

LAKE MANITOBA LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA TRANSPORTATION AND
INFRASTRUCTURE

Construction Environmental Management Program

June 30, 2022

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DISCLAIMER

This document was developed to support the Environmental Management Program (EMP) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). It has been prepared by Manitoba Transportation and Infrastructure as a way to share information and facilitate discussions with Indigenous rights-holders, stakeholders and the public. It has been prepared using existing environmental and engineering information and professional judgement, as well as information from previous and ongoing public and Indigenous engagement and consultation. The contents of this document are based on conditions and information existing at the time the document was prepared and do not take into account any subsequent changes. The information, data, recommendations, and conclusions in this report are subject to change as the information has been presented as draft. This draft plan should be read as a whole, in consideration of the entire EMP, and sections or parts should not be read out of context.

Revisions to draft plans have been informed by and will be based on information received from the engagement and consultation process, the Environmental Assessment process, Project planning activities, and on conditions of provincial and federal environmental regulatory approvals received for the Project. As these will be living documents, any changes to the plans that occur after Project approvals are received will be shared with regulators, Indigenous rights-holders and stakeholders prior to implementation of the change. Either a revision number or subsequent amendment would be added to the specific environmental management plan to communicate the revision or change.

PREFACE

The Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the Project) is proposed as a permanent flood control mitigation for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region of Manitoba. It will involve the construction and operation of two new diversion channels: the Lake Manitoba Outlet Channel (LMOC) will connect Lake Manitoba to Lake St. Martin and the Lake St. Martin Outlet Channel (LSMOC) will connect Lake St. Martin to Lake Winnipeg. Associated with these outlet channels are the development of bridges, control structures with power connections, a new realignment of Provincial Road (PR) 239, and other ancillary infrastructure.

Manitoba Transportation and Infrastructure is the proponent for the proposed Project. After receipt of the required regulatory approvals, Manitoba Transportation and Infrastructure will develop, manage and operate the Project. This Construction Environmental Management Program (CEMP) is one component of the overall Environmental Management Program (EMP) framework, which describes the environmental management processes that will be followed during the construction and operation phases of the Project. The intent of the EMP is to facilitate the timely and effective implementation of the environmental protection measures committed to in the Project Environmental Impact Statement (EIS), the requirements and conditions of the provincial licence issued under The *Environment Act*, the federal Decision Statement issued under the *Canadian Environmental Act 2012*, and other approvals received for the Project. This includes the verification that environmental commitments are implemented, monitored, evaluated for effectiveness, and adjustments made if/as required. It includes a commitment that information is reported back in a timely manner for adjustment, if required.

A key component for the success of the EMP is environmental monitoring, such that environmental management measures are inspected and modified for compliance with environmental and regulatory requirements, including those set out in provincial and federal approvals received for the Project. As indicated, monitoring results will be reviewed and used to verify predicted environmental assessment conclusions and effectiveness of mitigation measures. If unanticipated effects occur, or if mitigation measures are inadequate, adaptive management measures and subsequent monitoring will be applied as described further in individual environmental management and monitoring plans.

Monitoring results and application of adaptive management measures will inform follow-up reporting to regulators and any required revisions to environmental management plans. Manitoba Transportation and Infrastructure has initiated discussions with rights-holders and the Rural Municipality (RM) of Grahamdale in the Project area on the establishment of an Environmental Advisory Committee (EAC). The EAC would be a platform for sharing monitoring results and discussing issues of concern. In addition, Manitoba Transportation and Infrastructure anticipates that the EAC will coordinate Indigenous Environmental Monitors and communications during the construction period and will be working with rights-holders and stakeholders on its structure and purpose.

Manitoba Transportation and Infrastructure remains committed to consultation and ongoing engagement with Indigenous rights-holders and stakeholders that are potentially impacted by the Project. Detailed EMP review discussions were incorporated into Indigenous group-specific consultation work plans. Engagement opportunities included virtual open house events, sharing draft environmental management and monitoring

plans, sharing plan-specific questionnaires, and meetings to discuss related questions and recommendations. The intent has been to offer multiple avenues to share information about the Project so that rights-holders and stakeholders would be informed and could provide meaningful input into Project planning. The original draft EMP plans and questionnaires that were posted on the Project website for public review and comment are being replaced by the second draft of each plan as it becomes available. Feedback and recommendations received were used to update the current version of the draft plans, which are posted to the Project website at: <https://www.gov.mb.ca/mit/wms/lmbismoutlets/environmental/index.html>.

