

## **10.0 Environmental protection and follow-up**

### **10.1 Introduction**

Mitigation measures, monitoring and other follow-up actions identified in the effects assessment will be implemented through an Environmental Protection Program (EPP). Manitoba Hydro's EPP provides the framework for implementing, managing, monitoring and evaluating environmental protection measures consistent with regulatory requirements, corporate commitments, best practices and public expectations.

A Construction Environmental Protection Plan (CEnvPP) will be prepared and implemented under the environmental protection framework to address environmental protection requirements in a responsible manner.

The purpose of this environmental protection and follow-up chapter is to outline how Manitoba Hydro will implement and manage environmental protection measures and other follow-up actions, as well as regulatory and policy requirements and other commitments identified in this assessment. The EPP was developed in accordance with Manitoba Hydro's vision, goals and environmental policies.

### **10.2 Environmental protection guidance**

In addition to the CEnvPP that will be prepared for the Project, Manitoba Hydro has produced a number of corporate policies and procedures that relate directly or indirectly to environmental protection. Relevant policies and procedures including manuals, handbooks, rules and reports are outlined below. All of Manitoba Hydro's policies, procedures and guidelines work together under the umbrella of environmental protection program and plans to achieve environmental protection as well as the protection of employees and public safety and health.

#### **10.2.1 Corporate strategic plan**

Manitoba Hydro's Corporate Strategic Plan outlines its vision, operating principles, mission and goals. The corporate vision is:

to be recognized as a leading utility in North America with respect to safety, rates, reliability, customer satisfaction and environmental leadership.

## **10.2.2 Environmental management policy**

Manitoba Hydro's Environmental Management Policy states:

Manitoba Hydro is committed to protecting the environment by:

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

## **10.2.3 Hazardous materials management handbook**

Manitoba Hydro's Hazardous Materials Management Handbook (Manitoba Hydro 2016b) covers safe practices for managing hazardous materials to protect the health and safety of employees, the public and the environment. The handbook is divided into four parts:

- 1) spill response guidelines;
- 2) hazardous waste management guidelines;
- 3) managing PCBs; and
- 4) managing specific hazardous materials.

Health, safety and environmental protection protocols, emergency contacts and incident report forms are also provided in the handbook.

## **10.2.4 Fire manual**

The Manitoba Hydro Fire Manual (Manitoba Hydro 2016a) provides guidelines, rules and standards for the fire prevention and protection programs used to protect people and property in Manitoba Hydro. The manual provides this information for Manitoba Hydro's needs and to coordinate all design, construction, maintenance and operations of fire protection equipment throughout Manitoba Hydro. The manual consists of two parts; Part one contains operating and maintenance instructions for fire equipment and emergency programs used in the protection of Manitoba Hydro facilities. Questions, exemptions or requests for deviations pertaining to this section shall be directed to the Fire Marshal; and

Part two contains guidelines, rules and standards for fire prevention and protection required by the design and administrating personnel of the corporation including consultants and external agencies.

### **10.2.5 Transmission lines and transmission station vegetation management practices**

Manitoba Hydro's Transmission Lines and Transmission Station Vegetation Management Practices (Manitoba Hydro 2007) provide background information and a general understanding of Manitoba Hydro's transmission system vegetation management practices. This report describes Manitoba Hydro's vegetation control policy and practices, and outlines responsibilities, methods used, notification procedures and the overall management process.

## **10.3 Environmental protection program**

### **10.3.1 Overview**

Manitoba Hydro's EPP provides the framework for the delivery, management and monitoring of environmental and socio-economic protection measures that satisfy corporate policies and commitments, regulatory requirements, environmental protection guidelines and beneficial practices, and input during the Public Engagement Process and Indigenous Engagement Process.

The EPP:

- describes how Manitoba Hydro is organized;
- functions to deliver timely, effective, comprehensive solutions and mitigation measures to address potential environmental effects;
- defines roles and responsibilities for Manitoba Hydro employees and contractors; and
- outlines management, communication and reporting structures.

The EPP includes the "what, where and how" aspects of protecting the environment during the pre-construction, construction, operation and decommissioning of the Project.

### **10.3.2 Organization**

The organizational structure of the EPP includes senior Manitoba Hydro management, Project management and implementation teams that work together to provide timely and effective implementation of environmental protection measures identified in environmental protection plans. Manitoba Hydro senior management is responsible for the overall EPP, including resourcing, management and performance, and is accountable for regulatory compliance, policy adherence and stakeholder satisfaction.

The Environmental Protection Management Team is composed of senior Manitoba Hydro staff and is responsible for the management of environmental protection plans, including compliance with regulatory and other requirements, quality assurance and control, consultation with regulators, and related public and Indigenous engagement activities.

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 as required.

