sediment control are listed in Table 33. See Clearing (Table 4), Rehabilitating and Re-vegetating (Table10), Access Roads and Trails (Table 12), Stream Crossings (Table 20), Fish Protection (Table 24) and Waterbodies (Table 28).

Table 33. Erosion Protection and Sediment Control Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-3.1	A project-specific Erosion Protection and Sediment Control Plan will be prepared prior to starting construction. The Plan will be prepared or approved by a Certified Professional in Erosion and Sediment Control (CPESC)
EI-3.2	Contractor specific Erosion Protection and Sediment Control Plans will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
EI-3.3	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-3.4	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include erosion protection and sediment control techniques and procedures.
EI-3.5	The Contractor will be responsible for implementing and maintaining Erosion Protection and Sediment Control Plans and procedures.
EI-3.6	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-3.7	Construction activities will be suspended during extreme wet weather events where erosion

Table 33. Erosion Protection and Sediment Control Environmental Protection Measures	
No.	**Environmental Protection Measures**
	protection and sediment control measures are compromised.
EI-3.8	The Contractor will be responsible for modifying erosion protection and sediment control installations to ensure continued effectiveness.
EI-3.9	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-3.10	The Environmental Inspector will make regular inspections of erosion protection and sediment control measures to confirm implementation and continued effectiveness.
EI-3.11	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-3.12	Erosion protection and sediment control measures will be left in place and maintained until either natural vegetation or permanent measures are established.
EI-3.13	Erosion protection and sediment control measures will be established for all decommissioned project areas and sites where necessary in accordance with the Decommissioning Plan.
EI-3.14	The Environmental Inspector will make inspections of decommissioned project areas and sites in accordance with the site Reclamation Plan to ensure that environmental protection measures are effective and that any deficiencies are addressed.

3.7.4 Hazardous Substances (EI-4)

General environmental protection measures pertaining to the management of hazardous substances are listed in Table 34. Also see Blasting and Exploding (Table 2), Marshalling Yards (Table 16), Emergency Response (Table 32), Petroleum Products (Table 35), Safety and Health (Table 36), Soil Contamination (Table 37) and Treated Wood (Table 38).

Table 34. Hazardous Substances Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-4.1	Hazardous substances will be managed in accordance with contract specifications.
EI-4.2	A project-specific Hazardous Substances Management Plan will be prepared in accordance with provincial and federal legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro Guidelines (Appendix E).
EI-4.3	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-4.4	Hazardous substances management procedures will be communicated to all project staff and a copy will be made available at the project site.
EI-4.5	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include hazardous substance awareness.
EI-4.6	The Contractor will be responsible for the safe use, handling, storage and disposal of hazardous substances including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation (Appendix C) and standards (Appendix D).
EI-4.7	Hazardous substances will be transported, stored and handled according to the procedures prescribed by provincial legislation (Appendix C) and Manitoba Hydro policies (Appendix E).
EI-4.8	Contractor personnel will be trained and certified in the handling of hazardous substances including emergency response procedures in accordance with provincial legislation (Appendix C) and Manitoba Hydro policies (Appendix E).
EI-4.9	Contractor personnel will receive WHMIS training in accordance with provincial legislation (Appendix C) and Manitoba Hydro policy requirements (Appendix E).

Table 34. Hazardous Substances Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-4.10	An inventory of hazardous substances including wastes will be prepared by the Contractor and maintained at each project site and updated as required by provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-4.11	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 (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-4.12	Controlled substances will be labelled 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-4.13	Hazardous substance and WHMIS inventories will be stored with the substances at each location and with the Contractor's file of controlled substances in accordance with the Hazardous Substances Management Plan.
EI-4.14	Hazardous substance and WHMIS inventories will be completed prior to construction. Inventories will be updated in accordance with regulatory requirements (Appendix C) and Manitoba Hydro policies (Appendix E).
EI-4.15	Manitoba Hydro will approve all chemical products that are used on the project prior to their arrival on-site.
EI-4.16	Non-hazardous products will be used in place of hazardous substances to the extent possible.
EI-4.17	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-4.18	Hazardous materials will be adequately contained and will be protected from wind and rain to prevent entry of fine particles into streams through runoff of dust deposition.
EI-4.19	Access to hazardous materials storage areas will be restricted to authorized and trained Contractor and Manitoba Hydro personnel.
EI-4.20	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-4.21	Containers of hazardous substances stored outside will be labelled, weatherproof, placed on spill containment pallets and covered by a weatherproof tarp.
EI-4.22	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 (Appendix D).
EI-4.23	Pesticide storage will be in accordance with provincial legislation (Appendix C) and Manitoba Hydro guidelines (Appendix E).
EI-4.24	Wet batteries will be stored and transported to licensed or approved waste recycling facilities.
EI-4.25	Hazardous waste substances will be segregated and stored by type.
EI-4.26	The Contractor will monitor containers of hazardous substance containers regularly for leaks and to ensure that labels are displayed.
EI-4.27	The Contractor will ensure that hazardous substance inspections are conducted and reported in accordance with Hazardous Substances Management Plan.
EI-4.28	Bulk waste oil will be stored in approved aboveground tanks provided with secondary containment in accordance with provincial legislation (Appendix C) and guidelines (Appendix D).
EI-4.29	Waste oil will be transported by licensed carriers to licensed or approved waste oil recycling facilities.
EI-4.30	Empty hazardous waste containers will be removed to a licensed or approved disposal site.
EI-4.31	The Environmental Inspector will make routine inspections of hazardous substance storage sites to ensure that environmental protection measures are implemented and effective.

3.7.5 Petroleum Products (EI-5)

General environmental protection measures pertaining to the management of petroleum products are listed in Table 35. Also see Marshalling Yards (Table 16), Emergency Response (Table 32), Hazardous Substances (Table 34), Safety and Health (Table 36), Soil Contamination (Table 37) and Vehicles and Equipment (Table 39).

Table 35. Petroleum Products Environmental Protection Measures

No.	Environmental Protection Measures
EI-5.1	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 (Appendix C) and standards (Appendix D).
EI-5.2	Petroleum products will be transported and handled according to the procedures prescribed by provincial legislation (Appendix C) and Manitoba Hydro policies (Appendix E).
EI-5.3	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include petroleum product storage and handling awareness.
EI-5.4	Contractor personnel will be trained and certified in the handling of petroleum products including emergency response procedures.
EI-5.5	Contractor personnel will receive WHMIS training in accordance with provincial legislation (Appendix C) and Manitoba Hydro policies (Appendix E).
EI-5.6	The Contractor will be responsible for obtaining any required permits from Manitoba Conservation for the storage and handling of petroleum products.
EI-5.7	Petroleum product storage will be located a minimum of 100 m from the ordinary high water mark of waterbodies, riparian areas or wetlands (Appendix G).
EI-5.8	Petroleum product storage areas will be located in areas of low environmental sensitivity and will be approved by the Construction Supervisor/Site Manager prior to construction.
EI-5.9	Only approved aboveground petroleum storage tanks will be used during the construction phase of the project. No underground tanks will be permitted.
EI-5.10	Construction, installation or removal of petroleum product storage tank systems will only occur under the supervision of a registered licensed petroleum technician.
EI-5.11	All aboveground petroleum product tanks with a capacity greater than 5,000 L will be registered with Manitoba Conservation and have a valid operating permit.
EI-5.12	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-5.13	Petroleum product storage containers in excess of 230 L will be located on level ground and will incorporate secondary containment with a capacity of 110% of the largest container volume.
EI-5.14	Transfer of petroleum products between storage areas and work sites not exceed daily requirements and will be in accordance with provincial legislation and guidelines.
EI-5.15	Aboveground tanks will be equipped with overfill protection and spill containment consisting of perimeter dykes or secondary containment in the tank design.
EI-5.16	Petroleum product storage tanks will be protected from vehicle collisions by concrete filled bollards.
EI-5.17	Petroleum products will only be stored and handled within designated areas at construction camps and marshalling yards.
EI-5.18	Petroleum products stored outside will be in waterproof and labelled containers, placed on spill containment pallets.
EI-5.19	Indoor storage of petroleum products will be in fire-resistant, vented and enclosed storage areas or buildings in accordance with national standards (Appendix D).
	Petroleum products will display required signage, placards and labelling, and will be stored and

Table 35. Petroleum Products Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-5.20	handled in accordance with provincial legislation.
EI-5.21	Warning signs will be posted in visible locations around petroleum product storage areas. Signs will indicate hazard warning, contact in case of a spill, access restrictions and authority.
EI-5.22	Portable petroleum product storage containers will be placed on spill trays with a capacity of 110% of the largest container when not in use.
EI-5.23	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-5.24	Containment measures, such as secondary containment (i.e., berms) will be used at all locations where stationary oil-filled equipment is used.
EI-5.25	Spill trays will remain impervious at very low temperatures (-45 °C) and have accumulated precipitation removed regularly.
EI-5.26	Fuelling of equipment or portable storage tanks will be a minimum of 100 m from the ordinary high water mark of any waterbody.
EI-5.27	Fuelling operations require the operator to be visually observing the process 100% of the time.
EI-5.28	Petroleum product dispensing systems will be secured and locked when not in use by authorized personnel.
EI-5.29	There will be no ignition sources in and adjacent to petroleum product storage areas.
EI-5.30	Slip tanks and barrels will be securely fastened to the vehicle during transport and fuelling operations.
EI-5.31	Vehicles hauling petroleum products will carry equipment and materials for emergency spill containment and clean-up.
EI-5.33	Used petroleum products (including empty containers) will be collected and transported to a licensed oil recycling facility in approved storage containers.
EI-5.34	Documentation describing Manitoba Hydro's process for recycling waste oils and other materials will be made available to the Contractor.
EI-5.35	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.
EI-5.36	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-5.37	Petroleum product storage and dispensing locations will have a current Emergency Preparedness and Response Plan and a designated emergency response coordinator.
EI-5.38	Petroleum product storage sites and mobile transportation units will be equipped with fire suppressant equipment and products.
EI-5.39	Spill control and clean-up equipment and materials will be available at all petroleum product storage and dispensing locations.
EI-5.40	Once petroleum product storage areas are no longer required, a Phase I and II Environmental Site Assessment will be carried out to determine if remediation is required in accordance with national standards (Appendix D) and Manitoba Hydro guidelines (Appendix E).
EI-5.41	The Environmental Inspector will make regular inspections of petroleum product storage and dispensing sites to ensure that environmental protection measures are implemented and effective.

3.7.6 Safety and Health (EI-6)

General environmental protection measures pertaining to safety and health are listed in Table 36. Also see Blasting and Exploding (Table 2), Access Roads and Trails (Table 12), Construction Camps (Table 14), Marshalling Yards (Table 16), Emergency Response (Table

32), Hazardous Substances (Table 34), Petroleum Products (Table 35), Soil Contamination (Table 37) and Vehicles and Equipment (Table 39).

Table 36. Safety and Health Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-6.1	A project-specific Workplace Safety and Health Plan will be prepared in accordance with provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-6.2	A Contractor specific Workplace Safety and Health Plan will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction, and updated annually.
EI-6.3	Workplace safety and health committees will be established and safety meetings will be held as required by provincial legislation (Appendix D) and Manitoba Hydro guidelines (Appendix E) at all project locations.
EI-6.4	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include safety and health awareness.
EI-6.5	Safety and health information will be posted at each project location and made available to all project personnel.
EI-6.6	Safety and health equipment and supplies will be available at all project locations.
EI-6.7	All accidents will be reported to the designated safety and health representative, required actions taken and accident reports prepared.
EI-6.8	Safety Officers will inspect project sites in accordance with provincial legislation (Appendix C) and Manitoba Hydro policies (Appendix E) to ensure that safety and health related measures are implemented and effective.
EI-6.9	Manitoba Hydro employees and contractors will adhere to Corporate Safety Procedures (Appendix E) at all times.

3.7.7 Soil Contamination (EI-7)

General environmental protection measures pertaining to soil contamination are listed in Table 37. Also see Drilling (Table 7), Marshalling Yards (Table 16), Groundwater (Table 25), Hazardous Substances (Table 34), Petroleum Products (Table 35), Treated Wood (Table 38) and Vehicles and Equipment (Table 39).

Table 37. Soil Contamination Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-7.1	Contractor personnel will take all reasonable steps to prevent soil, groundwater and surface water contamination.
EI-7.2	All spills and releases reported will be responded to in accordance with provincial legislation (Appendix C) and guidelines (Appendix D) and Manitoba Hydro guidelines (Appendix E).
EI-7.3	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 (Appendix D).
EI-7.4	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 (Appendix D).
EI-7.5	The Contractor will carry out a Canadian Standards Association 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

Table 37. Soil Contamination Environmental Protection Measures	
No.	**Environmental Protection Measures**
	suspected.
EI-7.6	A Remediation Plan will be prepared by the Contractor for sites contaminated by project activities and will remediate soils according to provincial standards.
EI-7.7	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-7.8	If laboratory results show that the soil is not contaminated then the soils may be used in accordance with contact specifications.
EI-7.9	If laboratory results show that the soil is contaminated the soil must be treated on-site or transported to an approved landfill or land farm for remediation in accordance with a Remediation Plan.
EI-7.10	Any contaminated soil treatment areas must be designed and constructed to contain surface runoff and prevent leaching to soil and groundwater.
EI-7.11	The Environmental Inspector will inspect contaminated site assessment and remediation work regularly to ensure that environmental protection measures are implemented and effective.
EI-7.12	A closure report will be prepared for completed remediation projects in accordance with provincial (Appendix D) and Manitoba Hydro guidelines (Appendix E).

3.7.8 Treated Wood (EI-8)

General environmental protection measures related to the use of treated wood are listed in Table 38. Also see Construction Camps (Table 14), Facilities and Buildings (Table 15), Marshalling Yards (Table 16), Transmission Towers and Conductors (Table 21), Groundwater (Table 25), Hazardous Substances (Table 34) and Soil Contamination (Table 37).

Table 38. Treated Wood Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-8.1	Use of treated wood will be in accordance with provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-8.2	Creosote-treated wood will not be used. If existing creosote-treated wood is encountered it will be disposed of as hazardous waste by a licensed contractor at an approved waste disposal site.
EI-8.3	Treated wood products will not be used where they may come into contact with potable water supplies including those for domestic and livestock animals.
EI-8.4	CCA or other approved treated wood products will be used if avoidance of construction in aquatic environments is not possible.
EI-8.5	Treated wood will be delivered to project locations or construction sites on an as required basis to reduce storage time in the field.
EI-8.6	Treated wood will be kept in use for as long as possible or reused for other projects.
EI-8.7	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-8.8	Treated wood products will not be used indoors and will not be burned.
EI-8.9	Salvage and disposal of treated wood products will be in accordance with Manitoba Hydro guidelines (Appendix E).
EI-8.10	If treated wood products are sold the purchaser will be advised about potential adverse effects and will sign a release.
EI-8.11	The Environmental Inspector will inspect the use of treated wood to ensure that environmental

Table 38. Treated Wood Environmental Protection Measures	
No.	**Environmental Protection Measures**
	protection measures are implemented and effective.

3.7.9 Vehicle and Equipment Maintenance (EI-9)

General environmental protection measures related to vehicle and machinery maintenance are listed in Table 39. Also see Marshalling Yards (Table 16), Groundwater (Table 25), Hazardous Substances (Table 34), Petroleum Products (Table 35), Safety and Health (Table 36) and Soil Contamination (Table 37).