Figure A displays a summary of the EMP process. The EMP provides the overarching framework for the Project Construction Environmental Management Program (CEMP) and the Operation Environmental Management Program (OEMP). These will be updated prior to Project construction and operation, respectively, and will consider applicable conditions of The *Environmental Act* provincial licence, *Canadian Environmental Assessment Act* 2012 federal Decision Statement conditions and other approvals, any other pertinent findings through the design and regulatory review processes, and key relevant outcomes of the ongoing Indigenous consultation and public engagement processes. Until such time, these plans will remain in draft form.

The purpose of the CEMP and OEMP is to guide how environmental issues will be addressed during construction and operation, respectively, and how adverse effects of activities will be mitigated. The CEMP is supported by several specific or targeted management plans that will guide Manitoba Transportation and Infrastructure's development of the Project's contract documents and subsequently, the Contractor(s) activities, in an environmentally responsible manner and to meet regulatory compliance in constructing the Project. The OEMP will include some of the same targeted plans developed to manage issues during construction, but prior to construction completion, they would be revised and adapted to suit the specific needs during the operation phase.

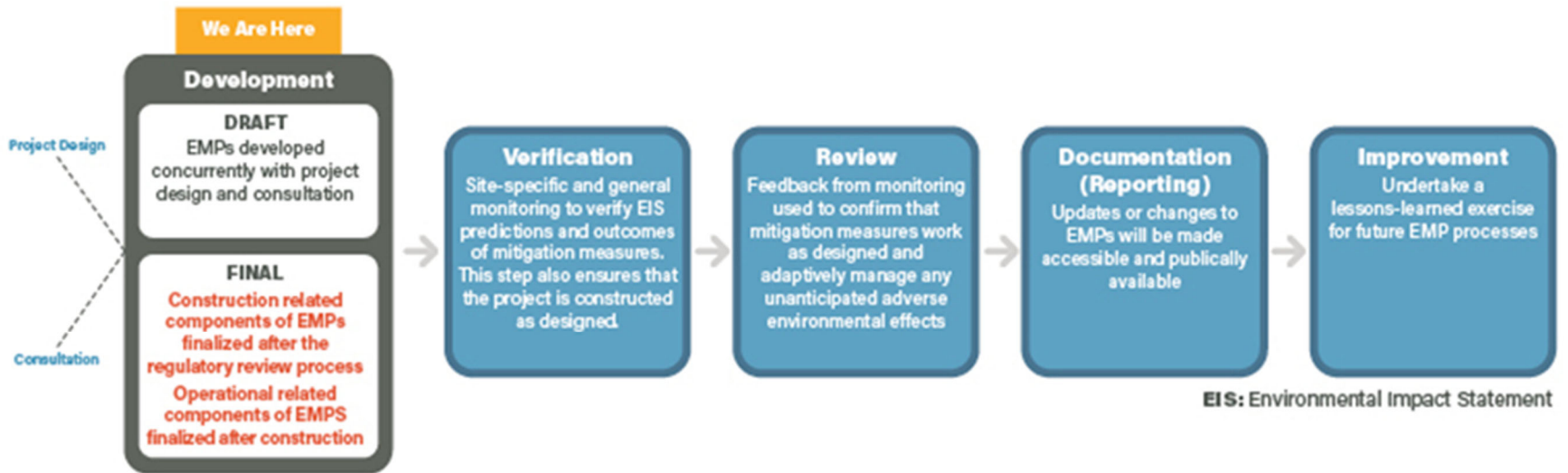


Figure A: EMP Process

LIST OF ACRONYMS AND GLOSSARY OF TERMS

Acronyms

%	Percent
AgBMP	Agricultural Biosecurity Management Plan
AEMP	Aquatics Effects Monitoring Plan
AMP	Access Management Plan
BMP	Best Management Practices
CEAA	<i>Canadian Environmental Assessment Act</i>
CEMP	Construction Environmental Management Program
cfs	cubic feet per second
CRP	Complaint Resolution Process
DFO	Fisheries and Oceans Canada
EIS	Environmental Impact Statement
EPP	Environmental Protection Plan
ER	Environmental Representative
ERP	Emergency Response Procedures
FN	First Nation
GWMP	Groundwater Management Plan
HRPP	Heritage Resources Protection Plan
km	Kilometre
LAA	Local Assessment Area
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
m	metre
MECP	Manitoba Environment, Climate and Parks
OEMP	Operation Environmental Management Program
PDA	Project Development Area
PER	Project Environmental Requirements