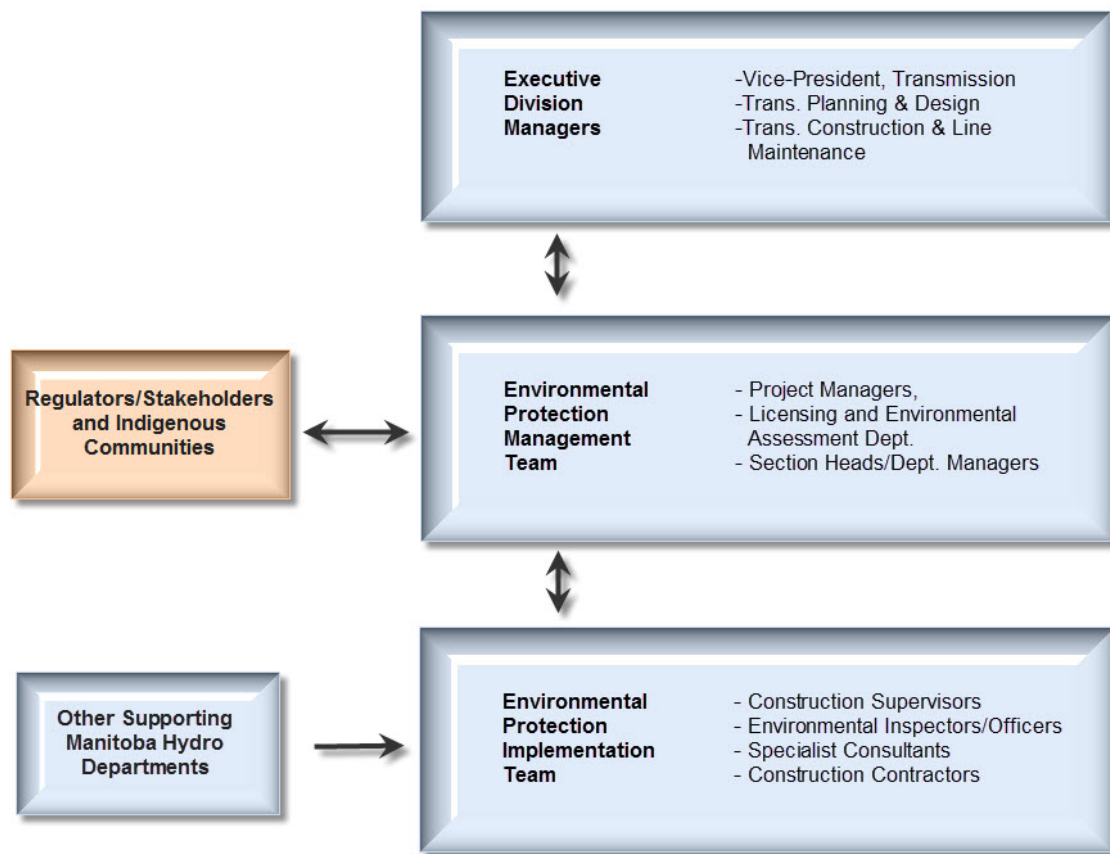


Figure 10-1: Environmental protection organizational structure

### 10.3.3 Resources

Manitoba Hydro commits resources early in the planning cycle to provide effective environmental assessment, mitigation and monitoring. Teams of engineers and environmental professionals develop preventative or avoidance mitigation measures that include design and routing alternatives. In addition, there are resource allocations for the delivery and implementation of specific environmental protection measures to meet corporate policy and government regulatory requirements.

Manitoba Hydro is committed to staffing the EPP with an environmental inspector and providing required support, including training, financial resources and equipment.

### **10.3.3.1 Roles and responsibilities**

The roles and responsibilities for delivery of the Project and implementation of environmental protection measures are as follows:

- the Construction Supervisor has overall responsibility for the implementation of the environmental protection plans and reports to a Section Head or Department Manager;
- the Licensing and Environmental Assessment Department oversees the development of environmental protection documents and associated inspection programs, including ongoing engagement activities;
- the construction contractor is responsible for ensuring work adheres to the environmental protection plans and reports to the Construction Supervisor;
- Environmental Inspectors have the primary responsibility to confirm that environmental protection measures and specifications are implemented as per the environmental protection plans as well as provide information and advice to the Construction Supervisor; and
- Manitoba Hydro Field Safety, Health and Emergency Response Officers are responsible for the development and execution of the safety program and Occupational Health and Safety practices at the various construction sites.

Other Manitoba Hydro employees, including engineers and technicians, provide information and advice to the Construction Supervisor.

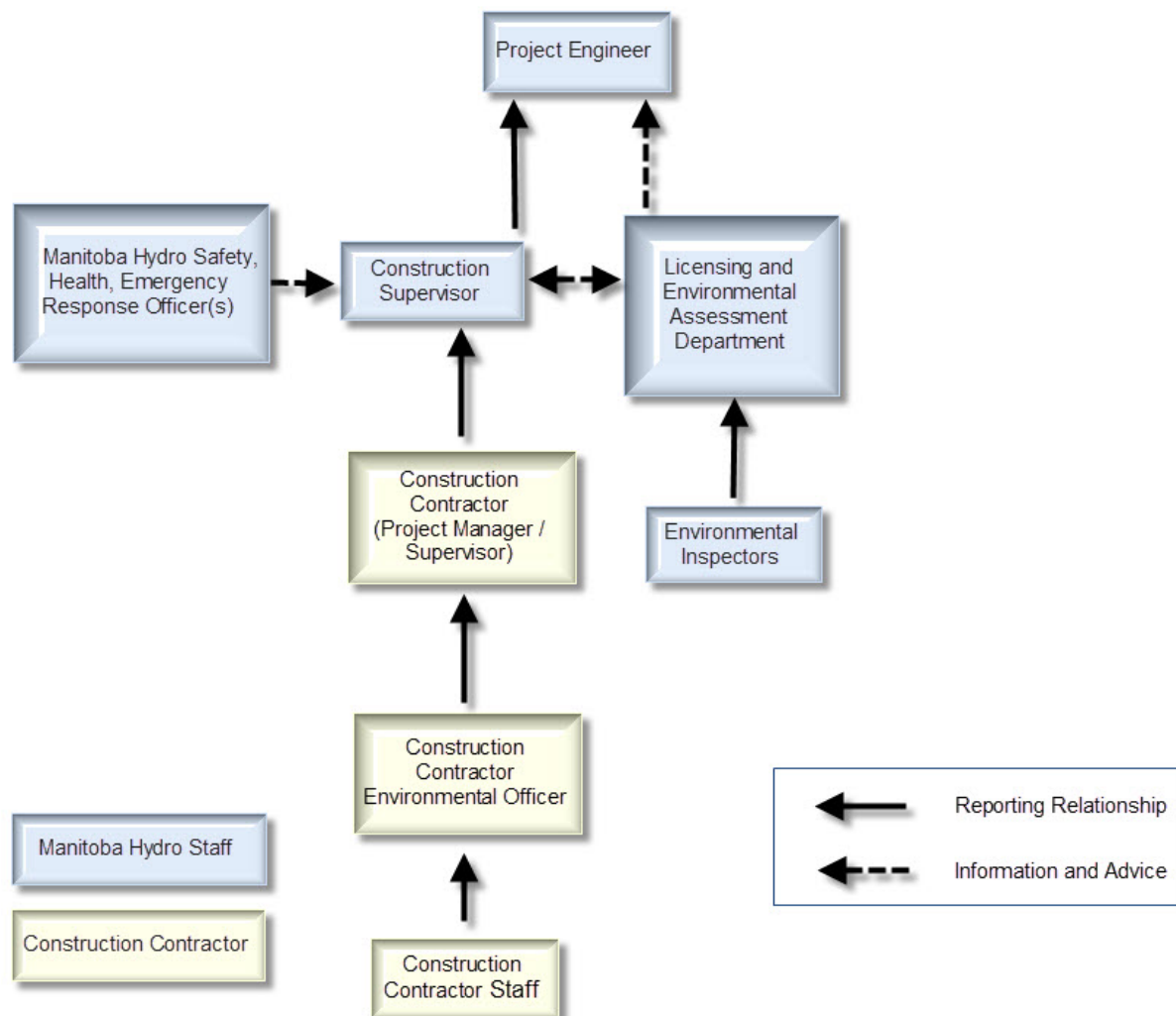


Figure 10-2: Typical organizational lines of reporting and communications

### 10.3.4 Communication and reporting

The construction supervisor and environmental inspectors will maintain ongoing communications with the contractor and contract staff. Inspection reports as well as incident, monitoring and other reports will be prepared and available on site for the regulators, contractors and Manitoba Hydro staff.