Table 39. Vehicle and Equipment Maintenance Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-9.1	All vehicles, equipment and machinery will be licensed, insured and operated in compliance with provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix D).
EI-9.2	Drivers of vehicles transporting dangerous goods or hazardous substances will be in possession of a valid transportation of dangerous goods certificate.
EI-9.3	Vehicles transporting dangerous goods or hazardous products will display required placards and labelling in accordance with provincial legislation (Appendix C) and Manitoba Hydro guidelines (Appendix E).
EI-9.4	Vehicles, equipment and machinery must arrive on site in clean condition free of fluid leaks and weed seeds.
EI-9.5	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-9.6	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-9.7	Vehicles, equipment and machinery that carry fuel, hydraulic oil and other petroleum products will also carry spill control and clean-up equipment and materials.
EI-9.8	Emergency vehicle, equipment and machinery maintenance repairs will contain waste fluids and will use drip trays and tarps.
EI-9.9	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-9.10	No vehicle, equipment and machinery washing will take place at construction sites.
EI-9.11	Unnecessary idling of vehicles, equipment and machinery will be avoided to the extent practical.
EI-9.12	The Environmental Inspector will inspect vehicles, equipment and machinery daily to ensure that environmental protection measures are implemented and effective.

3.7.10 Waste Management (EI-10)

General environmental protection measures related to non-hazardous solid waste management are listed in Table 40. Also see Clearing (Table 4), Demobilizing and Cleaning-up (Table 5), Construction Camps (Table 14), Facilities and Buildings (Table 15), Marshalling Yards (Table 16), Wildlife Protection (Table 30) and Hazardous Substances (Table 34).

Table 40. Waste Management Environmental Protection Measures	
No.	**Environmental Protection Measures**
EI-10.1	Waste collection, storage and disposal at construction sites will be in accordance with contact specifications.
EI-10.2	A project-specific Solid Waste/Recycling Management Plan that includes waste recycle, reuse and reduction provisions will be prepared in accordance with provincial legislation (Appendix C) and guidelines (Appendix D), and Manitoba Hydro guidelines (Appendix E).
EI-10.3	A Contract specific Solid Waste Management Plan will be prepared by the Contractor, approved by the Construction Supervisor/Site Manager prior to construction and updated annually.
EI-10.4	Construction sites will be kept tidy at all times and bins will be provided wherever solid wastes are generated.
EI-10.5	Indiscriminate burning, dumping, littering or abandonment will not be permitted.
EI-10.6	Construction and demolition wastes will be segregated into separate waste streams for reuse, recycling and landfill disposal.
EI-10.7	Non-reusable demolition and construction debris will be disposed of at a licensed or approved waste disposal facility.
EI-10.8	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-10.9	The Contractor must demonstrate that sufficient capacity exists at waste disposal grounds by obtaining approval from the operator prior to use of that facility.
EI-10.10	Bear-proof waste containers will be used in northern, remote and rural project locations.
EI-10.11	Kitchen wastes will be stored in closed containers to minimize wildlife interactions.
EI-10.12	Waste materials remaining at snow disposal sites after melting will be disposed of at a licensed or approved landfill.
EI-10.13	The Environmental Inspector will make regular inspections of waste collection, storage and handling at construction sites to ensure that environmental protection measures are implemented and effective.

3.8. Summary

This section provided general environmental protection measures for the Project. The environmental protection measures are presented in tabular form broken down by management, project activity, project component, environmental component and environmental topic. The next section provides specific environmental protection measures for environmentally sensitive sites in map and text formats.

4. Specific Environmental Protection Measures

4.1. Overview

This section of the Draft Environmental Protection Plan presents specific environmental protection measures for environmentally sensitive sites potentially affected by the Project. Environmentally sensitive sites are displayed in an interactive mapping application and specific environmental protection measures are provided for each sensitive site.

4.2. Environmental Protection Mapping

The environmentally sensitive sites are plotted on an interactive mapping application as colour coded points, lines or. The mapping application is designed at a high level (small scale) for the purposes of this Draft Environmental Protection Plan. Larger and more detailed maps will be provided in Construction Phase Environmental Protection plans.

The EnvPP Interactive Mapping Application (Figure 4) is included as Appendix A to this Draft Environmental Protection Plan. A This application is intended for the public and regulators to review the large number of identified environmentally sensitive sites and the mitigation Manitoba Hydro proposes to implement to reduce the Project's impact on the environment. The Construction Phase Environmental Protection plans will provide Manitoba Hydro Construction Supervisor/Site Managers and employees, and contractors and contract employees with detailed site-specific environmental protection information that can be implemented, inspected, evaluated and reported on in the field. The map sheets will be produced in hard copy and electronic formats which will be used by Manitoba Hydro, contractor and regulatory staff on laptop computers in field offices, vehicles and aircraft.

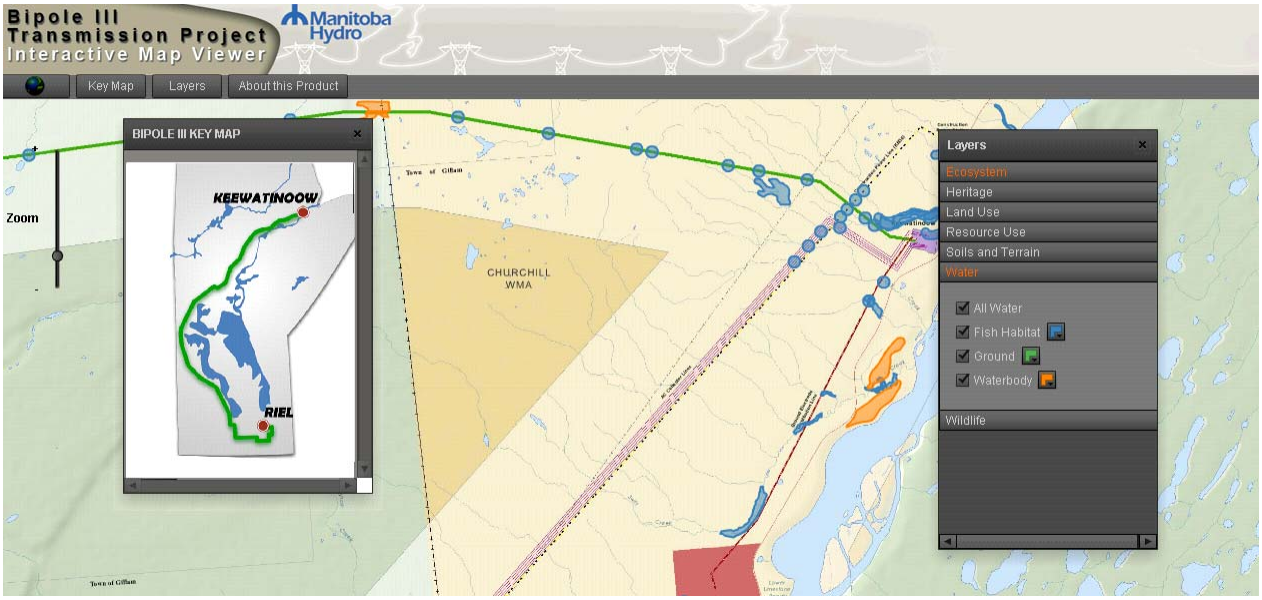


Figure 4: Screenshot of Interactive Map Showing Environmentally Sensitive Sites

4.3. Environmentally Sensitive Sites

Environmentally sensitive sites 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 and mitigation during construction and operation. The sites were identified by discipline specialists based on desktop studies and field research, baseline investigations, and consultation programs, and included Aboriginal Traditional and Local Knowledge. Sensitive sites include unique terrain features, erosion prone soils, waterbodies, wetland areas, valued and protected species and habitats, protected areas, heritage, cultural and spiritual sites, and other important locations requiring specific protection.

Through Aboriginal Traditional Knowledge workshops and self directed aboriginal community reports many culturally, and environmentally sensitive sites were identified. Due to the highly sensitive nature of this information, Manitoba Hydro has not included it in the Interactive Mapping Application. Manitoba Hydro will be working with aboriginal communities prior to the start of construction to further identify and map these sites and develop mitigation measures to minimize the effects of the project on them.

Environmentally sensitive sites that have been identified in the Interactive Mapping Application are located along or immediately adjacent to transmission line rights-of-way and other project component footprints. Sensitive sites located adjacent to the transmission line corridors and in the immediate vicinity of other project components are also included in the maps, however no mitigation has been prescribed. These sites are to be accounted for, when planning bypass trails, borrow pits, marshalling yards, etc. These sensitive sites if they become affected by the project will be assessed on environmental effect and appropriate mitigation applied.

4.4. Specific Environmental Protection Measures

Specific environmental protection measures are provided for each environmentally sensitive site identified in the Bipole III Transmission Project EIS. The environmental protection measures include project-specific mitigation measures, regulatory requirements, best practice guidelines, environmental standards, Aboriginal Traditional Knowledge and other protection strategies. References are made to general environmental protection measures where applicable. Linkages are also provided to legislation, guidance documents, drawings, diagrams, maps, photos, videos and other reference materials relevant to the sites.

4.5. Summary

This section of the Draft Environmental Protection Plan presented specific environmental protection measures for environmentally sensitive sites potentially affected by the Project.

5. Follow-up Actions

5.1. Overview

This section outlines inspecting, monitoring, managing and auditing requirements for the Draft Environmental Protection Plan.

5.2. Inspecting

Inspection is the organized examination or evaluation involving observations, measurements and sometimes tests for a construction project or activity. The results of an inspection are typically compared to specified requirements, drawings and standards for determining whether the item or activity is in conformance with these requirements. Environmental inspection is an essential and key function in environmental protection and implementation of mitigation measures.

Manitoba Hydro has established a comprehensive integrated environmental inspection program to comply with regulatory approvals and meet corporate environmental objectives. The program includes hiring and training of Environmental Inspectors to be on-site during construction activities. Manitoba Hydro's approach to environmental inspection includes:

- Compliance with regulatory approvals;
- Adherence to environmental protection plans;
- On-site environmental inspectors;
- Training and education;
- Regular monitoring and inspection during construction;
- Interaction with contractors (e.g. pre- construction meeting, daily discussion);
- Regularly review of inspection and monitoring information;
- Quick response to incidents or changing conditions;
- Weekly and monthly summary reports;
- Regular reporting to regulators; and
- Notification of regulators of emergency or contingency situations.

Trained environmental inspectors will visit active work sites daily to inspect for compliance with licence, permit or other approval terms and conditions, and adherence to environmental protection plan general and specific measures. All inspection activities will be recorded in a daily journal and daily inspection forms will be completed. Daily inspection reports will be provided electronically to the Construction Supervisor/Site Manager and Contractor. Weekly and monthly

inspection summary reports will be provided to Manitoba Hydro project supervisors and reports will be provided to senior management as required or requested. Sample Daily, weekly and monthly inspection report forms, as well as a detailed inspection report checklist and an incident report form are provided in Appendix I.

Project locations with environmental protection measures in place will be inspected routinely for continuing effectiveness. Particular attention will be paid to access roads and trails, rights-of-way, borrow pits and quarries, construction camps, marshalling areas, stream crossings, petroleum product and hazardous materials storage areas, rehabilitated sites and soil remediation locations.

All instances of non-compliance with legislated requirements or non-conformance with environmental protection measures will be recorded on daily inspection forms and reported to the Construction Supervisor/Site Manager, Contractor and Manitoba Hydro Licensing and Environmental Assessment Department. Instances of non-compliance and non-conformance will be responded to immediately. Non-compliance and non-conformance instances will be followed up in subsequent daily inspection reports and in weekly and monthly summary reports.

Incidents such as accidents, malfunctions, spills, fires, explosions, environmental damage, etc will be reported immediately to the Construction Supervisor/Site Manager, Contractor and Environmental Inspector, and an incident report form will be completed. Incidents will be dealt with immediately and followed up in subsequent daily inspection reports and in weekly and monthly summary reports.

5.3. Monitoring

Monitoring is the continuing observation, measurement or assessment of environmental conditions according to a pre-defined sampling, analysis and reporting procedures. There are two main types of monitoring in the environmental field: Compliance Monitoring is a broad term for monitoring conducted to verify whether a practice or procedure meets the applicable requirements prescribed by legislation, guidelines, industry standards or specific terms and conditions (e.g., in an agreement, lease, permit, licence or authorization). Environmental Monitoring is periodic or continuous surveillance or testing, according to a predetermined schedule, of one or more environmental indicators to establish baseline conditions or to verify the accuracy of an environmental assessment and the effectiveness of mitigation measures.

Monitoring for the Project will be in accordance with pre-defined plans. These monitoring plans will verify changes to the environment predicted in the EIS, facilitate compliance with regulatory limits, criteria or objectives, and identify any unforeseen environmental effects. Monitoring will be carried out by the Contractor or Manitoba Hydro and it may be contracted to environmental consultants that possess the necessary expertise, equipment and analytical facilities. Following is a list of monitoring plans to be prepared for the Project:

A Biophysical Environment Effects Monitoring Plan will be prepared to monitor effects of the Project on the environment. A Biophysical Environmental Effects Monitoring Framework (Appendix x) was developed to illustrate the components of the Biophysical Environment Effects Monitoring Plan, The framework will outline the environmental effects to be monitored, how the plan will be developed, and the process in which the results of the monitoring plans will be shared with regulators, stakeholders, aboriginal communities and the public.
The scope of the monitoring plan will include physical and biological, components of the environment. Objectives of the monitoring plan will be to:

- Confirm the nature and magnitude of predicted environmental effects;
- Assess effectiveness of mitigation measures implemented;
- Identify unexpected environmental effects of the project if they occur;
- Identify mitigation measures to address unanticipated environmental effects; where required
- Confirm compliance with regulatory requirements including approval terms and conditions; and
- Provide baseline information to evaluate long-term changes or trends.

Monitoring will be carried out on selected environmental components using environmental indicators and measurable parameters identified in the EIS. Components to be monitored will be selected based on regulatory requirements, environmental importance, vulnerability and sensitivity, and licence requirements. The monitoring plan will describe sampling procedures, quality control and assurance programs, laboratory methods and protocols, laboratory accreditations and reporting requirements. Results from monitoring will be used to adjust mitigation measures and to modify the plan on an ongoing basis. Aboriginal Traditional and Local Knowledge will be considered and incorporated into the monitoring plan where appropriate and applicable. The Biophysical Environment Effects Monitoring Plan will be completed and implemented prior to the commencement of the construction phase for the Project. The monitoring plan and subsequent monitoring reports will be provided to the

Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.

5.4. Management

Management involves the control or organization of activities and resources to resolve or respond to environmental problems, issues or concerns. Management plans provide reasoned course of actions to achieve pre-defined goals or objectives. Management strategies are identified, compared and analyzed, and preferred courses of action are implemented and evaluated.

5.4.1. Access Management Plan

An Access Management Plan will be prepared by Manitoba Hydro to control access to construction areas for the Project.

- The scope of the management plan will include security of construction sites and facilities, safety of construction workers and the general public, respect for Aboriginal rights and resource users, and protection of natural, cultural and heritage resources.
- The plan will ensure worker and public safety. It will also provide for security of Manitoba Hydro properties and facilities, and safe access to or through construction areas for authorized employees, land and resource users, and research and monitoring personnel.
- Contact requirements will be outlined for municipalities, land owners, resource users and other parties to be consulted prior to accessing lands.
- The management plan will outline security requirements including terms and conditions for access, restrictions on firearms, hunting and fishing, and other resource use activities.
- Environmental protection measures will be prescribed related to access including timing windows, vehicle cleaning and servicing, gate protocols, load restrictions, warning signage, speed limits, sensitive area avoidance, stream crossings and other environmental issues.
- A draft Access Management Plan will be provided for review by affected stakeholders including government departments, First Nations, Aboriginal communities, rural municipalities, environmental organizations and land owners.