PR	Provincial Road
the Project	Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project
PTH	Provincial Trunk Highway
QMP	Quarry Management Plan
RM	Rural Municipality
ROW	right-of-way
RVMP	Revegetation Management Plan
SAR	Species at Risk
SARA	<i>Species At Risk Act</i>
SMP	Sediment Management Plan
SOCC	Species of Conservation Concern
SWMP	Surface Water Management Plan
WCS	Water Control Structure
WetMP	Wetland Monitoring Plan
WMP	Wildlife Monitoring Plan
WHMIS	Workplace Hazardous Materials Information System

Glossary of Terms

Aquatic habitat: The living and non-living components of a lake, river, wetland or other waters upon which aquatic life depends.

Aquatic ecosystem: All living organisms in an area of a lake, river, wetland or other waters and the non-living components of the environment upon which they depend, as well as all their interactions, both among living and non-living components.

Aquifer: A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.

Aquitard: A confining bed and/or formation composed of rock or sediment that retards but does not prevent the flow of water to or from an adjacent aquifer. It does not readily yield water to wells or springs, but stores groundwater.

Artesian aquifer: A body of rock or sediment containing groundwater that is under greater than hydrostatic pressure: that is a confined aquifer. When an artesian aquifer is penetrated by a well, the water level will rise above the top of the aquifer; a flowing artesian well is when the water level will rise above ground surface.

Bedrock: The solid rock that lies beneath the soil and other loose material on the Earth's surface.

Biodegradable: A substance or object capable of being decomposed by bacteria or other living organisms.

Carbonates: A rock made up primarily of carbonate minerals (minerals containing the CO₃ anionic structure). Examples include: limestone, dolostone, and marble (metamorphosed limestone or dolomite) are the most commonly encountered carbonate rocks.

Carbonate aquifer: See Aquifer; see Carbonates. Refers to an aquifer comprised of a carbonate bedrock.

Cofferdam: An enclosure, usually only partially obstructing a river, from which water is pumped to expose the bottom to permit construction.

Confined aquifer: An aquifer that is bounded above and below by formations of distinctly lower permeability than that of the aquifer itself. An aquifer containing confined ground water. See artesian.

Contract Administrator: refers to the individuals, entities or groups delegated by Manitoba Transportation and Infrastructure to provide professional Engineering and Consulting Services for the Permanent Outlet Channels Project. This includes oversight of construction and maintenance contracts and operations; review of contractor submittals, plans and proposals for compliance with Project commitments and restrictions and making recommendation for acceptance or rejection of such plans by the Owner; and monitoring, inspecting, documenting and enforcing compliance with contractual and regulatory requirements.

Contractor: refers to the individuals, entities or groups contracted by Manitoba Transportation and Infrastructure to undertake specific Project construction, operation or maintenance activities, and includes all subcontractors and affiliates.

Inspector: refers to the individuals or designated representatives delegated by Manitoba Transportation and Infrastructure to monitor, inspect, document, and enforce compliance with contractual and regulatory requirements associated with the construction and/or maintenance activities and associated works for the Project.

Critical habitat: The resources and environmental conditions required for persistence of local populations of listed wildlife species, listed as extirpated, endangered, or threatened under the Species at Risk Act, throughout their current distribution in Canada.

Deleterious substance: A substance which, if administered, would likely cause bodily injury. In terms of the *Fisheries Act*: “Any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water, or (b) any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water”.

Depressurization: Action of decreasing hydrostatic pressure. Active depressurization involves the use of pumps. Passive depressurization does not involve the use of pump, but rather uses a relation between hydrostatic pressure elevation and topographic elevation.

Detailed Design: The project phase where structural engineering design principles and applicable design codes are utilized to produce a structural design complete with drawings and tender documents in sufficient detail to construct the specific structure/rehabilitation identified as the preferred alternative from the preliminary design phase. While detailed design is primarily structural in nature, it may also include the development of the hydraulic, hydrotechnical, geotechnical, environmental and traffic control aspects of the Project if not developed previously to support the structural design of the bridge or structure.

Dewatering: Removal or draining groundwater or surface water from a riverbed, construction site, caisson, or mine shaft, by pumping or evaporation.