Manitoba Hydro will provide First Nations, the MMF and the public with ongoing opportunities to review and comment on the Project through a dedicated Project website.

The Environmental Protection Management Team will record and review formal enquiries or complaints for response or action.

### **10.3.5 Environmental protection plans**

Environmental protection plans document environmental protection measures to provide for compliance with regulatory and other requirements, and to achieve environmental protection goals consistent with corporate environmental policies. Manitoba Hydro designed the environmental protection plans as “user-friendly” reference documents that provide Project managers, construction supervisors and contractors with detailed lists of environmental protection measures and other requirements implemented in the design, construction and operation phases of a Project.

Manitoba Hydro organized the environmental protection measures by construction component and activity, and environmental component and issue to assist Project personnel in implementing measures for specific work sites and activities.

Manitoba Hydro will develop the environmental protection plans described in the following sections.

#### **10.3.5.1 Construction**

The Construction Environmental Protection Plan (CEnvPP) is a key element in implementing effective environmental protection and limiting the potential adverse environmental effects identified in the Environmental Assessment Report. It also outlines actions to identify unforeseen environmental effects and implement adaptive management strategies to address them. An important component of an environmental protection plan is review and updating. This allows environmental protection measures to remain current, continually improving environmental performance.

A CEnvPP is composed of general and specific environmental protection measures that cover all aspects of the work and the environment. General environmental protection measures for the Project include mitigation measures and follow-up actions identified in the EA Report, including design mitigation, provincial and federal regulatory requirements, beneficial practice guidelines, Manitoba Hydro environmental policies and commitments, and input during engagement.



The CEnvPP lists the general environmental protection measures for major components and activities associated with the Project.

#### **10.3.5.2 Decommissioning**

A Decommissioning Environmental Protection Plan will be prepared at the end of the Project's operational life and will contain decommissioning methods, waste and recycling management, and mitigation measures to address environmental effects and legislation that is in effect at that time.

#### **10.3.5.3 Cultural and heritage resources**

The fact that cultural and heritage resources have intrinsic value to Manitobans is understood by Manitoba Hydro and addressed through a separate protection plan. The Cultural and Heritage Resource Protection Plan (Appendix B) outlines protection measures in the event of the discovery of previously unrecorded cultural and heritage resources during construction. The attached is the latest version but Manitoba Hydro is continuously revising and updating its procedures in an adaptive manner to respond changes in work practices and technology.

### **10.3.6 Management plans**

Management involves the organization of activities and resources to resolve or respond to environmental problems, issues or concerns. Management plans provide reasoned courses of action to achieve pre-defined goals or objectives. Management plans will be prepared to address important management issues, regulatory requirements and corporate commitments identified in the environmental assessment report. The management plans will describe the management actions, roles and responsibilities, evaluation mechanisms, updating requirements and reporting schedules. The following management plans, if required, will be prepared for the Project:

- Blasting;
- Erosion Protection and Sediment Control;
- Emergency Preparedness and Response; and
- Waste and Recycling.

Environmental Inspectors will conduct regular inspections during construction to ensure adherence to the plans. The following sections describe each plan.

#### **10.3.6.1 Blasting plans**

The contractor will prepare blasting plans to manage the storage and use of explosives at construction sites in accordance with environmental protection measures, provincial and federal legislation and guidelines, and corporate policies for explosives.

#### **10.3.6.2 Emergency preparedness and response plans**

Each contractor will prepare an emergency preparedness and response plan to prepare for and respond to emergencies at construction sites in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment.

The plan will address:

- spills or releases of hazardous substances, including petroleum products;
- accidents involving hazardous substances;
- medical emergencies; and
- explosions and fire.

It will also include measures prescribed for the provision of emergency response planning, responsibilities, training, exercises, procedures, containment, and clean-up equipment and materials. Manitoba Hydro will adjust the plan based on annual reviews to provide continued effectiveness.

#### **10.3.6.3 Erosion protection and sediment control plans**

The contractor will develop an erosion protection and sediment control plan to limit 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.

The plan will prescribe environmental protection measures including:

- winter construction;
- establishment of buffer zones;
- avoidance of sensitive areas; and
- use of bioengineering techniques.

Manitoba Hydro will adjust the plan based on annual reviews to provide continued effectiveness.

#### **10.3.6.4 Waste and recycling management plans**

The contractor will develop a waste and recycling plan to manage wastes at work locations in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection of human health and the environment.

The plan will include measures for:

- waste reduction;
- recycling and reusing initiatives;
- recycling and disposal of construction wastes; and
- disposal of wastes at licensed facilities.

#### **10.3.7 Inspection program**

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 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 Environmental Inspectors to be onsite during construction activities. Manitoba Hydro's approach to environmental inspection includes:

- compliance with regulatory approvals;
- adherence to environmental protection plans;
- onsite environmental inspectors;
- training and education;
- regular monitoring and inspection during construction;
- interaction with contractors (e.g., pre-construction meeting, daily discussion);
- regular review of inspection and monitoring information;
- quick response to incidents or changing conditions;

- monthly summary reports;
- regular reporting to regulators; and
- notification of regulators of emergency or contingency situations.

Environmental inspectors will:

- visit active work sites to inspect for compliance with licence, permit or other approval terms and conditions, and adherence to environmental protection plan general and specific mitigation measures;
- report all instances of non-compliance to the Construction Supervisor, contractor and applicable regulatory authority;
- report incidents such as accidents, malfunctions, spills, fires, explosions and environmental damage to the Construction Supervisor and applicable regulatory authority;
- record all inspection activities and complete inspection forms; and
- provide inspection reports electronically to the Environmental Protection Information Management System (EPIMS; see below) for review and viewing by applicable Project staff.