- The plan will be completed and implemented prior to the commencement of the construction phase for the Project. Once implemented, the management plan will be reviewed after each construction season and/or annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The plan will be provided to the Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.

5.4.2. Blasting Plans

Blasting Plans will be prepared by the Contractor to manage the storage and use of explosives at construction sites for the Project.

- The objective of the plans will be to provide for the effective management of explosives in accordance with environmental protection measures, provincial and federal legislation and guidelines, and corporate policies for explosives.
- Environmental Inspectors will conduct regular inspections of blasting activities and will submit reports to the Contractor and Construction Supervisor/Site Manager.
- Blasting Plans will be completed and approved prior to commencement of construction activities for Project.

5.4.3. Decommissioning Plan

A Decommissioning Plan will be prepared by Manitoba Hydro to manage decommissioning activities for the Project.

- The objective of the plan will be to provide for the decommissioning of abandoned construction areas in accordance with environmental protection measures, provincial guidelines, and corporate policies for decommissioning.
- Environmental Inspectors will conduct regular inspections of decommissioning activities and will submit reports to the Contractor and Construction Supervisor/Site Manager.
- The Decommissioning Plan will be completed and implemented prior to demobilizing and cleaning up abandoned construction areas for the Project.

5.4.4. Emergency Preparedness and Response Plan

An Emergency Preparedness and Response Plan will be prepared by Manitoba Hydro to prepare for and respond to emergency situations at construction sites for the Project.

- The objective of the plan will be to provide for emergency preparation and response in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment.
- The scope of the plan will include spills or releases of hazardous substances including petroleum products, accidents involving hazardous substances, medical emergencies, explosions and fire.
- Environmental protection measures will be prescribed for the provision of emergency response planning, responsibilities, training, exercises, procedures, containment, and clean-up equipment and materials.
- Environmental Inspectors will conduct regular inspections of construction activities including emergency preparedness and response measures. The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The Emergency Preparedness and Response Plan will be completed and implemented prior to the commencement of the construction phase for the Project.
- Contractors will be required to prepare contract-specific Emergency Preparedness and Response Plans that conform to contract specifications and are consistent with the Manitoba Hydro Emergency Preparedness and Response Plan.

5.4.5. Erosion Protection and Sediment Control Plan

An Erosion Protection and Sediment Control Plan will be prepared by Manitoba Hydro in accordance with Canadian professional erosion and sediment control standards to manage construction activities that cause soil erosion and result in sediment releases to the aquatic environment.

- The objective of the plan will be to minimize any adverse environmental effects of sediment releases on the aquatic environment in accordance with provincial and federal legislation and guidelines, and corporate environment policies and guidelines.
- Environmental protection measures will be prescribed for erosion protection and sediment control including winter construction, establishment of buffer zones, avoidance of sensitive areas and use of bioengineering techniques.
- Environmental Inspectors will conduct regular inspections of construction activities including erosion protection and sediment control measures.

- The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The Erosion Protection and Sediment Control Plan will be completed and implemented prior to the commencement of the construction phase for the Project.
- The plan will be provided to the Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.
- Contractors will be required to prepare contract-specific Erosion Protection and Sediment Control Plans that conform to contract specifications and are consistent with the Manitoba Hydro Erosion Protection and Sediment Control Plan.

5.4.6. Rehabilitation Plan

A Rehabilitation Plan will be prepared by Manitoba Hydro to manage rehabilitation activities at construction sites for the Project.

- The objective of the plan will be to provide for the rehabilitation of completed construction sites in accordance with environmental protection measures, provincial guidelines, and corporate policies for rehabilitation.
- The Contractor will prepare and implement site-specific rehabilitation plans for each construction project or contract.
- Environmental Inspectors will conduct regular inspections of rehabilitation sites and will submit reports to the Contractor and Construction Supervisor/Site Manager.
- The Rehabilitation Plan will be completed and implemented prior to demobilizing and cleaning up construction sites for the Project.
- The plan will be provided to the Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.

5.4.7. Remediation Plans

Remediation Plans will be prepared by the Contractor to manage remediation activities at any contaminated sites identified as a result of the Project.

- The objective of the plans will be to provide for the remediation of contamination in accordance with environmental protection measures, provincial legislation and guidelines, and Manitoba Hydro policies for contaminated sites.
- Environmental Inspectors will conduct regular inspections of remediation activities and will submit reports to the Contractor and Construction Supervisor/Site Manager.

- Closure reports will be prepared by Environmental Inspector for each successfully remediated site.
- The plans will be provided to the Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.

5.4.8. Solid Waste/Recycling Management Plan

A Solid Waste/Recycling Management Plan will be prepared by Manitoba Hydro to manage wastes at construction camps and work sites including marshalling yards for the Project.

- The objective of the plan will be to provide for effective waste management in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment.
- The scope of the plan will be limited to solid non-hazardous wastes and will include waste reduction, recycling and reusing initiatives.
- Environmental protection measures will be prescribed for the storage of kitchen wastes, recycling and disposal of construction wastes and disposal of wastes at licenced facilities.
- Environmental Inspectors will conduct regular inspections of construction activities including waste management.
- The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The Solid Waste/Recycling Management Plan will be completed and implemented prior to the commencement of the construction phase for the Project.

5.4.9. Vegetation Management Plan

A Vegetation Management Plan will be prepared by Manitoba Hydro to manage vegetation during construction of the Project.

- The objective of the plan will be to provide for effective vegetation management in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection vegetation and the environment.
- The scope of the plan will include introduction of exotic species, controlling vegetation, protection of protected species, forest insects and diseases, and re-vegetation of disturbed sites.

- Environmental protection measures will be prescribed for washing equipment and vehicles prior to entering construction sites, protecting protected species, controlling vegetation at construction sites and restoring and re-vegetating disturbed sites.
- Environmental Inspectors will conduct regular inspections of construction activities including vegetation management.
- The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The Vegetation Management Plan will be completed and implemented prior to the commencement of the construction phase for the Project.

5.5. Auditing

Auditing is a systematic approach to defining environmental risk and/or determining the conformance of an operation with respect to prescribed criteria. An environmental audit typically involves a methodical examination of evidence that may include interviews, site visits, sampling, testing, analysis, and verification of practices and procedures. Environmental protection plans for the Project will be audited annually. Environmental protection plan audits will be conducted by accredited environmental auditors. The audit results will help to evaluate the effectiveness of environmental protection measures, to learn from inspection and monitoring programs, and to improve project planning and environmental assessment performance.

5.6. Summary

This section outlined inspecting, monitoring and auditing requirements for the Project. Inspecting, monitoring and auditing results will be used in updating the environmental protection plan as outlined in the following section.

6. Plan Updating and Review

6.1 Overview

This section outlines how environmental protection plans will be reviewed and updated for the Project.

6.2 Project Phase Updates

This Draft Environmental Protection Plan for the Project covers the period from submission of the Environment Act Proposal to receipt of an Environment Act Licence and other approvals. At that time Construction Phase Environmental Protection Plans will be prepared to include licence terms and conditions and other regulatory requirements. It is anticipated that several environmental protection plans will be prepared for the various project components or construction contracts. The Construction Phase Environmental Protection Plans will cover the construction period from beginning to end.

Operation Phase Environmental Protection Plans will be prepared prior to completion of the Project. Operation Phase Environmental Protection Plans will cover the period from commissioning to the eventual decommissioning of the Project. Environmental protection plans will be prepared for each major project component.

A Decommissioning Phase Environmental Protection Plan will be prepared prior to decommissioning of the Project.

6.3 Construction Season Reviews

Construction Phase Environmental Protection Plans for transmission line project components will be reviewed at the end of each construction season and will be updated based upon the results of the reviews. Construction season reviews will be conducted by Licensing and Environmental Assessment in consultation with Contractor and Manitoba Hydro personnel, regulators and stakeholders. Checklists will be used to ensure that reviews address all required information in a consistent manner. It is expected the construction work in northern Manitoba will be carried out during the winter months from November to March while construction work in southern Manitoba may be carried out year-round. The results of each construction season review will be summarized in a report that documents the issues addressed and provides recommended updates to the environmental protection plan.

6.4 Annual Reviews

Construction Phase Environmental Protection Plans for construction power station, main camp and converter station project components will be reviewed at the end of each fiscal year ending on March 31 and will be updated based upon the results of the reviews. Annual reviews will be conducted by Licensing and Environmental Assessment in consultation with Contractor and Manitoba Hydro personnel, regulators and stakeholders. Annual reviews will be conducted so that they coincide with construction season reviews to the extent possible. Checklists will be prepared to ensure that reviews address all required information in a consistent manner. The results of each annual season review will be summarized in a report that documents the issues addressed and provides recommended updates to the environmental protection plan.

6.5 Incident Reviews

Construction Phase Environmental Protection Plans will be subject to review in the event of any incident including environmental accidents, fires and explosions, reportable releases of hazardous substances and non-compliance situations.

6.6 List of Revisions

A list of revisions will be maintained at the beginning of each environmental protection plan that identifies the nature of the revision, section revised, responsibility and dates.

6.7 Summary

This section outlined how environmental protection plans will be reviewed and updated for the Project. Both construction season and annual reviews will be conducted. Plans will be updated for construction, operation and decommission phases of the Project. A list of revisions will be maintained in each environmental protection plan.

7. References

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APPENDIX A

Bipole III Transmission Line Project
Draft Environmental Protection Plan

See attached CD for Interactive Mapping Application

APPENDIX B

Bipole III Transmission Line Project
Draft Environmental Protection Plan

Glossary

Aboriginal Community: A community where most of the residents are Aboriginal (i.e., Indian, Métis or Inuit) and that has a separate form of government, provides some level of service to its residents, and has clear community boundaries.

Aboriginal Peoples: Individuals who are Aboriginal (i.e., Indian, Inuit or Métis).

Aboriginal Traditional Knowledge (ATK): Knowledge that is held by, and unique to Aboriginal peoples. It is a living body of knowledge that is cumulative and dynamic and adapted over time to reflect changes in the social, economic, environmental, spiritual and political spheres of the Aboriginal knowledge holders. It often includes knowledge about the land and its resources, spiritual beliefs, language, mythology, culture, laws, customs and medicines.

ac: See **Alternating Current.**

Access: The ability to enter an area or reach a particular location.

Access Road: A road that affords access into and out of a “construction” area.

Access Trail: A trail that affords access into and out of a “construction” area.

Adaptive Management: The implementation of new or modified mitigation measures over the construction and operation phases of a project to address unanticipated environmental effects. The need for the implementation of adaptive management measures may be determined through an effective follow-up program.

Adverse Effects: Negative effects on the environment and people that may result from a proposed project.

Alignment: The vertical and/or horizontal route or direction of a linear physical feature.

Alternating Current (ac): Is the oscillating (back and forth) flow of electrical current, whereas dc (Direct Current) is the unidirectional continuous flow of electrical current. ac is the common household electrical current and is used in transmission lines; dc is the form of current produced by a battery (e.g., in a flashlight).

Amphibian: Cold-blooded animal of the Class Amphibia that typically lives on land but breeds in water (e.g., frogs, toads, salamanders).

Aquifer: A layer of permeable rock, sand, or gravel through which groundwater flows, containing enough water to supply wells and springs.

ATK: See **Aboriginal Traditional Knowledge.**

Bedrock: The solid rock that underlies soil and the regolith that is exposed at the surface.

Berm: An artificial ridge or embankment used to stop vehicle traffic or to block line of sight.

Blasting: The act of causing an explosion, consisting of a wave of increased atmospheric pressure followed immediately by a wave of decreased pressure

Bog: Wetland ecosystem characterized by an accumulation of peat, acid conditions and a plant community dominated by Sphagnum moss.

Borrow Pit: The excavation left by the removal of material (usually sand or gravel) for construction purposes.

Buffer: An area of land separating two distinct land uses that acts to soften or mitigate the effects of one land use on the other.

Buffer Zone: An area that protects or reduces effects on a natural resource from human activity. Also a strip of land along roads, trails or waterways generally maintained to enhance aesthetic values or ecosystem integrity.

Built-up Area: An area characterized by residential, commercial and/or industrial development including roads, infrastructure, services, etc.

Burning: The act of setting something on fire.

Cleaning Up: The act of collecting and removing equipment, materials, wastes, etc from a “construction” area.

Clearing: The act of cutting and removing trees from a “construction” area. Trees may be cut by machine or hand methods.

Clear-Span Bridge: Small-scale bridge structure that completely spans a watercourse without altering the stream bed or bank, and that are a maximum of two lanes wide.

Community Knowledge: Information held by community members, such as farmers, hunters, fishers and naturalists, who are familiar with the environment in a specific geographic area. Community knowledge may be used in the environmental assessment of a proposed project.

Compliance Monitoring: A broad term for a type of monitoring conducted to verify whether a practice or procedure meets the applicable requirements prescribed by legislation, internal policies, accepted industry standards or specific terms and conditions (e.g., in an agreement, lease, permit, license or authorization).

Conductor: A material that allows flow of electrical current. In transmission lines, usually a composition of multiple strands of aluminum and steel wires.

Conductor Stringing: The process of suspending the conductor from insulators attached to the transmission line towers or structures.

Conservation: Any of various efforts to preserve or restore the earth's natural resources, including such measures as: the protection of wildlife, the maintenance of forest or wilderness areas, the control of air and water pollution and the prudent use of farmland, mineral deposits, and energy supplies.

Construction: The act or process of constructing, building, erecting or assembling a structure, facility or development project.

Construction Camp: The temporary housing and support of workers for the purpose of constructing.

Contaminant: As defined by *The Manitoba Dangerous Goods Handling and Transportation Act*; "any solid, liquid, gas, waste, radiation or any combination thereof that is foreign to or in excess of the natural constituents of the environment and that effects the natural, physical, chemical or biological quality of the environment; or that is or is likely to be harmful or damaging to the health or safety of a person."

Contamination: The act or process of contaminating or changing the level of a contaminant in the natural environment.

Converter Station: The terminal equipment for a high voltage direct current transmission line, in which alternating current is converted to direct current or direct current is converted to alternating current.

Corridor: A band of land within which one or more alternative routes can be accommodated.
Cover: Vegetation such as trees or undergrowth that provides shelter for wildlife. Also, the surface area of a stratum of vegetation as based on the vertical projection on the ground of all above-ground parts of the plant. Also, the material in or over-hanging the wetland area of a lake or stream providing fish with protection from predators or adverse flow conditions, e.g., boulders, deep pools, logs, vegetation.

Danger Trees: Danger trees are trees that are tall enough - that if they fell or failed they would pass within the required "air gap" to the wires, or if the wires "blew out" far enough "air gap" would be breached.. (See Hazard Trees).

Dangerous Goods: Any product, substance or organism that, by its nature, is able or likely to cause injury, or that is included in any of the classes listed in the Dangerous Goods Handling and Transportation Regulation 55/2003 and Classification Criteria for Products, Substances and Organisms Regulation 282/87.

Dc: See **Direct Current.**

Decommissioning: Planned shut-down, dismantling and removal of a building, equipment, plant and/or other facilities from operation or usage and may include site cleanup and restoration.

Degradation: The diminution of biological productivity or diversity.

Demobilizing: The removal of personnel, machinery and materials and other support infrastructure and services from a site after construction is complete.