Discharge: Rate of outflow; volume of water flowing down a river, from a lake outlet, or man-made structure.

Dolomite: A sedimentary rock composed mostly of dolomite [$\text{CaMg}(\text{CO}_3)_2$] which often forms from limestone as the calcium is partly replaced by magnesium, usually as water solutions move through the limestone.

Domestic well: A water well used to supply water for the domestic needs of an individual residence or systems of four or fewer service connections.

Environmental Monitor: refers to the individuals, groups or designated representatives engaged by Manitoba Transportation and Infrastructure to monitor, inspect, and document compliance with contractual and regulatory requirements associated with the construction activities and associated works for the Project. The monitor may also be an active member (or representative) of the Project’s Environmental Advisory Committee.

Glaciolacustrine: Pertaining to, derived from, or deposited in glacial lakes; especially said of the deposits and landforms composed of suspended material brought by meltwater streams flowing into lakes bordering the glacier, such as deltas, kame deltas, and varved sediments.

Groundwater: Water that occurs beneath the land surface and fills the pore spaces of soil or rock below saturated zone.

Groundwater quality: Refers to the chemical composition of groundwater and its suitability for various uses. Varies widely depending upon the local geologic setting, hydrogeological conditions, and past/current land use practices that may contribute anthropogenic effects.

Groundwater recharge: The natural or intentional infiltration of surface water into the zone of saturation. Groundwater recharge occurs either naturally as the net gain from precipitation, or artificially as the result of human influence.

Hydraulic profile: The graphical representation of the water level through a channel based on the water level of the receiving water, control points, and the head loss.

Aquatic Invasive species: Aquatic or plant species that are growing outside the country or region of origin and outcompeting or replacing native species.

Invert (channel): The stream bed or floor within a structure or channel.

Piezometric pressure: A measurement at a discrete location expressing the potentiometric surface which is an imaginary surface representing the pressure of groundwater in an aquifer that is defined by the level to which water will rise in a well.

Pool: A deep, slow-moving area of a stream; an artificially confined body of water above a dam or weir.

Preliminary Design: An engineering process undertaken at the pre-structural design phase. For structures, preliminary design includes some or all of the following: collection of survey information, preliminary foundation report (including soils investigation), hydrological analysis, hydraulic analysis and design, hydrogeological investigation, historical ice thickness and ice levels, condition assessment, geometric design, traffic forecasting, hazard protection, site location, environmental determinations, consideration of traffic accommodation, identification of constructability issues and possible construction staging, development of alternatives for advancement to structural design, life cycle cost analysis of alternatives, evaluation and selection of the preferred replacement structure/rehabilitation work. Preliminary design typically supports environmental submissions that satisfy environmental and/or regulatory requirements, as well as environmental applications. In addition, during preliminary design, all major stakeholders are consulted, and their issues addressed to the extent possible.

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

Recharge: Water added to an aquifer or the process of adding water to an aquifer.

Rights-holders: include First Nations, Metis Communities and other Indigenous communities who hold Aboriginal or Treaty rights that are protected under Section 35 of the Constitution Act 1982. Commonly, these include hunting, trapping, fishing or gathering rights.

Riparian vegetation: Vegetation growing along the banks of rivers and streams, at the interface between water and land.

Riprap: A stone covering used to protect soil or surface bedrock from erosion by water or the elements.

Runoff: Surface water that flows overland and into streams, wetlands or waterbodies, or into drainage systems.

Species of conservation concern: Species that are tracked either federally (*Species at Risk Act*, Committee on the Status of Endangered Wildlife in Canada), or provincially (*The Endangered Species and Ecosystems Act* and Manitoba Conservation Data Centre) and are considered rare or at risk of extinction.

Suspended sediment: Particulate matter that is held in the water column due to movement of the water.

Technical Support Team: refers to Manitoba Transportation and Infrastructure or a designated representative delegated by Manitoba Transportation and Infrastructure to provide specialized technical support services for Project construction, maintenance, or operation. Specialized support may include, but is not limited to design, contracting, contract disputes, auditing, inspections, construction methods and sequencing.

The Owner: refers to Manitoba Transportation and Infrastructure or a designated representative delegated by Manitoba Transportation and Infrastructure with overall responsibility for, and oversight of, Project design, construction and operation.

Till: An unstratified, unconsolidated mass of boulders, pebbles, sand and mud deposited by the movement or melting of a glacier.