### **10.3.8 Environmental protection information management system**

The Environmental Protection Information Management System (EPIMS) is an internal central repository of environmental protection information, including:

- environmental protection documents;
- reference information such as regulations and guidelines;
- inspection reports; and
- monitoring field data and reports.

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.

EPIMS is a tool that helps Manitoba Hydro monitor and report on environmental protection implementation, regulatory compliance and incident reporting. EPIMS will be the

mechanism to provide reporting and tracking of environmental protection performance, and the foundation of an auditable EPP.

## **10.4 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 licenses, permits, authorizations and other approvals, including property agreements, and releases, prior to commencement of construction. Additional terms and conditions of these approvals will be incorporated into the Construction Environmental Protection Plan. Additional approval requirements to be obtained by the contractors will be identified and communicated to the successful bidders.

Meetings will be held with the contractors to review the environmental protection requirements, establish roles and responsibilities, management, monitoring and other plans, inspection and reporting requirements, and other submittals. Prior to the start of construction, contractor employees will be trained and/or oriented on environmental protection requirements.

## **10.5 Work stoppage**

The duty to stop work rests with everyone encountering situations where the environment, including biophysical, socio-economic and heritage resources, are threatened by an activity or occurrence that has not been previously identified, assessed and mitigated. Work stoppage is also to occur in the event of an environmental accident, extreme weather event or exposed human remains. Individuals discovering such situations are to inform their supervisor who will report the matter to the Construction Supervisor immediately who will issue a stop work order. The contractor is also required to stop work voluntarily where construction activities are adversely affecting the environment or where mitigation measures are not effective in controlling environmental effects. Remedial action plans or other environmental protection measures will be developed and implemented immediately after discussion and prior to resumption of work if previously halted. Work is not to resume until the situation has been assessed and responded to and the Construction Supervisor

approves the resumption of work. Stop work orders will be documented, reported to regulatory authorities (if applicable) and reviewed at construction meetings.

## **10.6 Emergency and contingency response**

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

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

## **10.7 Reviewing and updating**

### **10.7.1 CEnvPP reviews**

The Construction Environmental Protection Plan may be reviewed annually by Manitoba Hydro and may involve consultation with contractors, regulators and stakeholders. The results of each review will be summarized in a report that documents the issues addressed and provides recommended updates to the CEnvPP.

### **10.7.2 Incident reviews**

CEnvPPs will be subject to review in the event of an incident, including environmental accidents, fires and explosions, reportable releases of hazardous substances and non-compliance situations.

### **10.7.3 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 may be subject to internal and external audits through Manitoba Hydro's ISO 140001 Registration process. 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.

### **10.7.4 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 and dates.

## **10.8 Environmental considerations**

Important environmental considerations for pre-construction planning and construction activities are required at environmental sensitive sites (ESS; if applicable), which include locations, features, areas, activities or facilities that were identified to be ecologically, socially, economically or culturally important or sensitive to disturbance. These ESS require protection and mitigation during construction.

### **10.8.1 Timing windows**

#### **10.8.1.1 Wildlife**

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

The recommended Reduced Risk Timing Windows table demonstrates periods of the year when wildlife species are sensitive to disruptive operations because of a sensitive lifecycle

activity such as calving, nesting, and hibernation, etc. Appendix C 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.

## **10.8.2 Burning**

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

## **10.8.3 Setbacks and buffers for wildlife and anthropogenic features**

Setbacks and buffer distances from sensitive environmental features are provided in Appendix D. These setbacks and buffers may be expanded or refined based on further data collection, regulatory license and work permits to be issued for the Project. Setbacks are areas to be maintained from a given environmental feature where no work shall occur unless authorized by the Senior Environmental Assessment Officer. Buffers are work areas where restricted activities such as low disturbance clearing are permitted. Site specific setback and buffers are prescribed in specific mitigation measures.

## **10.8.4 Agriculture**

### **10.8.4.1 Agricultural biosecurity**

Manitoba Hydro's Agricultural Biosecurity Policy was created to prevent the introduction and spread of disease, pests and invasive plant species in agricultural land and livestock operations. Manitoba Hydro employees and contractors will follow this corporate policy and the Transmission Business Unit Agricultural Biosecurity Standard Operating Procedures (SOP) found in Appendix E. The attached is the latest version. Manitoba Hydro is continuously revising and updating its procedures in an adaptive manner to respond changes in work practices and technology.

The Transmission SOP and the training associated with it apply to all the employees of Manitoba Hydro's Transmission Business Unit as well as external individuals such as



contractors or consultants who conduct work on behalf of the Transmission Business Unit. The SOP also includes procedures to provide guidance and direction to staff and contractors/consultants who may be required to enter agricultural land and the levels of cleaning necessary to reduce the likelihood of transport of invasive species, pests or disease.

### **10.8.5 Soils**

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

## **10.9 Environmental mitigation requirements**

Contractors and Manitoba Hydro staff must follow all mitigation measures identified to protect the environment. The following mitigation measures, if required, will be adhered to.

### **10.9.1 General mitigations**

Construction considerations required for all Project areas are considered general mitigation and are applicable to all construction areas. The general mitigation measures are provided under the following five categories:

- 1) Management (MM);
- 2) Project Activity (PA);
- 3) Project Component (PC);
- 4) Environment Component (EC); and
- 5) Environmental Issue (EI),

as follows:

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

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

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

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

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

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## Access roads and trails (PC-1)