Development: *The Environment Act* – Any project, industry, operation or activity, or any alteration or expansion of any project, industry, operation or activity which causes or is likely to cause: a) the emission or discharge of any pollutant to the environment, or b) an effect on any unique, rare or endangered feature of the environment, or c) the creation of by-products, residual or waste products not regulated by *The Dangerous Goods Handling and Transportation Act*, or d) A substantial utilization or alteration of any natural resource in such a way as to pre-empt or interfere with the use or potential use of that resource for any other purpose, or e) A substantial utilization or alteration of any natural resource in such a way as to have an adverse effect on another resource, or f) The utilization of a technology that is concerned with resource utilization and that may induce environmental damage, or g) A significant effect on the environment or will likely lead to a further development which is likely to have a significant effect on the environment, or h) A significant effect on the social, economic, environmental health and cultural conditions that influence the lives of people or a community insofar as they are caused by environmental effects.

Direct Current (dc): Electric current that flows in one direction only (i.e., Bipole III Transmission Line).

Disturbance: A disruption in the normal functioning of an organism or system.

Draining: The act of making land drier by providing channels for water to flow away.

Drilling: The act of boring a hole in something (ground or bedrock) with a device such as a drill.

Easement: The permission or right to use a defined area of land for a specific purpose such as transmission line rights-of-way. The easement gives Manitoba Hydro the right of access to the right-of-way to construct, operate and maintain the transmission line.

Ecosystem: A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.

Ecozone: An area where organisms and their physical environment endure as a system.

EIS: See **Environmental Impact Statement.**

Electric Current: See **Current**.

Elevation: An indication of the vertical distance of a point above or below sea level, expressed in metres.

EMS: See **Environmental Management System**.

Endangered: As defined by COSEWIC, a species facing imminent expiration (no longer existing in the wild in Canada, but occurring elsewhere) or extinction (no longer existing).

Energy: Electrical utilities sell electrical energy to their customers who, in turn, convert this energy into a desirable form - such as work, heat, light or sound. Electrical energy is measured in kilowatt hours (kWh).

Enhance: To improve by increasing in number or quality.

Environment: The components of the Earth and includes: a) land, water and air, including all layers of the atmosphere, b) all organic and inorganic matter and living organisms, and c) the interacting natural systems that include components referred to in paragraphs a) and b) (*Canadian Environmental Assessment Act*).

Environmental Assessment: Process for identifying project and environment interactions, predicting environmental effects, identifying mitigation measures, evaluating significance, reporting and following-up to verify accuracy and effectiveness leading to the production of an environmental assessment report.

Environmental Component: Fundamental element of the physical, biological or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds and land use that may be affected by a proposed project, and may be individually assessed in the environmental assessment.

Environmental Effect: In respect of a project, a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*, b) any effect of any change referred to in paragraph a) on i) health and socio-economic conditions, ii) physical and cultural heritage, iii) the current use of lands and resources for traditional purposes by Aboriginal persons, or iv. any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or any change to the project that may be caused by the environment; whether any such change or effect occurs within or outside Canada *(Canadian Environmental Assessment Act).*

Environmental Impact Statement (EIS): A document that presents the findings of an environmental assessment in response to specific guidelines or terms or reference. The term EIS is often used in the context of an assessment by a review panel and in the environmental assessment regimes of other jurisdictions.

Environmental Management System (EMS): Part of an organization’s overall management practices related to environmental affairs. It includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an environmental policy. This approach is often formally carried out to meet the requirements of the International Organization for Standardization (ISO) 14000 series.

Environmental Monitoring: Periodic or continuous surveillance or testing, according to a predetermined schedule, of one or more environmental components. Monitoring is usually conducted to determine the level of compliance with stated requirements, or to observe the status and trends of a particular environmental component over time.

Environmental Protection Plan (EnvPP): A 'user-friendly' guide for the contractor and Manitoba Hydro that includes: information such as a brief project description; updated construction schedule; summary identifying environmental sensitivities and mitigation actions; listing of all federal, provincial or municipal approvals, licences, or permits that are required for the project; a description of general corporate practices and specific mitigating actions for the various construction and maintenance activities; emergency response plans, training and information; and environmental/engineering monitoring plans and reporting protocols.

Environmental Protection Program (EPP): Provides a framework for delivery, management and monitoring of environmental protection activities in keeping with issues identified in the environmental assessment, regulatory requirements and public expectation.

Environmentally Sensitive Site (ESS): 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 and operation of the project.

EnvPP: See **Environmental Protection Plan.**

Ephemeral Stream: A channel (usually vegetated) where water flows only during and immediately after rainfall or snowmelt.

EPP: See **Environmental Protection Program.**

Erosion: The natural breakdown and movement of soil and rock by water, wind or ice. The process may be accelerated by human activities.

ESS: See **Environmentally Sensitive Site.**

Evaluation: The determination of the significance of effects. This involves making judgements as to the value of what is being affected and the risk that the effect will occur and be unacceptable.

Fill: Natural soils that are manually or mechanically placed; soil or loose rock used to raise a grade.

Fish Habitat: Spawning, nursery, rearing, food supply and migration areas upon which fish depend (*Fisheries Act*).

Follow-up Program: A program for: a) verifying the accuracy of the environmental assessment of a project, and b) determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project (*Canadian Environmental Assessment Act).*

Foundation: The surface or subsurface base that is in direct contact with the ground and supports a structure.

Footprint: The surface area occupied by a structure or activity.

Generator: A machine that converts mechanical energy – such as a rotating turbine driven by water, steam, or wind – into electrical energy.

Grading: The act of levelling or sloping the ground evenly by mechanical means (i.e., grader).

Ground Electrode: Buried ring of iron located in close proximity to a converter station which provides for the return of direct current (ground) in the event of a malfunction on the transmission line.

Groundwater: The portion of sub-surface water that is below the water table, in the zone of saturation.

Grubbing: The act of removing roots from soil using a root rake, harrow or similar device.

Guideline: Non-mandatory, supplemental information about acceptable methods, procedures and standards for implementation of requirements found in legislation, policies and directives.

Guys or Guy Wires: Supporting wires that are used to stabilize some transmission line structures.

Habitat: The area where a plant or animal lives. The primary attributes that define habitat for a terrestrial plant or animal in the Project area are vegetation, soils, surface water, ground water, permafrost, disturbance regime (e.g. highly variable water fluctuations, frequent large fires) and vegetation age. A combination of similar habitat attributes is similarly referred to as a habitat type.

Habitat: The place where an organism lives. Since all natural areas are habitat for something, “habitat” refers to all habitats. Habitat for a particular species is identified with a species prefix (e.g., fish habitat, jack pine habitat, moose habitat).

Hazard Trees: Hazard trees are “Danger trees” that are structurally unsound, so that they pose a significant risk of failing and passing thru the conductor “air-gap”.

Hazardous Substance: Any substance which, by reason of being explosive, flammable, poisonous, corrosive, oxidizing or otherwise harmful, is likely to cause death or injury

Hazardous Waste: As defined by Manitoba Regulation 175/87: a product, substance or organism that is a source of danger and that meets the criteria set out in the Classification Criteria products, Substances and Organism Regulation, Manitoba Regulation 282/87, and that is intended for treatment or disposal, including recyclable material.

Hectares (ha): A metric unit of square measure equal to 10,000 square metres or 2.471 acres.

Herbicide: A product used to destroy or inhibit plant growth.

Heritage Resource: A heritage site, heritage object and any work or assembly of works of nature or of human endeavour that is of value for its archaeological, paleontological, pre-historic, historic, cultural, natural, scientific or aesthetic features, and may be in the form of sites or objects or a combination thereof (*The Heritage Resources Act 1986*).

High Water Mark (Ordinary) (HWM): The visible high water mark of any lake, stream, or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river stream, or other body of water a character distinct from that of the banks, both in vegetation and in the nature of the soil itself. Typical features may include, a natural line or "mark" impressed on the bank or shore, indicated by erosion, shelving, changes in soil characteristics, destruction of terrestrial vegetation, or other distinctive physical characteristics.

HWM: See **High Water Mark (Ordinary).**

Hydrocarbon: An organic compound that contains only carbon and hydrogen; derived mostly from crude petroleum and also from coal tar and plant sources (diesel fuel, fuel oil, gasoline and lubricating oils are complex mixtures of hydrocarbons); excessive levels may be toxic.

Ice Bridge: A temporary crossing of a winter road over a lake or river crossing.

Impact: General term referring to the overall effect of a project. Accepted use includes Environmental Impact Statement, Economic Impact and Cumulative Impact.

Indicators: Anything that is used to measure the condition of something of interest. Indicators are often used as variables in the modeling of changes in complex environmental systems. In an environmental assessment, indicators are used to predict changes in the environment and to evaluate their significance.

Infrastructure: The basic features needed for the operation or construction of a system (e.g. access road, construction camp, construction power, batch plant, etc).

Insulator: Any material that resists the passage of electricity.

Invertebrates: Animals without a spinal column.

Kilovolt (kV): The unit of electromotive force or electrical pressure, equivalent to 1,000 volts (V).

Km: Kilometre; the unit measure of length equivalent to 1000 metres; one kilometre = 0.62 miles.

kV: See **Kilovolt.**

m: Metre, a unit measure of length; one metre = 3.28 ft.

Marshalling Yard: An open area used to stock-pile, store and assemble construction materials.

Mitigation: The elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means *(Canadian Environmental Assessment Act).*

Monitoring: Continuing assessment of conditions at and surrounding an activity. This determines if effects occur as predicted or if operations remain within acceptable limits and if mitigation measures are as effective as predicted.

MW: See **Megawatt.**

Ordinary High Water Mark (OHWM): See **High Water Mark**

Organic: Containing plant and animal residues at various stages of decomposition (i.e., organic soil contains decomposing plant fibres).

Overburden: The soil (including organic material) or loose material that overlies bedrock.

Parameters: Any set of physical, chemical or biological properties, the values of which determine the characteristics or behaviour of a system.

Permafrost: A condition where soil temperature remains below 0°C for at least two consecutive years.

Permeability: The degree to which fluids or gases can pass through a barrier or material.

Physical Activity: Any proposed activity not relating to a physical work. Such an activity is identified as a project for the purposes of the Act if it is explicitly listed in the Inclusion List Regulations.

Physical Work: Anything that has been or will be constructed (human-made) and has a fixed location. Examples include a bridge, building or pipeline. Natural water bodies, airplanes and ships at sea are not physical works.

Policy: Basic principles and corresponding procedures and standards by which an organization is guided.

Potable Water: Water that is suitable for drinking because it contains no harmful elements and which meets drinking quality standards.

Pre-construction: Includes all project activities (surveying, staking, mapping) that lead up to but do not include project construction, including all field studies (aquatic, plant, wildlife) and related public liaison activities.

Preferred Route: The best balanced choice of route based on public input, biophysical, socio-economic, and cost and technical considerations. Preferred routes are generally identified during a Site Selection and Environmental Assessment process.

Project Activity: Elements of a project component that may result in environmental effects or changes. Example project activities include clearing, grubbing, excavating, stockpiling, reclaiming, etc.

Project Component: A component of the project that may have an effect on the environment. Example project components include access road, construction camp, wastewater treatment facility, etc.

Project Description: Any information in relation to a project that includes, at least: (a) a summary description of the project; (b) information indicating the location of the project and the areas potentially affected by the project; (c) to the extent possible, a summary description of the physical and biological environments within the areas potentially affected by the project; and (d) the mailing address, e-mail address and phone number of a contact person who can provide additional information about the project (*Canadian Environmental Assessment Act,* Federal Coordination Regulations).

Project Footprint: The surface area directly affected by a project, facility or activity such as clearing, disturbance, etc.

Project: In relation to a physical work, any proposed construction, operation, modification, decommissioning, abandonment or other undertaking in relation to that physical work, or any proposed physical activity not relating to a physical work that is prescribed or is within a class of physical activities that is prescribed pursuant to regulations made under paragraph 59(b) (i.e., the Inclusion List Regulations) *(Canadian Environmental Assessment).*

Protected Area: As defined by the World Conservation Union, a protected area is: an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Protected Species: Plant and animal species protected under the *Species at Risk Act* (Federal) or *The Endangered Species Act* (Manitoba).

Quarry: An open excavation or pit from which stone, gravel or sand is obtained by digging, cutting or blasting.

Recycling: Diversion of materials from the waste stream for reprocessing into new products (e.g., newspapers).

Reduction: Decrease in waste produced at its source in order to minimize the amount required for off-site treatment or disposal.

Region: Any area in which it is suspected or known that effects due to the action under review may interact with effects from other actions. This area typically extends beyond the local study area.

Regulatory: Pertaining to legislated requirements (i.e., statues, laws, regulations).

Rehabilitate: To restore a disturbed structure, site or land area to good condition, useful operation or productive capacity.

Remediate: To return to the state prior to alteration; to remedy.

Reptiles: Cold-blooded animals of the Class Reptilia that includes tortoises, turtles, snakes, lizards, alligators and crocodiles.

Restoration: The return of an ecosystem or habitat to its original community structure, natural complement of species and natural function.

Reuse: Subsequent use without significant treatment of a material remaining after being used in a previous process.

Re-vegetating: Adding vegetative cover by planting, seeding or other means on a disturbed site.

Right-of-Way (RoW): Area of land controlled or maintained for the development of a road, pipeline or transmission line.

Riparian: Along the banks of rivers and streams.

Riparian Ecosystem: The ecosystem located between aquatic and terrestrial environments identified by soil characteristics or distinctive vegetation communities that require free or unbound water.

Risk: A state of uncertainty where some of the possibilities involve a loss, catastrophe or other undesirable outcome. The greater loss and greater event likelihood result in a greater overall risk.

RoW: See **Right-of-Way.**

SD: See **Sustainable Development.**

Sediment: Material, including soil and organic material that is deposited on the bottom of a waterbody.

Selective Clearing: Removal of specific or selected trees and vegetation, rather than all vegetation (e.g., at sensitive sites).

Setback: Prescribed distance between a pollution sources or disturbance and a resource or ecosystem that needs protection.

Shore: The narrow strip of land in immediate contact with the sea, lake or river.

Shoreline: See **Shore.**

Significance: A conclusion about whether adverse environmental effects are likely to be significant, taking into account the implementation of appropriate mitigation measures. Significance is determined by a combination of scientific data, regulated thresholds, standards, social values and professional judgment.

Spawning Habitat: Areas suitable for the deposition of eggs and the incubation of the eggs.

Species: A group of organisms that can interbreed to produce fertile offspring.

***Species at Risk Act* (SARA):** The federal Act which provides for the legal protection for wildlife species listed under ‘Schedule 1’ of that Act.

Species at Risk: An extirpated, endangered or threatened species or a species of special concern (*Species at Risk Act*).

Stand: A community of trees sufficiently uniform in species, age, arrangement, or condition to be recognized as a separate group from the forest or other growth in the area.

Standards: Descriptions of targets or goals used to measure the success of procedures. They may be general or specific.

Start-up Camp: The initial housing and support of workers prior to development of a main construction camp.

Stewardship: Refers to general environmental care and protection.

Stripping: The act of removing the natural soil and organic covering from an area by mechanical means.

Study Area: The geographic limits within which environmental effects are assessed.

Sullage: Waste from household sinks, showers and baths.

Sustainable Development (SD) (Canada): Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.

Sustainable Development (SD) (Manitoba): Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

TEK: See **Traditional Ecological Knowledge.**

Terrestrial: Living on or in the ground, or related to the ground.

***The Endangered Species Act*:** A Manitoba Act to ensure the protection and survival of endangered and threatened species in the province, enable the reintroduction of extirpated species into the province; and designate species as endangered, threatened, extinct or extirpated.

Threshold: A limit or level which if exceeded likely results in a noticeable, detectable or measurable change or environmental effect that may be significant. Example thresholds include water-quality guidelines, acute toxicity levels, critical population levels and wilderness criteria.

Timber: The wood of growing trees suitable for structural uses; the body, stem or trunk of a tree.

Towers: The transmission line structures which provide support for the conductors to ensure clearance from the ground. Towers are may be either free standing or guyed and are typically a steel lattice design.

Traditional Ecological Knowledge (TEK): A body of knowledge built up by a group of people through generations of living in close contact with nature. Also see aboriginal traditional knowledge.

Transmission: A process of transporting electric energy in bulk form from a source of supply to other parts of the electrical system (e.g., load centres like large communities or major industrial customers).

Transmission Line: A linear arrangement of towers and conductors which carries electricity from generating stations and transmission stations to load centres like communities and industries to meet electrical needs.

Transmission System: The towers, conductors, substations, and related equipment involved with transporting electricity from generation source to areas for distribution—or to the power systems of out-of-province electrical utilities.

Understory: That portion of the trees or other vegetation in a forest stand that is below the main canopy level.

Velocity: A measurement of the speed of flow.

Volt: The unit of measurement of electric pressure which causes current to flow.

Voltage: See **Kilovolt.**

Waterbird: A bird commonly associated with water, e.g., waterfowl, terns and gulls.

Waterbody: Any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent, or occurs only during a flood. This includes, but is not limited to, wetlands and aquifers.

Watt: The unit of measurement of electrical power (See kilowatt and kilowatt-hour).

Wetland: A land ecosystem where periodic or prolonged water saturation at or near the soil surface is the dominant factor shaping soil attributes and vegetation composition and distribution. Peatlands are wetlands where organic material has accumulated because dead plant material production exceeds decomposition. Relative to many other habitat types, wetlands make disproportionately high contributions to ecosystem functions such as cleaning water, storing water and storing carbon.

Wildlife: Free-ranging animals which live in the wild, natural or undomesticated state.

Work Camp: A temporary place to house workers when a construction site is far from their place of residence.

APPENDIX C

Bipole III Transmission Line Project
Draft Environmental Protection Plan

Environmental Protection Legislation – Provincial and Federal

1. Introduction

Appendix C identifies provincial and federal environmental legislation applicable to the proposed Bipole III Transmission Project. Environmental protection legislation relevant to Manitoba Hydro projects and operations are provided in: "*Guide to Environmental Legislation Applicable to Manitoba Hydro's Projects and Operations, Sixth Edition"* (Manitoba Hydro 2009). Environmental legislation applicable to the proposed Bipole III Transmission Project is reviewed in the Environmental Impact Statement

Following are lists of the major provincial and federal regulatory requirements identified in the Environmental Impact Statement that would apply to the pre-construction and construction phases of the proposed Bipole III Transmission Project.

2. Provincial Legislation

Provincial legislation relevant to the proposed Bipole III Transmission Project includes:

- *The Climate Change and Emissions Reduction Act*
- *The Contaminated Sites Remediation Act*
    - Contaminated Sites Remediation Regulation
- *The Crown Lands Act*
- *The Dangerous Good Handling and Transportation Act*
    - Environment Accident Reporting Regulation
    - Generator Registration and Carrier Licensing Regulation
    - Manifest Regulation
    - Storage and Handling of Petroleum Products and Allied Petroleum Products Regulation
- *The Drinking Water Safety Act*
    - Drinking Water Safety Regulation
    - Drinking Water Quality Standards Regulation
- *The Endangered Species Act*
    - Threatened, Endangered and Extirpated Species Regulation
- *The Environment Act*
    - Litter Regulation

    - Onsite Wastewater Management Systems Regulation
    - Pesticides Regulation
    - Waste Disposal Grounds Regulation
- *The Fires Prevention and Emergency Response Act*
    - Manitoba Fire Code
- *The Forest Act*
    - Designation of Provincial Forests Regulation
    - Forest Use and Management Regulation
- *The Forest Health Protection Act*
    - Forest Health Protection Regulation
- *The Ground Water and Water Wells Act*
    - Well Drilling Regulation
- *The Heritage Resources Act*
    - Heritage Objects Designation Regulation
    - Heritage Resources Forms Regulation
    - Heritage Sites Designation Regulation
- *The Highways and Transportation Act*
    - Construction and Surface Maintenance of Access Crossings to Departmental Roads Regulation
    - Declaration of Provincial Roads (Access Roads) Regulation
    - Highways and Transportation Department Permit Application Fees Regulation
- *The Highways Protection Act*
    - Permits for Location of Structures in Controlled Areas Regulation
    - Limited Access Highways Application Fee Order
    - Control Lines Establishment and Limited Access Designations Regulation
- *The Mines and Minerals Act*
    - Drilling Regulation
    - Quarry Minerals Regulation
- *The Noxious Weeds Act*
    - Noxious Weeds Regulation
- *The Ozone Depleting Substances Act*
    - Ozone Depleting Substances and other Halocarbons Regulation
- *The Pesticides and Fertilizers Control Act*
    - Pesticides and Fertilizers Licence Regulation
    - Prescribed Spraying Equipment and Controlled Products Regulation
- *The Planning Act*
    - Provincial Land Use Policies Regulation
- *The Provincial Parks Act*
    - Parks Activities Regulation
    - Parks Reserves Designation Regulation
    - Provincial Parks Designation Regulations
- *The Public Health Act*
    - Atmospheric Pollution Regulation
    - Collection and Disposal of Wastes Regulation
    - Protection of Water Sources Regulation
    - Water Works, Sewerage and Sewage Disposal Regulation
- *The Sustainable Development Act*
- *The Waste Reduction and Prevention Act*
    - Multi-Materials Stewardship (Interim Measures) Regulation

    - Tire Stewardship Regulation
    - Packaging and Printed Paper Stewardship Regulation
- *The Water Power Act*
    - Crown Lands Withdrawn from Disposal Regulation
    - Water Power Regulation
- *The Water Protection Act*
    - Nutrient Management Regulation
- *The Water Rights Act*
    - Water Rights Regulation
- *The Water Resources Administration Act*
    - Designated Flood Regulation
- *The Wildfires Act*
    - Burning Permit Areas Regulation
- *The Wildlife Act*
    - Use of Wildlife Lands Regulation
    - Woodland Caribou Protection Regulation
- *The Workplace Safety and Health Act*
    - Workplace Safety and Health Regulation

3. Federal Legislation

Federal legislation relevant to the proposed Bipole III Transmission Project includes:

- *Canada Wildlife Act*
    - Wildlife Area Regulations
- *Canadian Environmental Assessment Act*
    - Comprehensive Study List Regulations
    - Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements Respecting Regulations
    - Law List Regulations
- *Canadian Environmental Protection Act*
    - Environmental Emergency Regulations
    - Ozone-Depleting Substances Regulations
    - PCB Regulations
    - Prohibition of Certain Toxic Substances Regulations
    - Regulations Amending the Ozone-Depleting Substances
    - Solvent Degreasing Regulations
    - Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- *Explosives Act*
    - Explosives Regulations
- *Federal Sustainable Development Act*
- *Fisheries Act*
    - Fishery (General) Regulations
    - Manitoba Fishery Regulations
- *Indian Act*
    - Indian Reserve Waste Disposal Regulations
- *Migratory Birds Convention Act*
    - Migratory Birds Regulations

    - Migratory Birds Sanctuary Regulations
- *National Building Code of Canada*
- *National Energy Board Act*
    - National Energy Board Electricity Regulations
    - Power Line Crossing Regulations
- *National Fire Code of Canada*
- *Navigable Waters Protection Act*
    - Navigable Water Works Regulation
- *Species at Risk Act*
- *Telecommunications Act*
- *Transportation of Dangerous Goods Act*
    - Transportation of Dangerous Goods Regulations

APPENDIX D

Bipole III Transmission Line Project
Draft Environmental Protection Plan

Environmental Protection Guidance – Provincial and Federal

1. Introduction

Appendix D identifies provincial, federal/national, international guidelines and other best practice documents applicable to the proposed Bipole III Transmission Project. Environmental protection guidelines are provided in: "*Guide to Environmental Legislation Applicable to Manitoba Hydro's Projects and Operations, Sixth Edition"* (Manitoba Hydro 2009). Guidelines related to the proposed Bipole III Transmission Project are reviewed in the Environmental Impact Statement for the Project.

Following are descriptions and lists of provincial, national/federal and international guidelines and best practices identified in the Environmental Impact Statement that would apply to the pre-construction and construction phases of the proposed Bipole III Transmission Project.

2. Provincial

2.1. Manitoba Conservation

Manitoba Conservation (formerly Manitoba Environment and including Manitoba Natural Resources) best practices include:

- Recommended Buffer Zones for Protecting Fish Resources in Lakes and Streams in Forest Cutting Areas. Manitoba Natural Resources (1990).
- Guidelines for Various Air Pollutants: Atmospheric Emission Criteria (1991).
- Guidelines for Sound Production (1992).
- Petroleum Storage Tanks Sites: On-Site Risk Management (1993).
- Guideline for Testing Underground Petroleum Storage Tank Systems (1996).
- Objectives and Guidelines for Various Air Pollutants: Ambient Air Quality Criteria (1997).
- Guideline for Designation of Contaminated Sites in Manitoba (1997).
- Summary of the Odour Nuisance Management Strategy (1998).
- Ambient Air Quality Guidelines (1998).
- Guideline for Dismantling and Removal of Underground, Grade and Above Grade Level Petroleum Storage Tank Systems in Manitoba (2000).
- Development of a Nutrient Management Strategy for Surface Waters in Southern Manitoba. 2000 – 02E (2000).
- Forest Damage Appraisal and Valuation Policy. Department of Natural Resources

(Manitoba Conservation) (2002).
- Treatment and Disposal of Petroleum Contaminated Soil. Guideline 96-05 (2002).
- Manitoba Water Quality Standards, Objectives and Guidelines (Final Draft) (2002).
- Protection of Softwood Understorey in Mixedwood and Hardwood Forests. Manitoba Conservation Forest Practices Guidebook (2003).
- Brush Disposal: Manitoba Conservation Forest Practices Guidebook. Forestry Branch, Forest Planning and Practices (2005).
- Forestry Road Management: Manitoba Conservation Forest Practices Guidebook. Forestry Branch, Forest Planning and Practices (2005).
- Forest Practices Handbook Brush Disposal (2005).
- Forest Management Guidelines for Riparian Management Areas. Forest Practices Guidebook (2008).
- Forest Management Guidelines for Terrestrial Buffers. Manitoba Conservation Forest Practices Guidebook (2010).
- Guidelines for Public Water Systems, Chlorine Residual Testing, and Bacteriological Water Sampling, Submission and Interpretation (1998).
- Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat. Manitoba Natural Resources and Department of Fisheries and Oceans Canada (1996).
- Dangerous Goods Handling and Transportation Act, Compliance Guide to Manitoba Hazardous Waste Legislation (1993).

2.2. Manitoba Water Stewardship

Manitoba Water Stewardship best practices include:

- Development of a Nutrient Management Strategy for Surface Waters in Southern Manitoba (2000).
- Manitoba Water Stewardship. 2000. Draft Manitoba Water Quality Objectives Manitoba Water Quality Standards, Objectives and Guidelines.

2.3. Manitoba Infrastructure and Transportation

Manitoba Infrastructure and Transportation (formerly Manitoba Highways and Transportation) best practices include:

- Geometric Design Criteria for Secondary Arterial Roadways (1988).
- Winter Road Safety Guidelines. Winter Road Safety Committee (1992).
- Manual for the Design and Implementation of Erosion and Sediment Control (2002).

2.4. Other Manitoba

Other Manitoba best practices include:

- Manitoba Heavy Construction Association. Environmental Management Manual (1998).
- Winnipeg Construction Association. CCA 27 1997 Guide on Construction Environmental Management Planning (1997).

- Winnipeg Construction Association. CCA 81 Best Practices Guide to Solid Waste Reduction (2001).

2.5. Other Provinces

Best practices from other provinces include:

- British Columbia. 1994. Environmental Best Management Practices for Urban and Rural Land Development. Ecosystem Standards and Planning, Biodiversity Branch.
- Alberta. 1995. Environmental Protection Guidelines for Electric Transmission Lines. Conservation and Reclamation Newsletter. C&R/IL/95-2. 6p.
- Ontario. 1992. Class Environmental Assessment for Minor Transmission Facilities. Pursuant to the Environmental Assessment Act. Report. No. 89513.
- Ontario. 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Ministry of Environment and Energy. 24p.
- Ontario. 1995. Environmental Guidelines for Access Roads and Water Crossings. Ministry of Natural Resources. 64p.
- Ontario. 1997. In-stream Sediment Control Techniques Field Implementation Manual. NEST Field Guide. 93p.
- Ontario. 2001. Guide to Environmental Assessment Requirements for Electricity Projects. Ministry of the Environment, Environmental Assessment and Approvals Branch. PIBS 402e. 78p.
- Saskatchewan. 2003. Saskatchewan Activity Restriction Guidelines for Sensitive Species in Natural Habitats. Saskatchewan Environment and Resource Management. 3p.

3. Federal/National

3.1. Canadian Council of Ministers of the Environment

Canadian Council of Ministers of the Environment (CCME) best practices include:

- Environmental Code of Practice for Light-Duty Motor Vehicle Emission Inspection and Maintenance Programs. PN 1293. (1998).
- Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks. EPC-73E. (1993).
- Environmental Code of Practice for On-Road Heavy-Duty Vehicle Emission Inspection and Maintenance Programs. PN 1328. (2003).
- Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks (1995).
- A Framework for Ecological Risk Assessment: General Principles. Pub. No. 1195 (1996).
- Provisional Code of Practice for the Management of Post-Use Treated Woods (1996).
- Canadian Environmental Quality Guidelines (1999).
- Canada-Wide Standard for Mercury-Containing Lamps (2001).
- Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (2003).
- Canadian Water Quality Guidelines for the Protection of Aquatic Life (2005).
- Canada-Wide Standards for Petroleum Hydrocarbons in Soils – User Guidance Pub. No. 1398 (2008).

- Subsurface Assessment Handbook for Contaminated Sites. Pub. No. 1144 (1994).

3.2. Canadian Environmental Assessment Agency

Canadian Environmental Assessment Agency best practices include:

- Adaptive Management Measures under the Canadian Environmental Assessment Act. Operational Policy Statement. 11p. (2007).
- Follow-up Programs under the Canadian Environmental Assessment Act. Operational Policy Statement. 6p. (2007).

3.3. Canadian Standards Association

Canadian Standards Association best practices include:

- Overhead Systems. Canadian Standards Association CSA C22.3 - No.10
- Design criteria of overhead transmission lines. National Standard of Canada CAN/CSA-C22.3 No. 60826-10.
- Phase 1 Environmental Site Assessment. Pub. No. Z768. (2006).
- Phase 2 Environmental Site Assessment. Pub. No. Z769. (2006).

3.4. Department of Fisheries and Oceans

Department of Fisheries and Oceans Manitoba operational statements include:

- Timing Windows. Manitoba Operational Statement v3 (2009).
- Aquatic Vegetation Removal. Manitoba Operational Statement v3 (2009).
- Beaver Dam Removal. Manitoba Operational Statement v3 (2009).
- Bridge Maintenance. Manitoba Operational Statement v3 (2009).
- Clear-Span Bridges. Manitoba Operational Statement v3 (2009).
- Culvert Maintenance. Manitoba Operational Statement v3 (2009).
- Ice Bridges and Snow Fills. Manitoba Operational Statement v3 (2009).
- Isolated or Dry Open-Cut Stream Crossings. Manitoba Operational Statement v3 (2009).
- Maintenance of Riparian Vegetation in Existing Rights-of-Way. Manitoba Operational Statement v3 (2009).
- Overhead Line Construction. Manitoba Operational Statement v3 (2009).
- Punch and Bore Crossings. Manitoba Operational Statement v3 (2009).
- Routine Maintenance Dredging. Manitoba Operational Statement v3 (2009).
- Temporary Stream Crossing. Manitoba Operational Statement v3 (2009).
- Underwater Cables. Manitoba Operational Statement v3 (2009).