ID	Mitigation
PC-1.01	Access roads and trails no longer required will be decommissioned and rehabilitated in accordance with the Rehabilitation and Invasive Species Management Plan.
PC-1.02	Access roads and trails required for future monitoring, inspection or maintenance will be maintained.
PC-1.03	Access roads and trails will be constructed to a minimum length and width to accommodate the safe movement of construction equipment.
PC-1.04	Access roads and trails will be located, constructed, operated and decommissioned in accordance with contract specifications.
PC-1.05	Access roads and trails will be provided with erosion protection and sediment control measures in accordance with the Erosion Protection and Sediment Control Plan.
PC-1.06	All season access roads will not be permitted within established buffer zones and setback distances from waterbodies, wetlands, riparian areas and water bird habitats.
PC-1.09	Contractor will be restricted to established roads and trails, and cleared construction areas.
PC-1.10	During winter construction, where necessary (i.e. unfrozen wetlands, creeks), equipment will be wide-tracked or equipped with high flotation tires to minimize rutting and limit damage and compaction to surface soils.
PC-1.14	No chemical melting agents are to be utilized.
PC-1.15	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
PC-1.19	Surface water runoff will be directed away from disturbed and erosion prone areas but not directly into waterbodies.
PC-1.23	The Contractor shall check that rock utilized for access road construction does not have acid or alkali generating properties.
PC-1.24	All constructed access points onto Manitoba Infrastructure and Transport (MIT) roadways (Provincial Roads or Provincial Trunk Highways) will require a permit from MIT.
PC-1.25	Heavy equipment will not be allowed access to MIT roadways without the appropriate protection and permits.
PC-1.26	Access Roads and Trails that use or cross MIT roadways care will be taken to ensure excessive amounts of material are not tracked onto the roadway, with contractor being responsible for clean-up.
PC-1.27	Any temporary constructed access within an MIT roadway will need to be removed once the Project is completed.
PC-1.28	All works undertaken within the MIT right-of-way (ROW) will adhere to the MIT traffic control policies.

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**Agricultural areas (EC-1)**

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

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**Borrow pits and quarries (PC-2)**

ID	Mitigation
PC-2.01	Access to abandoned borrow pits and quarries will be managed in accordance with the Access Management Plan.
PC-2.02	All equipment and structures will be removed from borrow pits prior to abandonment.
PC-2.03	Borrow pits and quarries will be designed, constructed and operated in compliance with provincial legislation and guidelines.
PC-2.04	Borrow pits and quarries will not be located within 150 m of a provincial trunk highway or provincial road unless an effective vegetated berm is provided to shield the area from view.
PC-2.05	Borrow pits and quarries will not be located within established buffer zones and setback distances from identified Environmentally Sensitive Sites.
PC-2.06	Drainage water from borrow pits and quarries will be diverted through vegetated areas, existing drainage ditch(s) or employ a means of sediment control prior to entering a waterbody.
PC-2.07	Erosion protection and sediment controls will be put in place before borrow pit excavation commences, when required as determined by the Environmental Inspector.

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**Borrow pits and quarries (PC-2)**

PC-2.08	Fuel storage will not be permitted near stockpiles outlined in PC 5.21.
PC-2.09	Garbage, debris or refuse will not be discarded into borrow pits and quarries.
PC-2.10	Only water and approved dust suppression products will be used to control dust on access roads where required. Oil or petroleum products will not be used.
PC-2.11	Organic material, topsoil and subsoil with-in borrow pits and quarries will be stripped and stockpiled for use in future site rehabilitation.
PC-2.12	Previously developed borrow sites and quarries will be used to the extent possible before any new sites are developed.
PC-2.13	Signs will be posted at borrow pits and quarries to warn all persons of safety hazards.
PC-2.14	Surface drainage will be redirected away from the borrow pits and quarries before excavation commences.
PC-2.15	Vegetated buffer areas will be left in place when borrow pits are cleared in accordance with provincial guidelines.
PC-2.18	Worked out borrow pits and granular quarries will be left with maximum 4:1 (horizontal to vertical) side slopes.
PC-2.24	The Blasting Contractor shall check that blast rock does not have acid or alkali generating properties.

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**Built-up and populated areas (EC-2)**

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

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**Concrete wash water (EI-10)**

ID	Mitigation
EI-10.01	Washwater and solids will not be discharged onto the ground at the Project site.
EI-10.02	All concrete solids and washwater will be collected and removed from the Project site by the concrete supplier or treated on site in an approved settling pond.
EI-10.05	High Density Polyethylene geomembrane liners and either earth or physical berms may be used for a temporary concrete washout pond for uncured or partially cured concrete.
EI-10.06	All water from chute washing activities will be contained in leak proof containers.
EI-10.08	All water used for wash out purposes and associated activities will be disposed in an

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**Concrete wash water (EI-10)**

	appropriately sized settling pond(s) treated to meet turbidity (Total Suspended Solids [TSS]) and pH requirements prior to discharge. Turbidity will be treated by settlement or filtration; pH will be treated by use of acid, dry ice, carbon dioxide gas or other methods.
EI-10.09	All water used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 1) for municipal wastewater effluents of 25 mg/L TSS prior to discharge.
EI-10.10	All water used for wash out purposes and associated activities will be treated to meet the Manitoba Water Quality Standards, Objectives, and Guidelines (Tier 3) for the protection of aquatic life for pH 6.5-9.0, prior to discharge.
EI-10.12	Cured concrete can be disposed of in non-hazardous waste containers and disposed of at a licensed facility.
EI-10.13	Any uncured and partly cured concrete will be kept isolated from watercourses/ditches.

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**Demobilizing and clean-up (PA-4)**

ID	Mitigation
PA-4.01	Temporary buildings, structures, trailers, equipment, utilities, waste materials, etc will be removed from construction areas and sites when work is completed.
PA-4.02	Construction access roads/trails that are no longer required will be decommissioned and rehabilitated to prevent access.
PA-4.03	Construction areas and sites will be rehabilitated and re-vegetated as appropriate immediately after demobilizing and clean-up.
PA-4.05	Petroleum product and other hazardous substances storage areas will be cleaned-up, assessed and, if necessary, remediated in accordance with provincial guidelines and Manitoba Hydro guidelines.
PA-4.06	Stream crossings and drainages will be left free of obstructions so as not to impede natural runoff.