Other Department of Fisheries and Oceans best practices include:

- Environmental Protection Guidelines for Resource Road Construction Case, A.B. and D.A. Rowe (1978).
- Guidelines for the Protection of Fish and Fish Habitat During Bridge Maintenance Operations in British Columbia. Canadian Technical Report of Fisheries and Aquatic

Sciences. No. 1692. Samis, S.C. 1991.
- Guidelines for the use of Explosives In or Near Canadian Fisheries Waters. Canadian and Technical Report of Fisheries and Aquatic Sciences. G. Hopky and D. Wright. 39p. (1998).
- Guideline for Attaining No Net Loss – Fish Habitat. Conservation and Protection (1999).
- Habitat Conservation and Protection Guidelines. Developed from the 1996 Policy for the Management of Fish Habitat. (1998).
- Practitioners Guide to the Risk Management Framework for DFO Habitat Management Staff. Habitat Management Program, Version 1.0. 25 p. (2007).
- Culverts – Standards and Best Practices for Instream Works. V1.0. Department of Fisheries and Oceans and British Columbia. 14p (nd).

3.5. Environment Canada

Environment Canada best practices include:

- Environmental Code of Good Practice for Highways and Railways. Report EPS 1-EC-79-2. Environment Canada (1979).
- Code of Practice for Reduction of Chlorofluorocarbon (CFC) Emissions from Refrigeration and Air Conditioning Systems. Environmental Protection Service Report EPS 1/RA/1 Environment Canada (1996).
- Ambient Air Quality Objectives, Canadian Environmental Protection Act, 1990 – Criteria for National Air Quality Objectives. Environment Canada (1990).
- Environmental Assessment Guideline for Forest habitat of Migratory Birds (R. Milko). Biodiversity Protection Branch, Canadian Wildlife Service (1998).
- Migratory Bird Environmental Assessment Guideline. (R. Milko). Biodiversity Protection Branch, Canadian Wildlife Service. (1998).
- Wetlands Environmental Assessment Guideline (R. Milko). Biodiversity Protection Branch, Canadian Wildlife Service. (1998).
- Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada. Canadian Wildlife Service. 63p. (2004).
- Federal-Provincial-Territorial Committee on Drinking Water. Summary Environmental Quality Guidelines for Drinking Water Quality. (2005).
- Code of Practice for the Environmental Management of Road Salts. Environment Canada. (2004).
- Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region. Canadian Wildlife Service. Environment Canada, Prairie and Northern Region. Edmonton Alberta. 64p. (2009).
- Activity set-back Distance Guidelines for Prairie Plant Species at Risk. Environment Canada, Prairie and Northern Region, Saskatoon, Saskatchewan. 15p. (2009)

3.6. Indian and Northern Affairs Canada

Indian and Northern Affairs Canada best practices include:

- Land Use Guidelines: Access Roads and Trails. Hardy Associates (1978) Ltd. Land Resources, Northern Affairs Program. 49p. (1984).
- Environmental Guidelines: Pits and Quarries. MacLaren Plansearch, Land Resources, Northern Affairs Program. 68p. (1982).

4. International

International best practices include:

- EIA Follow-up: International Best Practice Principles. International Association for Impact Assessment Special Publication No. 6. 4p. (2007).
- Environmental, Health and Safety Guidelines for Electric Power Transmission and Distribution. International Finance Corporation. World Bank Group. 23p. (2007).
- IEEE Standard. 524-2003. Guide to the Installation of Overhead Transmission Line Conductors.
- IEEE Standard. 951-1996. Guide to the Assembly and Erection of Metal Transmission Structures.
- IEEE Standard. 977-1991. Guide to the Installation of Foundations for Transmission Line Structures.
- IEEE Standard. 1185-1994. Guide for Installation Methods for Generating Station Cables.
- IEEE Standard. 1307-2004. Standard for Protection of Utility Work.
- Implementing Agreement for Hydropower Technologies and Programmes. Annex VIII Hydropower Good Practices – Environmental Mitigation Measures and Benefits. International Energy Agency. (2006).
- NERC. Reliability Standards for the Bulk Electric Systems of North America. North American Electric Reliability Corporation. Princeton, NJ.
- Principles of Environmental Assessment Best Practice. International Association for Impact Assessment. Special Publication. 4p. (1999).
- Sustainability Guidelines. International Hydropower Association. (2004).

APPENDIX E

Bipole III Transmission Line Project
Draft Environmental Protection Plan

Environmental Protection Guidance - Manitoba Hydro

1. Introduction

Appendix E identifies Manitoba Hydro guidelines, best practices and policies applicable to the proposed Bipole III Transmission Project. Environmental protection guidelines are provided in: "*Guide to Environmental Legislation Applicable to Manitoba Hydro's Projects and Operations, Sixth Edition"* (Manitoba Hydro 2009). Environmental guidelines and best practices related to the proposed Bipole III Transmission Project are reviewed in the Environmental Impact Statement for the Project

Following are descriptions and lists of Manitoba Hydro environmental protection guidelines, policies best practices identified in the Environmental Impact Statement for the pre-construction and construction of the proposed Bipole III Transmission Project.

2. Guidelines

Following are excerpts from selected Manitoba Hydro guideline documents that reflect best practice guidance for environmental protection:

Fur, Feathers, Fins and Transmission Lines: How Transmission Lines and Rights of Way Affect Wildlife - Third Edition (Manitoba Hydro 2010) provides information environmental effects of transmission line construction and operation activities, and measures to mitigate adverse effects. The report also provides general environmental protection measures for the construction, operation and maintenance, and decommissioning of transmission line projects in Manitoba. Specific measures are also provided for urban environments, agricultural lands and boreal wilderness areas.

Environmental Protection Guidelines for Construction and Decommissioning Manitoba Hydro Work Sites and Facilities (Manitoba Hydro 1996) provides information to assist Manitoba Hydro employees and contractors carry out their responsibilities for protection of the environment at work sites and facilities. The guideline report lists environmental protection guidelines for various construction, operation and decommissioning activities based on regulatory documentation. The report is intended to be updated from time to time.

Shorelines, Shorelands and Wetlands: A Guide to Riparian Ecosystem Protection at Manitoba Hydro Facilities (Manitoba Hydro 2001) provides information on the potential environmental effects of Manitoba Hydro facilities and activities on riparian ecosystems and suggests ways to protect them. The report discusses factors to be considered when evaluating riparian ecosystems, potential effects of Manitoba Hydro activities on riparian ecosystems, measures to reduce these effects and recommended procedures to determine buffer zone size to protect the riparian area.

Transmission Line and Transmission Station Vegetation Management Strategies (Manitoba Hydro (2006) provide background information and a general understanding of Manitoba Hydro's transmission line system vegetation management practices. The report provides information on responsibilities and the methods used to control tree growth on transmission line rights of way.

Overhead Transmission Line Construction Inspection Manual (Manitoba Hydro 2008) provides a means for facilitating the inspection of overhead transmission line construction projects. The manual applies to the inspection methods and procedures to be followed during transmission line construction activities and is intended to be used as a reference for field personnel. Quality control techniques to help ensure the successful completion of a project and compliance with all drawings and specifications are also presented.

Generic Environmental Protection Plan: Transmission Line Construction and Maintenance (Manitoba Hydro 2008) provides guidance and support to Manitoba Hydro's transmission construction and line maintenance departments. It is the key tool for contractors and their associates to conduct themselves in an environmentally acceptable manner while working on Manitoba Hydro transmission projects. It is a catalogue of environmental protection guidelines that supplement transmission project design, construction, maintenance and operating specifications to prevent or minimize adverse environmental effects. This document is in the process of being updated as *Manitoba Hydro Environmental Best Practices*.

3. Environmental Policies

Manitoba Hydro's Corporate Vision (Manitoba Hydro 2010) is:

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

The corporation's mission is:

> "To provide for the continuance of a supply of energy to meet the needs of the province and to promote economy and efficiency in the development, generation, transmission, distribution, supply and end-use of energy".

Corporate goals are as follows:

1. Improve safety in the workplace.
2. Provide exceptional customer value.
3. Strengthen working relationships with Aboriginal peoples.
4. Maintain fiscal strength.
5. Extend and protect access to North American energy markets and profitable export sales.
6. Attract, develop and retain a highly skilled and motivated workforce that reflects the demographics of Manitoba.
7. Protect the environment in everything we do.
8. Promote cost effective energy, conservation and innovation.
9. Be recognized as an outstanding corporate citizen and a supporter of economic development in Manitoba

Manitoba Hydro's Environmental Management Policy (Manitoba Hydro 2008) states that:

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

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

“Manitoba Hydro’s policy for responding to enforcement actions by regulatory authorities including summons, orders, directions, etc is outlined in Corporate Policy P602 entitled “Processing Legal Documents Served on Manitoba Hydro”.

4. Best Practices

Manitoba Hydro best practices and policies include:

- Sustainable Development Policy/Principles (1993)
- Code of Practice for Compliance with the Workplace Hazardous Materials Information System in Manitoba Hydro Workplaces, Employee Safety and Health (1994).
- Code of Practice for Storage and Handling of Petroleum Products and Allied Petroleum Products Storage Tank Systems. Engineering Services Division and Employee Safety and Health (2002).
- Code of Practice for the Storage of PCBs at Manitoba Hydro Facilities. Employee Safety and Health (2003).
- Contractor/Non-Employee Safe Practice Guide, Safety Circular 0011/05. Workplace Safety Department, Safety and Occupational Health Division (2005).
- Pesticide Application Requirements for Manitoba Hydro Employees and Contractors (2005).
- Hazardous Materials Management Handbook. Employee Safety and Health (2007).
- Hazardous Waste Management Handbook (2007).
- Pesticide Application Requirements for Manitoba Hydro Employees and Contractors. Workplace Environment and Health (2008).
- Environmental Management Systems Manual. Corporate Environment Department (2009).
- Corporate Safety and Health Rules, Corporate Safety and Health Division (2009).
- Corporate Fire Manual, Corporate Safety and Health Division, Parts 1 and 2 (2009).
- Corporate Strategic Plan (2009).

APPENDIX F

Bipole III Transmission Line Project
Draft Environmental Protection Plan

Timing Windows

1.0 General

Construction activities that may cause excessive ground disturbance in northern Manitoba will be carried out during winter months (November 1st to March 31) under frozen and snow-covered conditions with the exception of the Converter and Camp project components.

Construction in southern Manitoba will be carried out during winter months (November to March) under frozen and snow-covered conditions where required, and under dry conditions during other times of the year where required.

2.0 Wildlife Reduced Risk Work Windows

Table 1 outlines draft wildlife reduced risk work windows applicable to the Project. These windows are based on federal and provincial regulatory requirements as well as best management practices. Timing periods may be expanded or refined based on further data collection, transmission line final design and regulatory license and work permits to be issued for the project.

The recommended reduced risk work windows are considerate of periods of the year when wildlife species are sensitive to disruptive operations because of a sensitive lifecycle activity such as calving, nesting, and hibernation, etc. Table 1 is intended to assist in scheduling construction activities for the time of year when risks of adverse construction impacts are negligible. Where conflicting timing restraints with construction activities exist in a particular area, appropriate mitigation will be implemented to reduce effects.

4.0 Burning

Burning will be authorized between October 1st and November 15th by a burning permit.

Burning between November 16th and March 31st does not require a burning permit; however, the supervising Natural Resources Officer must be advised prior to any burning.

All fires must be completely extinguished by March 31st.

5.0 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;
- 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. The table below are general recommended timing windows to avoid during construction.

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

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

Region	Spring Spawning Fish	Summer Spawning Fish	Fall Spawning Fish
Northern Manitoba (north of The Pas)	April 15 – June 30	May 15 – July 15	September 1 – May 1
Southern Manitoba (south of the Pas)	April 1 – June 15	May 1 – June 30	September 15 – April 30

*Department of Fisheries and Oceans, Manitoba Operational Statement Timing Windows (2007).

7.0 Permafrost

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

APPENDIX G

Bipole III Transmission Project
Draft Environmental Protection Plan

Buffers and Setbacks

1.0 Setbacks and Buffers for Wildlife and Anthropogenic Features

Recommended setbacks and buffer distances from sensitive environmental features are provided in Table 1.

These setback and buffers are preliminary and 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.

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 feature.

2.0 Riparian Management

Recommended Reserve Zones, Riparian Buffers and Machine Free zones distances from sensitive water features are provided in Table 2.

Reserves Zones are setbacks to be maintained from a defined riparian habitat where no work shall occur.

Riparian Buffers are applied to riparian habitats within the ROW that 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.

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.

Both Riparian Buffers and Machine Free Zones are measured from the ordinary high water mark (OHWM) and apply to streams that are identified as ESS sites, Reserve zones are measured from OHWM or from a defined riparian boundary as delineated by an Aquatics Specialist.

Where applicable, site specific reserve zones are prescribed in specific mitigation measures for each feature.

Table 1. Draft Setbacks and Buffers

Feature	Activity	Non Frozen Ground Setback Distance (no work allowed)	Frozen Ground Setback Distance (no work allowed)	Winter Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Effective Period	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
	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

Table 1. Setbacks and Buffers cont'd

Feature	Activity	Non Frozen Ground Setback Distance (no work allowed)	Frozen Ground Setback Distance (no work allowed)	Winter Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Effective Period	Rationale
Birds						
Nests of Eagles, Ospreys and Heron Rookeries	All	200m			April 1 to July 31	Protect from sensory disturbance during breeding season.
Active Large Stick Nests	All	200m			April 1 to July 31	Protect from sensory disturbance during breeding season.
least Bittern	All	400m			May 15 to July 31	Protect from sensory disturbance during breeding season.
yellow rail	All	350m			May 15 to July 31	Protect from sensory disturbance during breeding season.
Burrowing Owl	All	500m			April 15 to Sept 15	Protect from sensory disturbance during breeding season.
Short Eared Owl	All	500m			April 15 to Sept 15	Protect from sensory disturbance during breeding season.
Common Nighthawk	All	200m			June 1st to July 15	Protect from sensory disturbance during breeding season.
Ferringeous Hawk	All	1000m			March 20 to July 15	Protect from sensory disturbance during breeding season.
Golden Winged Warbler	All	300m			May 15 to July 15	Protect from sensory disturbance during breeding season.
Loggerhead Shrike	All	400m			April 20 to July 15	Protect from sensory disturbance during breeding season.
Red Headed Woodpecker	All	200m			May 15 to July 31	Protect from sensory disturbance during breeding season.
Rusty Blackbird	All	100m			May 20 to July 10	Protect from sensory disturbance during breeding season.
Olive-sided flycatcher	All	300m			May 15 to July 15	Protect from sensory disturbance during breeding season.
Sprague's Pipit	All	250m			May 15 to July 15	Protect from sensory disturbance during breeding season.
Whip-poor-will	All	200m			May 15 to July 15	Protect from sensory disturbance during breeding season.

Table 1. Draft Setbacks and Buffers

Feature	Activity	Non Frozen Ground Setback Distance (no work allowed)	Frozen Ground Setback Distance (no work allowed)	Winter Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Effective Period	Rationale
Birds						
Sharp tailed Grouse Leks	All	400m			March 15 to June 1	Protect from sensory disturbance during breeding season.
Canada Warbler	All	300m			May 20 to July 31	Protect from sensory disturbance during breeding season.
Nesting Colonies	All	1000m			April 1 to July 31	Protect from sensory disturbance during breeding season.
Landforms						
Wetlands	Tower Foundation Siting	15m	15m			Protect from disturbance
	Clearing And Construction	30m				Protect from disturbance
	Maintenance	30m				Protect from disturbance
	Access Trail	30m				Protect from disturbance
	Hazardous Material Handling/Storage	100m				Protect from disturbance
	Soil Stockpiles	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				Protect from disturbance
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 2. Riparian Buffers and Zones

Feature	Activity	Reserve Zone (No Work allowed)	Riparian Buffer	Machine Free Zone (no machines allowed except at trail crossing)	Rationale
Lake/Stream/River					
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 Within ROW	Tower Foundation Siting	15-30m			Protect from sedimentation and erosion
	Clearing and Construction		15-30m	7m	Protect from sedimentation and erosion
	Maintenance		15-30m	7m	Protect from sedimentation and erosion
Non Fish habitat ROW Stream Crossings	Tower Foundation Siting	15m			Protect from sedimentation and erosion
	Clearing and Construction			7m	Protect from sedimentation and erosion
	Maintenance			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 H

Bipole III Transmission Project
Draft Environmental Protection Plan

Biophysical Environmental Effects Monitoring Framework

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1.0 Introduction

Part of Manitoba Hydro's commitment to environmental protection includes the development of a comprehensive Environmental Protection Program (EPP) for the Bipole III Transmission Project (the 'Project'). One aspect of this program is monitoring and follow up for biophysical environmental components identified in the Bipole III Transmission Project Environmental Impact Statement (EIS) and technical reports.

This document provides the Biophysical Monitoring Framework (BMF) which outlines the various monitoring programs that will occur during the phases of Project development (i.e., pre-construction, construction and post construction). It provides the basis for the development of the Biophysical Monitoring Plan that will evolve in greater detail subsequent to regulatory approvals.

The Biophysical Monitoring Framework is intended to provide assurance to regulatory reviewers, environmental organizations, Aboriginal communities and the general public that potential environmental effects caused by the Project will be monitored, evaluated and reported on in a responsible and accountable manner.

2.0 Goals, Objectives and Purpose

2.1 PURPOSE

During the process of developing the EIS, several key environmental components that require follow-up monitoring were identified. These include:

- Groundwater
- Aquatics
- Soils and Terrain
- Terrestrial Ecosystems and Vegetation
- Reptiles
- Birds
- Mammals

The purpose of the BMF is to provide a conceptual-level overview of the Biophysical Monitoring Plan that will be developed around the abovementioned environmental components and their associated environmental indicators. The intended goal of this framework is to provide confidence that follow-up monitoring associated with the Project will follow best practices for environmental monitoring.

2.2 OBJECTIVES

The objectives of the Biophysical Monitoring Framework are as follows:

- To provide a framework for monitoring Project effects and mitigation on biophysical environmental components and their indicators.
- To identify monitoring requirements and a process to develop a Biophysical Monitoring Plan that meets regulatory requirements, industry standards and best practices.

Manitoba Hydro is committed to developing a Biophysical Monitoring Plan that incorporates input from stakeholders including, but not limited to, government agencies and Aboriginal communities. During the process of plan development, opportunities for stakeholder involvement will be identified and described and opportunities that will enable the public to be active participants in the collection and reporting of biological monitoring data will be explored. Biophysical monitoring Information will be shared for learning and improvement through regular reporting to regulators and community presentations.

3.0 Monitoring Requirements

3.1 OVERVIEW

As defined under Canadian Environmental Assessment Act (CEAA), monitoring and follow up is required to verify the accuracy of the environmental assessment of a project and determine the effectiveness of measures taken to mitigate potential adverse environmental effects (CEAA 2011). Through monitoring and follow up, Environmental Impact Assessment (EIA) outcomes are realized, communicated to stakeholders and managed through refinement and improvement of mitigation strategies.

A number of environmental components were identified in the EIA and technical reports as requiring monitoring and follow up. For each environmental component, one or more environmental indicator was selected to focus monitoring and follow up efforts (Table 3-1). Section 3.0 provides the rationale for the inclusion of environmental indicators that will form the basis of the Biophysical Monitoring Plan. General information on how these environmental indicators will be measured is covered in Section 4.

Environmental indicators were selected to represent the five broad environmental components if they had one or more of the following attributes:

- Scientific/regulatory importance (rare/endangered or protected status)
- Cultural importance (important to communities or society as a whole)
- Environmental importance
- Vulnerable and sensitive to change

Table 3-1 provides a list of environmental components and their respective environmental indicators/parameters including the rationale for their inclusion in the Biophysical Monitoring Framework.

Table 3-1: Environmental Components Requiring Follow-up Monitoring

Environmental Component	Environmental Indicator	Parameter	Rationale[1]
Groundwater	Water level and quality (construction camp, converter station)	Water level, water chemistry, petroleum hydrocarbons and other parameters	Environmental importance; Public health
Aquatics	Water quality	Total suspended solids	Environmental importance; MWQSOGs; Protection of aquatic life

Table 3-1: Environmental Components Requiring Follow-up Monitoring			
Environmental Component	**Environmental Indicator**	**Parameter**	**Rationale[1]**
Soils and Terrain	Soil productivity	Agriculture capability	Agriculture production benefits society
Terrestrial Ecosystems and Vegetation	Species and communities of conservation concern	Presence and abundance	Regulatory Importance - MESA; SARA; MB CDC
	Native grassland /prairie areas	Size (area)	Environmentally important; potential to support species of conservation concern
	Plants/communities important to Aboriginal people	Plant abundance	Cultural Importance
	Invasive and non-native species	Plant abundance	Environmental importance
Reptiles	Northern prairie skink habitat	Skink presence	Regulatory Importance – SARA, Manitoba *Wildlife Act*
	Red-sided garter snake dens	Persistence of garter snake dens/hibernacula	Vulnerable and sensitive to change
Birds	Bird species of concern	Abundance	Regulatory Importance - MESA; SARA; MB CDC
	Sharp-tailed grouse Leks	Grouse abundance	Vulnerable and sensitive to change
	Bird wire collisions	Abundance	Regulatory Importance - MBCA; Manitoba *Wildlife Act*
	Colonial bird breeding sites	Colonial bird abundance	Regulatory Importance - Manitoba *Wildlife Act*
	Breeding bird nests	Location and abundance	Regulatory Importance – MBCA
Mammals	Caribou	Caribou populations and habitat use	Regulatory Importance – SARA

[1] Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOG); *Manitoba Endangered Species Act* (MESA); *Species at Risk Act* (SARA); Manitoba Conservation Data Centre (MB CDC); *Migratory Bird Convention Act* (MBCA)

3.2 GROUNDWATER

3.2.1 Water Quality

To ensure potable water is being provided at the construction camp and Converter Station, regular potability testing will be undertaken with results compared to the most current Canadian Guidelines for Drinking Water Quality. Long term monitoring of water quality and quantity will ensure that any changes at the camp that may be related to the influence of Nelson River water be addressed by the water treatment process.

3.3 AQUATICS

3.3.1 Water Quality

Summer construction has the potential to affect water quality at stream crossings by increasing total suspended solids (TSS) as a result of erosion. Manitoba Water Quality Standards, Objectives, and Guidelines (MWQSOG) will be used to protect, maintain and where necessary, rehabilitate water quality.

3.4 SOILS AND TERRAIN

3.4.1 Soil Productivity

In Agro-Manitoba, primarily in the southern portion of the Local Study Area, the productivity of soils for arable agriculture is valued by agricultural producers as a primary source of income and agricultural production is of general benefit to society. The potential for loss of agricultural land in Agro-Manitoba due to soil compaction from construction and maintenance activities was a concern raised by many participants of the Environmental Assessment Consultation Process for the Project. Maintenance of soil productivity for lands under annual and perennial agricultural crop production is important to minimize disruption to agricultural producers. For these reasons, Manitoba Hydro will monitor soil productivity through measures of agriculture capability.

3.5 TERRESTRIAL ECOSYSTEMS AND VEGETATION

3.5.1 Species of Conservation Concern

Species of conservation concern include species of plants that are protected under the *Manitoba Endangered Species Act* (MESA), the federal *Species at Risk Act* (SARA) or are listed by the Manitoba Conservation Data Centre (MBCDC). These species generally exist in low numbers, play a role in helping to preserve species diversity (e.g., songbirds, invertebrates), and/or have limited distributions.

3.5.2 Native Grassland/Prairie Areas

Historically, grassland ecosystems existed over large areas but only few undisturbed natural areas remain today and need to remain intact as these areas provide important plant and

wildlife habitat. Native grasslands are also important sites as they have potential to support federal and provincial species of concern.

3.5.3 Plants/Communities Important to Aboriginal People

A number of plants and plant communities (e.g., berries along Assiniboine River), have been identified as being particularly important to Aboriginal people. These areas are valued for their provision of resources used by Aboriginals including gathering of food and medicines and harvesting plants and trees.

3.5.4 Invasive and Non-Native Species

The abundance of non-native or invasive plant species may increase as a result of the Project. Non-native species are plants that grow outside of their normal range while invasive species are plants that out-compete native species when introduced outside of their natural setting.

3.6 REPTILES

3.6.1 Northern Prairie Skink

Potential habitat for the northern prairie skink (*Plestiodon septentrionalis septentrionalis)* occurs within and adjacent to the Project Footprint. The northern prairie skink is listed as endangered under SARA and is protected by Manitoba's *Wildlife Act.*

3.6.2 Red-sided Garter Snake

Potential habitat for the red-sided garter snake (*Thamnophis sirtalis parietalis*) occurs within and adjacent to the Project Footprint. The red-sided garter snake overwinters in dens that form in specific substrates (e.g., limestone bedrock). If present, these dens or hibernacula's, could be disturbed or lost where permanent towers are proposed.

3.7 BIRDS

3.7.1 Bird Species of Concern

Species of conservation concern include species of birds that are protected under MESA, SARA, and the Committee on the Status of Endangered Wildlife in Canada (COSWEIC) or are listed as rare by the MBCDC. These species generally exist in low numbers and are sensitive to changes in habitat.

As described under SARA (subsection 79(2)), monitoring of potential adverse effects on SARA-listed wildlife species is required (SARA 2011).

3.7.2 Sharp-tailed Grouse Leks

Sharp-tailed grouse (*Tympanuchus phasianellus*) are particularly vulnerable to bird-wire strikes and to increased rates of predation near leks where birds of prey use elevated perches such as transmission line towers near the lek to hunt birds.

3.7.3 Bird-Wire Collisions

Very limited numbers of bird-wire collisions are anticipated for this Project, especially where bird deflectors are installed at sensitive sites. However, as there is a paucity of data for Manitoba, and as there is some level of uncertainty with the effects predictions, Manitoba Hydro will monitor and report the number of bird-wire collisions associated with the Project.

3.7.4 Colonial Bird Nesting Sites

Colonial birds are protected under the Manitoba *Wildlife Act*. They are sensitive to disturbance during the courting, nesting and brood-rearing periods. Construction activities could result in the loss of colonial bird nesting habitat and/or result in nest abandonment/decrease in reproductive success by colonial birds breeding within or adjacent to Project construction areas.

3.7.5 Active Bird Nests

Land clearing during the breeding bird period (April 1–July 31) has the potential to destroy migratory bird nests, which is a violation of the *Migratory Bird Convention Act* (MBCA) and the Manitoba *Wildlife Act*. In order to prevent nest loss, pre-clearing nest searches in areas where summer clearing is planned (i.e., April 1-July 31) are necessary to determine locations of active bird nests. For all active nests identified, appropriate buffer sizes would be applied and retained until young fledge and are no longer vulnerable to nest loss.

3.8 MAMMALS

3.8.1 Caribou

Boreal woodland caribou (*Rangifer tarandus caribou*) are listed under SARA and MESA as threatened. Requirements of SARA (subsection 79(2)), indicate that monitoring of potential adverse effects on SARA-listed wildlife species must occur (SARA 2011). Woodland caribou are sensitive to changes in habitat that involve loss or alteration of calving and wintering areas.

4.0 Monitoring Plan Organization

4.1 APPROACH

The Biophysical Monitoring Plan that will be developed on the basis of this framework document and will describe the environmental components and indicators that will be monitored, including: sampling methods, timing of activities, quality control and assurance programs, reporting requirements and opportunities for public involvement. Manitoba Hydro will develop the plan with input from stakeholders, and will include Aboriginal Traditional and Local Knowledge where appropriate and applicable. The Plan will be submitted to Manitoba Conservation for review and comment before being implemented, by Manitoba Hydro, prior to Project construction. Results from monitoring will be shared publicly and will be used to adjust mitigation measures and to modify the plan on an ongoing basis.

The Biophysical Monitoring Plan will include two main types of monitoring: environmental monitoring and compliance monitoring. Information generated from these programs will be used to improve and adapt management strategies as required.

- Environmental monitoring – periodic or continuous surveillance or testing, according to a predetermined schedule, of one or more environmental indicators to establish baseline conditions or to verify the accuracy of an environmental assessment and the effectiveness of mitigation measures.

- Compliance monitoring – conducted to verify whether a practice or procedure meets the applicable requirements prescribed by legislation, guidelines, industry standards or specific terms and conditions (e.g., in an agreement, lease, permit, license or authorization).

The following environmental components will form the basis of the Biophysical Monitoring Plan. Monitoring efforts will focus on the environmental indicators, with a general overview of anticipated activities by Project phase. Where possible, the Plan will consider opportunities to build efficiencies by combining monitoring tasks that have overlapping sampling periods (e.g., plant species of concern surveys and investigations of plants/communities important to Aboriginal communities).

4.2 GROUNDWATER

4.2.1 Water Quality

4.2.1.1 Post-Construction

Groundwater level and water quality monitoring will accompany groundwater withdrawal for the construction camp and the Converter Station. Water quality will be monitored to address possible changes to aquifer water quality and possible surface water intrusion from the Nelson

River to the aquifer during long term (e.g., multi-year) pumping in the water treatment process stream; particularly during high river staging (e.g., winter ice staging) events. At a minimum, the monitoring program will include the continuous recording of water levels and the regular testing of groundwater quality. The groundwater will be analyzed for routine water chemistry parameters, petroleum hydrocarbons, dissolved metals and trihalomethane.

4.3 AQUATICS

4.3.1 Water Quality

4.3.1.1 Construction

Water quality monitoring at stream crossings affected by Project components will include regular turbidity measurements when potential release of sediments can occur during construction activities (e.g., installing stream isolation barriers). Frequency of measurements and measurement locations will depend on site condition/construction activity and type of watercourse, respectively.

4.3.1.2 Post-Construction

Monitoring of stream crossings affected by Project components will be carried out during the post-construction phase to ensure that rehabilitation works and stability of the watercourse is at least equal to the pre-construction condition.

4.4 SOILS AND TERRAIN

4.4.1 Soil Productivity

4.4.1.1 Post-Construction

Monitoring of crops or vegetation is the key indicator of land productivity (Enbridge Pipelines Inc. 2011, CH2M Hill 2008). Semi-annual monitoring of crops using aerial or ground patrols will be undertaken for two years following construction on agricultural lands, as is typically the standard on pipeline projects (CH2MHill 2008). Project footprints found to have signs of soil-related effects (often displayed in vegetation growth/colour, etc.) would be rehabilitated.

4.5 TERRESTRIAL ECOSYSTEMS AND VEGETATION

4.5.1 Species of Conservation Concern

4.5.1.1 Pre-Construction

Pre-clearing surveys for rare plants will be focused in areas of the Project Footprint likely to support species of conservation concern but not previously assessed. A representative number of sample plots will be established during pre-construction surveys for follow up during the post-construction phase.