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**Draining (PA-5)**

ID	Mitigation
PA-5.01	Construction activities shall not block natural drainage patterns.
PA-5.02	Culverts will be installed and maintained in accordance with Manitoba Stream Crossing Guidelines and relevant provincial and municipal acts, regulations and bylaws.
PA-5.03	Dewatering discharges from construction activities will be directed into vegetated areas, existing drainage ditch(s) or a means of sediment control at such a rate that will have adequate flow dissipation at the outlet to ensure it does not cause erosion at the discharge point or at any point downstream.
PA-5.04	Drainage water from construction areas will be diverted through vegetated areas, existing

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### Draining (PA-5)

	drainage ditch(s) or a means of sediment control prior to entering a waterbody.
PA-5.05	Erosion protection and sediment control will be provided in accordance with the Erosion Protection and Sediment Control Plan.
PA-5.06	Existing, natural drainage patterns and flows will be identified and maintained to the extent possible.
PA-5.07	No debris or slash is allowed to be placed in drainage channels/ditches.
PA-5.14	Flows to Manitoba Infrastructure and Transport (MIT) roadway drains and ditches will not be altered by construction (increased flow, de-watering and other flow effects) without department approval in advance.
PA-5.15	All drainage, natural or manmade that may deposit construction generated sediments on the MIT roadway right-of-way will be managed through Erosions and Sediment Control Plans.

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### Drilling (PA-6)

ID	Mitigation
PA-6.01	Abandoned drill holes will be sealed with bentonite or other effective sealers to prevent interconnection and cross-contamination of ground and surface waters.
PA-6.02	Drilling activities in northern Manitoba will be carried out under frozen ground conditions to minimize damage to surface vegetation, soils and permafrost to the extent possible.
PA-6.03	Drilling equipment and machinery will not be serviced within 100 m of waterbodies or riparian areas.
PA-6.04	Drilling fluids and waste materials will be contained and not allowed to drain into waterbodies, riparian areas or wetlands.
PA-6.05	Drilling in environmentally sensitive sites, features and areas will not be permitted unless approved in advance by Environmental Inspector and mitigation measures are implemented.
PA-6.07	Drilling will not be permitted within established buffer zones and setback distances from waterbodies.
PA-6.08	Spill control and clean-up equipment will be provided at all drilling locations.
PA-6.09	The drilling contractor will ensure that equipment and materials are available on site for sealing drill holes.
PA-6.10	The drilling contractor will inspect drilling equipment and machinery for fuel and oil leaks prior to arrival at the Project site, and will inspect for fuel and oil leaks and spills regularly.
PA-6.11	Where there is potential for mixing of surface and groundwater, precautions will be taken to prevent the interconnection of these waters.



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**Emergency response (EI-2)**

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

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**Erosion protection and sediment control (EI-3)**

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

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**Grading (PA-7)**

ID	Mitigation
PA-7.01	A thick gravel layer (1.2 m) or compacted snow layer (0.6 m) will be used in temporary workspaces or marshaling yards where required to prevent damage to surface materials.
PA-7.02	Grading for gravel pads for construction areas and access roads will be limited to areas where it is needed for the safe and efficient operation of vehicles, machinery and construction equipment.
PA-7.04	Grading will not be permitted within established buffer zones and setback distances from waterbodies.
PA-7.05	Grading will only be permitted within rights-of-ways and construction areas.
PA-7.06	Gravel pads will be graded so the surface runoff is directed away from waterbodies, riparian areas and wetlands.

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### Grading (PA-7)

PA-7.07	Required erosion protection and sediment control measures will be put in place prior to grading in accordance with the Erosion Protection and Sediment Control Plan.
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### Groundwater (EC-4)

ID	Mitigation
EC-4.01	Potable water samples will be collected every two weeks and submitted for analysis according to provincial sampling and analysis protocol.
EC-4.02	Well location will be marked with flagging tape prior to construction.
EC-4.03	Where there is potential for mixing of surface and groundwater, precautions will be taken to prevent the interconnection of these waters.

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### Grubbing (PA-8)

ID	Mitigation
PA-8.01	Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques.
PA-8.02	Construction areas requiring extensive grubbing will be stabilized as soon as possible to minimize erosion.
PA-8.03	Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils.
PA-8.04	Grubbing will not be permitted within 2 m of standing timber to prevent damage to root systems and to limit the occurrence of blow down.
PA-8.05	Grubbing will not be permitted within established buffer zones and setback distances from waterbodies.
PA-8.06	Stockpiled materials from grubbing will not block natural drainage patterns.
PA-8.07	Unless required for the work, the extent of grubbing will be minimized to the extent possible.
PA-8.08	When not under frozen conditions, erosion protection and sediment control measures will be put in place prior to grubbing in accordance with the Erosion Protection and Sediment Control Plan.
PA-8.09	Windrows of grubbed materials will be piled at least 15 m from standing timber.
PA-8.10	If grubbing is needed on a Manitoba Infrastructure and Transport roadway (MIT) right-of-way, clearance must be obtained from MIT in advance.

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**Hazardous materials (EI-4)**

ID	Mitigation
EI-4.02	Access to hazardous materials storage areas will be restricted to authorized and trained Contractor and Manitoba Hydro personnel.
EI-4.03	An inventory of WHMIS controlled substances will be prepared by the Contractor and maintained at each Project site and updated as required by provincial legislation.
EI-4.04	Bulk waste oil will be stored in approved aboveground tanks provided with secondary containment in accordance with provincial legislation.
EI-4.05	Containers of hazardous materials stored outside will be labeled, weatherproof, placed on spill containment pallets and covered by a weatherproof tarp.
EI-4.06	Contractor personnel will be trained and certified in the handling of hazardous materials including emergency response procedures in accordance with provincial legislation.
EI-4.07	Contractor personnel will receive WHMIS training in accordance with provincial legislation.
EI-4.09	Empty hazardous waste containers will be removed to a licensed or approved disposal site by the contractor.
EI-4.10	Hazardous materials storage sites will be secured, and signs will be posted that include hazard warnings, contacts in case of a release, access restrictions and under whose authority the access is restricted.
EI-4.11	Hazardous materials will be adequately contained and will be protected from wind and rain to prevent deposition of fine particles or dust into watercourses through runoff.
EI-4.12	Hazardous materials and WHMIS inventories will be completed prior to construction. Inventories will be updated in accordance with regulatory requirements and Manitoba Hydro policies.
EI-4.13	Hazardous substances management procedures will be communicated to all Project staff and a copy will be made available at the Project site.
EI-4.14	Hazardous substances storage areas will be located a minimum of 100 m from the ordinary high water mark of a waterway and above the 100-year flood level.
EI-4.15	Hazardous substances will be transported, stored and handled according to the procedures prescribed by provincial legislation and Manitoba Hydro policies.
EI-4.16	Hazardous waste materials will be segregated and stored by type.
EI-4.17	Indoor storage of flammable and combustible substances will be in fire resistant and vented enclosed storage area or building in accordance with national codes and standards.
EI-4.19	Non-hazardous products will be used in place of hazardous substances to the extent possible.
EI-4.20	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include hazardous substance awareness.
EI-4.21	Pesticide storage will be in accordance with provincial legislation and Manitoba Hydro guidelines.
EI-4.22	The Contractor will be responsible for the safe use, handling, storage and disposal of hazardous materials including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-4.23	The Contractor will monitor containers of hazardous substance containers regularly for