Investigations for native prairie plants, including the small white lady's-slipper (*Cypripedium canadidium*) will occur in the southern portion of the preferred route, in areas with the greatest potential to support this species. Small white lady's slipper is listed as endangered and is protected under MESA and SARA.

4.5.1.2 Post-Construction

Areas previously identified as requiring mitigation (i.e., minimization of shrub and herb disturbance) will be investigated to determine success of measures used to minimize Project effects on plants of conservation concern.

4.5.2 Native Grassland/Prairie Areas

4.5.2.1 Pre-Construction

Monitoring native grassland/prairie areas will occur as part of the overall monitoring program for plant (Section 5.5.1) and avian (Section 5.7.1) species of special concern. It is expected that any changes in native grassland/prairie areas resulting from Project development would be recognized through monitoring of both rare plants and birds in this community. Surveys would occur during the pre-construction and post-construction phases.

4.5.3 Plants/Communities Important to Aboriginal Communities

4.5.3.1 Pre-Construction

In summer construction areas pre-clearing surveys for plants and plant communities identified in the EIS as being important to Aboriginal communities will occur in areas of the Project Footprint not previously assessed. A representative number of sample plots will be established during pre-construction surveys for follow up during the post-construction phase.

4.5.3.2 Post-Construction

Survey of plants and plant communities identified in the EIS as being important to Aboriginal communities will focus on identifying any changes in plant community composition and productivity (e.g., berries, medicinal plants) due to Project development. Post-construction surveys focus on resampling plots surveyed during the pre-construction phase.

4.5.4 Invasive and Non-Native Species

4.5.4.1 Post-Construction

Permanently located sampling units located at representative sites will be used to record any changes in vegetation resulting from Project construction (i.e., introduction of non-native and invasive species). The collection of vegetation information will occur at a similar time during the growing season to maximize the comparability of data (Ecological Land Surveys Ltd. 1999).

4.6 REPTILES

4.6.1 Northern Prairie Skink

4.6.1.1 Pre-Construction

Site-specific field surveys for northern prairie skink would occur in areas where permanent tower placement and potential skink habitat overlap. Skink surveys would occur within 125m of proposed infrastructure locations. Modifications to tower placement and/or mitigation measures to limit or avoid disturbance to skinks would be implemented prior to the construction phase.

4.6.1.2 Construction

To insure the effectiveness of mitigation measures, construction monitoring would occur in areas where northern prairie skinks were identified during the pre-construction surveys.

4.6.2 Red-sided Garter Snake

4.6.2.1 Pre-Construction

Site-specific summer field surveys for garter snake hibernacula would occur in areas where permanent tower placement and potential snake hibernacula overlap. Surveys would occur within 200m of proposed infrastructure locations. Modifications to tower placement and/or mitigation measures to limit or avoid disturbance to snake hibernacula would be implemented prior to the construction phase.

4.6.3 Construction

To insure the effectiveness of mitigation measures, construction monitoring would occur in areas where red-sided garter snake dens were identified during the pre-construction surveys.

4.7 BIRDS

4.7.1 Bird Species of Concern

4.7.1.1 Pre-Construction

Pre-Project nest searches for species of concern are required in areas where summer construction (April 1-July 31) is anticipated in the southern portion of the Project Footprint (as part of the Active Bird Nest survey program [Section 4.7.5]). In accordance to Environment Canada guidelines, pre-construction surveys will identify the location of active nests and any additional sensitive sites or habitats that may require the implementation of mitigation measures including species-appropriate set-back distances or buffers.

4.7.1.2 Construction

Manitoba Hydro will monitor threatened and endangered species occurrences at locations where species at risk were observed, or where they may be found during summer construction of Project components. Evaluation of the effectiveness of buffer zones and set-back distances for species at risk will be assessed where construction occurs during the breeding season (April1-July 31). If suggested sizes of buffer zones or set-back distances are determined to be inadequate, and measureable effects are found, or where unanticipated effects have occurred, adaptive management will be employed to modify their sizes to eliminate any nest abandonment and to minimize potential effects to fledging success.

4.7.2 Sharp-tailed Grouse Leks

4.7.2.1 Pre-Construction

Investigations for sharp-tailed grouse leks (courtship display grounds) will occur in areas where suitable breeding habitat and Project components (e.g., towers) overlap. Locations of active leks will be identified, and appropriate set-back distances will be applied. Number of grouse observed using leks will also be recorded and will function as baseline for comparison to grouse numbers observed during and after Project construction.

4.7.2.2 Construction

Surveys of sharp-tailed grouse leks identified during pre-construction investigations will occur during the construction phase to determine the effectiveness of set-back distances, perch deterrents and other mitigation measures.

4.7.3 Bird-Wire Collisions

4.7.3.1 Post-Construction

Searches for dead or injured birds will be performed at selection of representative sites during peak periods of bird activity in order to determine the efficacy of bird deflectors in higher risk-of-collision habitats (e.g., near great blue heron [*Ardea herodias*] colonies, Bonaparte's gull [*Chroicocephalus philadelphia*] colonies). Searches will also occur at a select number of sites where effects were not anticipated and bird deflectors were not implemented. If unanticipated effects are encountered such as high numbers of bird-wire strikes, or collisions involving listed species, appropriate mitigation measures will be implemented and add follow up monitoring will occur.

4.7.4 Colonial Bird Nesting Sites

4.7.4.1 Pre-Construction

Investigations for active colonial bird nests will occur in areas where summer (April 1-July 31) construction is proposed. Surveys focus on areas where suitable colonial bird breeding habitat overlaps with the Project Footprint. Appropriate mitigation measures (e.g., set-back distances) will be applied to avoid or minimize Project-related disturbances to colonial bird breeding sites.

4.7.4.2 Construction

Investigations at previously identified colonial bird nesting sites will occur in areas where construction activity overlaps with the colonial bird courting, nesting and brood-rearing periods (i.e., spring-summer). Monitoring will verify the effectiveness of set-back distances and other mitigation measures.

4.7.5 Active Bird Nests

4.7.5.1 Pre-Construction

Pre-project nest searches are required in areas where summer construction (April 1-July 31) is anticipated (i.e., in the southern portion of the Project Footprint). In accordance to Environment Canada guidelines, pre-construction surveys will identify the location of active nests and any additional sensitive sites or habitats that may require the implementation of mitigation measures including species-appropriate setback distances or buffers.

4.8 MAMMALS

4.8.1 Caribou

4.8.1.1 Pre/Post-Construction

Currently, collaborative research and monitoring between Manitoba Hydro, Manitoba Conservation and the University of Manitoba is ongoing. Monitoring and research include ongoing collaring of caribou and wolves and specific research assessing caribou persistence in relation to linear development. Monitoring of caribou populations will continue through to the post construction stage, with the purpose of assessing the effects of linear features on caribou populations and caribou use of habitat.

5.0 Anticipated Project Timelines and Key Monitoring Activities

The following table provides an overview of the timing of key monitoring activities identified in the EIS and supporting technical reports.

Table 5-1: Anticipated Project Timeline for Key Monitoring Activities

Environmental Component	Key Monitoring Activity	Pre-construction Phase	Construction Phase	Post-construction Phase
Groundwater	Aquifer water quality and quantity at construction camp and converter stations	-	-	Yes
Aquatics	Water quality (TSS) at affected stream crossings	-	Yes	Yes
Soils and Terrain	Soil productivity	-	Yes	Yes
Terrestrial Ecosystems and Vegetation	Species of conservation concern	Yes	-	Yes
	Native grassland/prairie areas	Yes	Yes	Yes
	Plant communities important to Aboriginals	Yes	Yes	Yes
	Invasive and non-native species	-	-	Yes
Reptiles	Northern prairie skink habitat	Yes	Yes	-
	Red-sided garter snake dens	Yes	Yes	-
Birds	Bird species of concern	Yes	Yes	-
	Sharp-tailed grouse leks	Yes	Yes	-
	Bird-wire collisions	-	-	Yes
	Colonial bird nesting sites	Yes	Yes	-
	Active bird nests	Yes	-	-
Mammals	Caribou	Yes	Yes	Yes
	Environmentally sensitive sites for mammals	Yes	Yes	-

6.0 Stakeholders, Roles and Responsibilities

The following Table 6-1 provides an overview of the roles and responsibilities of the Project stakeholders.

Table 6-1: Overview of Stakeholder Roles and Responsibilities

Stakeholder	Role	Responsibilities
Manitoba Hydro	Proponent	• Design and implementation of Biophysical Monitoring Plan • Collaboration with stakeholders in development and implementation of various aspects of the monitoring plan • Management of monitoring plan activities • Development of monitoring reports • Regular reporting and sharing of information with stakeholders (e.g., open house)
Manitoba Conservation	Regulator	• Review and provide input into the monitoring plan • Approve monitoring plan • Collaborate on research and monitoring initiatives with Manitoba Hydro (e.g., caribou) • Jurisdictional responsibilities related to wildlife, and species at risk, as mandated by the Manitoba Wildlife Act and MESA
Department of Fisheries and Oceans	Regulator	• Jurisdictional responsibilities relate to the protection of fish and fish habitat as mandated by the Fisheries Act
Environment Canada	Regulator	• Jurisdictional responsibilities relate to the protection of migratory birds and species at risk as mandated by the Migratory Birds Convention Act, 1994, and the Species at Risk Act.
Aboriginal Communities	Active participant	• Provide input into the monitoring plan design • Active role in the implementation of the monitoring plan
Private Landowners	Active participant	• Active contributors of any biophysical-related monitoring information opportunistically encountered • Communicate with proponent regarding unanticipated Project effects
Public	Active participant	• Active contributors of any biophysical-related monitoring information opportunistically encountered

7.0 Reporting

The Biophysical Monitoring Plan will be developed by Manitoba Hydro and submitted to Manitoba Conservation for review and approval prior to the commencement of the Project construction phase. The monitoring plan and subsequent monitoring reports will be shared with regulators, stakeholders, aboriginal communities and the public. Monitoring plans and reports from monitoring programs will also be made available to all stakeholders on the Project website.

8.0 References

CEAA 2011. Canadian Environmental Assessment Agency. Accessed at: http://www.ceaa.gc.ca/default.asp?lang=En&n=081671C7-1&offset=7&toc=show

SARA 2011. Government of Canada's Species at Risk Act registry. Accessed at: http://www.sararegistry.gc.ca/approach/act/sara_e.pdf

APPENDIX I

Bipole III Transmission Project
Draft Environmental Protection Plan

Sample Environmental Inspection Forms

Bipole III Transmission Line Project
Transmission Line and Northern Collector System
Draft Environmental Protection Plan

Form No.

Daily Inspection Report Form No. _____

Name/Title of Inspector:				Date/Time:			
Location:				Contractor:			
Project Components/Activities (Check all that apply)							
	Transmission Line		Converter Station		Ground Electrode		Power Supply
	Construction Camp		Marshalling Yard		Access Road		Borrow Pit
	Fuel Storage		Stream Crossing		Buildings/Facilities		Other:
	Blasting				Erosion/Sediment Control		
	Burning				Grading		
	Clearing				Grubbing		
	Demobilizing				Rehabilitating		
	Disposing Wastes				Stripping		
	Draining				Surveying		
	Drilling/Boring				Other (specify):		
Environmental Protection Measures Applied:							
Effectiveness of Measures:							
Revisions to Measures:							
Non-Compliance Issues Identified:							
Follow-up Actions Taken:							
Weather Conditions:							
Description of Photos/Diagrams Attached:							
Notes:						Tailboard Complete:	
Inspector Signature:				Contractor Signature:			

Bipole III Transmission Line Project
Transmission Line and Northern Collector System
Draft Environmental Protection Plan

Form No.

Weekly Summary Report Form No. _____

Name of Inspector:	Title:
Report From: (date)	Report To: (date)
Project Activity Summary:	
Environmental Issues Summary:	
Highlights: (non-compliance/incidents)	
Follow-up Actions: (required/taken)	
Notes:	
Signature:	Date:

Bipole III Transmission Line Project
Transmission Line and Northern Collector System
Draft Environmental Protection Plan

Form No.

Monthly Summary Report Form No. _____

Name of Inspector:	Title:
Report For: (month)	Year:
Key Project Activities:	
Key Environmental Issues:	
List Any Non-Compliance/Incidents Reported:	
Non-Compliance/Incident	Reported to:
Follow-up Actions: (required/taken)	
Non-Compliance/Incident	Actions
Notes:	
Signature:	Date:

Bipole III Transmission Line Project
Transmission Line and Northern Collector System
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Form No.

Detailed Inspection Checklist Form

Name/Title of Inspector:		Date:
Location:		Time:
Contractor:		Contract No:
Weather Conditions:	Precip in Past 24 hr: mm/cm	Precip in Past week: mm/cm

Project Components:			
Transmission Line	Converter Station	Ground Electrode	Power Supply
Construction Camp	Marshalling Yard	Access Road	Borrow Pit
Fuel Storage	Stream Crossing	Buildings/Facilities	Other:

Inspection Checklists:

General Site Conditions	NA	Deficiency Observed	Actions Taken	Follow-up Required
Access Roads/Trails				
Right-of Way				
Construction Camp				
Borrow Pits				
Marshalling Area				
Sanitary Facilities				
Traffic Control				

Designated Areas	NA	Deficiency Observed	Actions Taken	Follow-up Required
Sanitary Waste				
Solid Waste				
Hazardous Waste				
Fuel Storage				
Materials Storage				
Equipment Service				
Parking				

Project Activities	NA	Deficiency Observed	Actions Taken	Follow-up Required
Blasting				
Burning				
Clearing				
Demobilizing				
Disposing				
Draining				
Drilling				

Erosion/Sediment Control	NA	Deficiency Observed	Actions Taken	Follow-up Required
Rutting Evident				
Erosion Evident				
Turbidity Evident				
Stockpile Conditions				
Drainage Swales				
Check Dams				
Silt Fences				
Erosion Control				
Re-vegetation	**NA**	**Deficiency Observed**	**Actions Taken**	**Follow-up Required**
Planting success				
Seeding success				
Invasive Species				
Erosion				
Other Conditions	**NA**	**Deficiency Observed**	**Actions Taken**	**Follow-up Required**

Deficiencies, Issues, Complaints, Incidents	Yes	No	Comments
Environmental Issues			
Health and Safety Issues			
Regulatory Issues			
Deficiencies Addressed			
Complaints			
Incidents			

Description of Photos/Diagrams Attached:
Contacts During Inspection:
Notes:

Inspector Signature:	Contractor Signature:

Bipole III Transmission Line Project
Transmission Line and Northern Collector System
Draft Environmental Protection Plan

Form No.

Environmental Incident Report Form

Location of incident		Date of incident	Time of incident
Project	Line designation/SCI/other	Department/contractor	
Name of Manitoba Hydro person responding to incident		Phone no.	

Incident reported to

	Organization (check)	Name	Date	Attended to
	Manitoba Conservation			
	Manitoba Hydro, Environmental Inspector			
	Manitoba Hydro, Licensing and Environmental Assessment			
	Manitoba Hydro, Construction Supervisor/Site Manager			
	Manitoba Hydro, Area Spill Response Coordinator			
	Others (specify)			

UTM Easting	UTM Northing	UTM Zone

Description of incident including conditions at the time such as weather:

Description of environmental effects:

Mitigation measures implemented:

Start date	Completion date

Status of incident (check)		Comments
	Open	
	Follow-up	
	Closed	

Cause of incident and preventative measures to be taken

Photos, diagrams attached (yes/no)

Prepared by	Phone no.	Fax no.	Date