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**Hazardous materials (EI-4)**

	leaks and to ensure that labels are displayed.
EI-4.24	The Environmental Inspector will make routine inspections of hazardous substance storage sites to ensure that environmental protection measures are implemented and effective.
EI-4.25	Waste oil will be transported by licensed carriers to licensed or approved waste oil recycling facilities.
EI-4.26	Wet batteries will be stored and transported to licensed or approved waste recycling facilities.

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**Heritage resources (EC-5)**

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

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**Management measures (MM)**

ID	Mitigation
MM-01	All licenses, permits, contracts, Project specifications, guidelines and other applicable documents will be obtained and in the possession of both the Contractor and Manitoba Hydro prior to commencement of work.
MM-02	All Project participants will ensure that Project activities are carried out in compliance with applicable legislation, guidelines and, contractual obligations and environmental protection plan provisions.

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**Management measures (MM)**

MM-03	Environmental concerns will be identified and discussed at planning meetings on an as required basis.
MM-05	Manitoba Hydro will contact local municipal authorities prior to Project start-up.
MM-08	Manitoba Hydro will meet the Contractor at the beginning of each new contract to review environmental protection requirements including mitigation measures, inspections and reporting.
MM-11	Project construction update meetings will be held weekly for the ongoing review of environmental and safety issues.
MM-12	Relevant documents including licenses, permits, approvals, legislation, guidelines, environmental protection plans, orthophotos maps, etc. will be made available to all Project participants.
MM-13	Response to enforcement actions by regulatory authorities will be in accordance with Manitoba Hydro policy P602.
MM-14	The Contractor will obtain all licenses, permits, contracts and approvals other than those that are Manitoba Hydro's responsibility prior to Project start-up.
MM-15	The Contractor will review terms and conditions of all authorizations, contract specifications, agreements, etc prior to Project start-up or as authorization are acquired and will discuss any questions or concerns with Manitoba Hydro.
MM-16	During construction activities the contractor must provide Manitoba Hydro representatives with full and unrestricted access to all Project related work areas so that inspections can occur

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**Marshaling yards (PC-5)**

ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.02	Emergency Preparedness and Response Plan and procedures for marshaling yards will be developed.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.04	Fire breaks will be established a minimum of six meters around marshaling yards in areas where there is a risk of fire.
PC-5.05	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved Waste Management Facilities site.
PC-5.06	Hazardous materials entering and leaving the marshaling yards will be inventoried and accounted for.
PC-5.07	Hazardous materials will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Marshaling yards will be located based on criteria that consider soils, topography, land form

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**Marshaling yards (PC-5)**

	type, permafrost, wildlife habitat and other environmental factors.
PC-5.09	Marshaling yards will be located in existing clearings or natural openings.
PC-5.11	Once marshaling yards are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.12	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.
PC-5.13	Petroleum products will only be stored, handled and dispensed in designated areas within marshaling yards in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within marshaling yards.
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within marshaling yards.
PC-5.18	Hazardous waste materials, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste management facilities by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.

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**Petroleum products (EI-5)**

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

## Petroleum products (EI-5)

	phase of the Project. No underground tanks will be permitted.
EI-5.11	Orientation for Contractor and Manitoba Hydro employees working in construction areas will include petroleum product storage and handling awareness.
EI-5.12	Petroleum product dispensing systems will be secured and locked by authorized personnel when not in use by authorized personnel.
EI-5.13	Petroleum product inventories will be taken weekly by the owner/operator on all aboveground tanks greater than 5,000 L and retained for inspection by Manitoba Hydro or Manitoba Sustainable Development upon request.
EI-5.14	Petroleum product storage containers in excess of 230 L will be located on level ground and will incorporate secondary containment with a capacity of 110% of the largest container volume. Water collected in the containment shall be removed regularly so as not to diminish the capacity of the containment.
EI-5.15	Petroleum product storage sites and mobile transportation units will be equipped with fire suppressant equipment and products.
EI-5.16	Petroleum product storage tanks will be protected from vehicle collisions by concrete filled bollards.
EI-5.17	Petroleum product storage will be located a minimum of 100 m from the ordinary high water mark of waterbodies, riparian areas or wetlands.
EI-5.18	Petroleum products stored outside will be in waterproof and labeled containers, placed on spill containment pallets.
EI-5.20	Petroleum products will display required signage, placards and labeling, and will be transported, handled and stored in accordance with provincial legislation.
EI-5.21	Petroleum products will only be stored and handled within designated areas at construction camps and marshaling yards.
EI-5.22	Portable petroleum product storage containers will be placed on spill trays with a capacity of 110% of the largest container when not in use. Water collected in the containment shall be removed regularly so as not to diminish the capacity of the containment.
EI-5.23	Slip tanks and barrels will be securely fastened to the vehicle during transport and fuelling operations.
EI-5.24	Spill control and clean-up equipment and materials will be available at all petroleum product storage and dispensing locations.
EI-5.25	Spill trays will remain impervious at very low temperatures (-45 °C) and have accumulated precipitation removed regularly.
EI-5.26	The Contractor will be responsible for the safe use, handling, storage and disposal of petroleum products including waste as well as procedures for emergency conditions in accordance with provincial and federal legislation and standards.
EI-5.27	The Contractor will inspect all petroleum product storage tanks and containers regularly for leaks, and product inventories will be recorded and retained for inspection by Manitoba Hydro and Manitoba Sustainable Development.
EI-5.28	There will be no ignition sources in and adjacent to petroleum product storage areas.
EI-5.29	Transfer of petroleum products between storage areas and work sites will not exceed daily



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**Petroleum products (EI-5)**

	requirements and will be in accordance with provincial legislation and guidelines.
EI-5.30	Used petroleum products (including empty containers) will be collected and transported to a licensed oil recycling facility in approved storage containers.
EI-5.31	Vehicles hauling petroleum products will carry equipment and materials for emergency spill containment and clean-up.
EI-5.32	Warning signs will be posted in visible locations around petroleum product storage areas. Signs will indicate hazard warning, contact in case of a spill, access restrictions and authority.
EI-5.33	All slip tanks are to have a double walled design.

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**Potable water (EI-11)**

ID	Mitigation
EI-11.01	Drinking water holding tanks will be designed for potable water containment.
EI-11.02	Drinking water holding tanks will be cleaned and disinfected before use.
EI-11.03	Potable water used to fill the drinking water holding tanks will be in compliance with federal legislation.
EI-11.04	Potable water will be conserved by personnel at the site.
EI-11.05	Leaking fixtures will be repaired in a timely manner.

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**Rehabilitating and re-vegetation (PA-9)**

ID	Mitigation
PA-9.02	Natural re-vegetation will be allowed to occur although active rehabilitation programs may be required at specific sites where erosion warrants seeding or planting.
PA-9.03	Organic material, topsoil and subsoil stripped from construction areas will be stockpiled and protected to be used for future site rehabilitation.
PA-9.04	Rehabilitation of construction areas will incorporate erosion protection and sediment control measures in accordance with the Erosion and Sediment Control Plan as required.
PA-9.05	Rehabilitation Plans will include objectives for restoration of natural conditions, erosion protection, sediment control, non-native and invasive plant species management, wildlife habitat restoration and restoration of aesthetic values as required.
PA-9.06	Where appropriate, regional native grass mixtures will be used to assist re-vegetation of disturbed areas to control erosion or prevent invasion of non-native species. The mixtures will not contain non-native or invasive species.

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**Safety and health (EI-6)**

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

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**Soil contamination (EI-7)**

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

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**Soil contamination (EI-7)**

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effective.

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**Staging areas (PC-5)**

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ID	Mitigation
PC-5.01	Contractor employees responsible for receipt and distribution of hazardous substances will be trained in handling and transportation of dangerous goods, and WHMIS.
PC-5.03	Erosion protection, sediment control and drainage management measures will be put in place prior to construction.
PC-5.04	Fire breaks will be established a minimum of six meters around staging and work storage areas where there is a risk of fire.
PC-5.05	Garbage and debris will be stored in approved containers, sorted for recycling and disposed of at a licensed or approved waste management facility site.
PC-5.06	Hazardous materials entering and hazardous wastes leaving the staging and work storage areas will be inventoried and provided to Manitoba Hydro.
PC-5.07	Hazardous materials will be stored in accordance with provincial legislation, and provincial and national codes and standards.
PC-5.08	Staging and work storage areas will be located based on criteria that consider soils, topography, land form type, wildlife habitat and other environmental factors.
PC-5.11	Once staging and work storage areas are no longer required, structures, equipment, materials, fences, etc. will be dismantled and moved to storage or a new location.
PC-5.12	Organic material, topsoil and sub-soil stripped during site preparation will be stockpiled separately for later use in site rehabilitation.
PC-5.13	Petroleum products will only be stored, handled and dispensed in designated areas within staging and work storage areas in accordance with provincial legislation and guidelines.
PC-5.14	Spill control and clean-up equipment to be located at designated areas within staging and work storage areas.
PC-5.17	Vehicle, machinery and equipment maintenance and repairs will be carried out in designated areas within staging and work storage areas.
PC-5.18	Hazardous waste materials, fuel containers and other materials will be stored in approved containers and transported to licensed or approved waste management facility by a licensed carrier.
PC-5.19	Welding mats will be used to minimize the risk of fire.
PC-5.20	The Site Environmental Officer will inspect rehabilitated staging and work storage areas in accordance with the site Rehabilitation and Vegetation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required.

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**Stripping (PA-10)**

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

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**Vehicle and equipment maintenance (EI-9)**

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

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**Waste management (EI-10)**

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

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**Wildlife protection (EC-9)**

ID	Mitigation
EC-9.04	Clearing is allowed only within the Reduced Risk Time Period for Wildlife illustrated in Appendix C. If clearing within the Sensitive Time Period for Wildlife, further mitigation and approvals would be required.
EC-9.05	Construction activities will not be carried out during prescribed timing windows for wildlife species.
EC-9.07	Hunting and harvesting of wildlife by Project staff will not be permitted while working on the Project sites.
EC-9.09	Manitoba Sustainable Development will be notified if animal traps are encountered and must be removed for Project activities.
EC-9.10	Manitoba Sustainable Development and Fisheries and Oceans Canada will be notified if beaver dams must be cleared along rights-of-way and access roads and trails.
EC-9.11	No firearms will be permitted at construction sites.
EC-9.12	Orientation for Contractor and Manitoba Hydro employees will include awareness of environmental protection measures for wildlife and wildlife habitat.
EC-9.13	Problem wildlife will be reported immediately to Manitoba Sustainable Development.
EC-9.15	Trees containing large nests of sticks and areas where active animal dens or burrows are encountered will be left undisturbed until unoccupied. Artificial structures for nesting may be provided if unoccupied nests must be removed.
EC-9.16	Vehicles will not exceed posted speed limits and wildlife warning signs may be installed in high density areas and at known crossings locations as a result of wildlife monitoring.
EC-9.18	Wildlife and wildlife habitat will be protected in accordance with provincial and federal legislation and provincial and federal guidelines.
EC-9.19	Wildlife will not be fed, befriended or harassed at construction areas.

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**Wildlife protection (EC-9)**

EC-9.23	New occurrences of any listed rare, threatened or endangered species will be documented and provided to Manitoba Sustainable Development.
EC-9.21	Understory vegetation will be managed at access routes to limit line of sight.
EC-9.22	New by-pass trails and access routes will be sited where possible to utilize existing natural terrain features and existing vegetation to minimize line of site.
EC-9.23	New occurrences of any listed rare, threatened or endangered species will be documented and provided to Manitoba Sustainable Development.

## **10.10 Summary**

This chapter of the environmental assessment report described the environmental protection program for the proposed De Salaberry East Station Project and how environmental protection measures will be implemented. Manitoba Hydro's environmental protection guidance materials are described. Mitigation measures and follow-up actions identified in the report are summarized by Project phase.