Turbidity: A measure of the relative clarity of water.

Wetland: Refers to:

(a) a marsh, bog, fen, swamp or ponded shallow water, and

(b) low areas of wet or water-logged soils that are periodically inundated by standing water and that are able to support aquatic vegetation and biological activities adapted to the wet environment in normal conditions.

1.0 INTRODUCTION

The Construction Environmental Management Program (CEMP) has been prepared as part of the design, tendering and contract administration of the Lake Manitoba and Lake St. Martin Permanent Outlet Channels Project (the Project) for Manitoba Transportation and Infrastructure. This CEMP has been prepared based on industry standard practices and the description provided in Section 3.7 of the Project Environmental Impact Statement (EIS) for the Project. The construction Contractors will be required to abide by the procedures and measures identified within the CEMP.

The purpose of the CEMP is to describe the environmental management processes and measures that will be implemented to minimize environmental effects during construction of the Project. It organizes the various mechanisms required to confirm that the environmental management measures are executed, monitored, and evaluated for effectiveness, and that information is reported on to allow for adjustments, as required. The CEMP describes Manitoba Transportation and Infrastructure's commitment to protection of the environment and compliance with the various federal and provincial environmental regulatory requirements.

This CEMP document describes the responsibilities of the various parties involved, provides a summary of construction activities and potential environmental effects, and provides an overview of the various environmental management measures, monitoring and reporting procedures to be applied during the Project construction. The CEMP and supporting management plans will guide the Contractor(s) construction of Project components in a manner that promotes Best Management Practices (BMPs) for environmental protection.

The CEMP is supported by several specific or targeted management and monitoring plans that have been submitted as separate documents, with the exception of the Waste Management Plan, Hazardous Materials Management Plan and Emergency Response Procedures (ERP), which are described within this CEMP document. Many of these management plans are interrelated and rely on each other for management and monitoring aspects. These topic-specific management plans also include references to other documents developed to support the topic further. As listed in Section 3.7.2 of the Project EIS, these targeted management and monitoring plans consist of the following:

- Management Plans:
 - Environmental Protection Plan (EPP)
 - Project Environmental Requirements (PERs)
 - Access Management Plan (AMP)
 - Quarry Management Plan (QMP)
 - Sediment Management Plan (SMP)
 - Surface Water Management Plan (SWMP)
 - Groundwater Management Plan (GWMP)
 - Revegetation Management Plan (RVMP)
 - Agricultural Biosecurity Management Plan (AgBMP)
 - Dust Control Plan

- Waste Management Plan (see Section 5.11)
- Hazardous Materials Management Plan (see Section 5.11)
- Emergency Response Procedures (see Section 5.12)
- Heritage Resources Protection Plan (HRPP)
- Wetland Compensation Plan (WCP)
- Site Decommissioning Plan
- Complaint Resolution Process (CRP)
- Monitoring Plans:
 - Inspection and compliance monitoring (part of the SWMP, SMP, RVMP and GWMP)
 - Aquatic Effects Monitoring Plan (AEMP)
 - Wildlife Monitoring Plan (WMP)
 - Wetland Monitoring Plan (WetMP)

Environmental management measures described herein and in the supporting management plans are derived from Manitoba Transportation and Infrastructure's corporate environmental and safety policies and incorporate other BMPs such as those outlined in the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, the Forest Management Guidelines for Riparian Management Areas, and/or the Boreal Wetlands Conservation Codes of Practice.

This CEMP document is preliminary based on the current stage of design and will be expanded and updated after regulatory approvals and before the start of construction. The updates and finalization of the CEMP will reflect completion of detailed design, construction work scheduling, current site conditions, input obtained from consultation and engagement, requirements of the environmental approvals, permits and licenses, and other applicable environmental plans and reports. The CEMP is a living document that will be reviewed and updated by Manitoba Transportation and Infrastructure on a regular basis, with continuous improvement being made so that the Project is constructed in an environmentally responsible manner.

1.1 Project Description

The Project will involve the construction and operation of the Lake Manitoba Outlet Channel (LMOC), the Lake St. Martin Outlet Channel (LSMOC) and associated components such as bridges, control structures with power connections, a new realignment of Provincial Road (PR) 239, and other ancillary infrastructure. A detailed description is provided in the EMP Framework document, and the Project location is shown in Figure 1 and Figure 2.

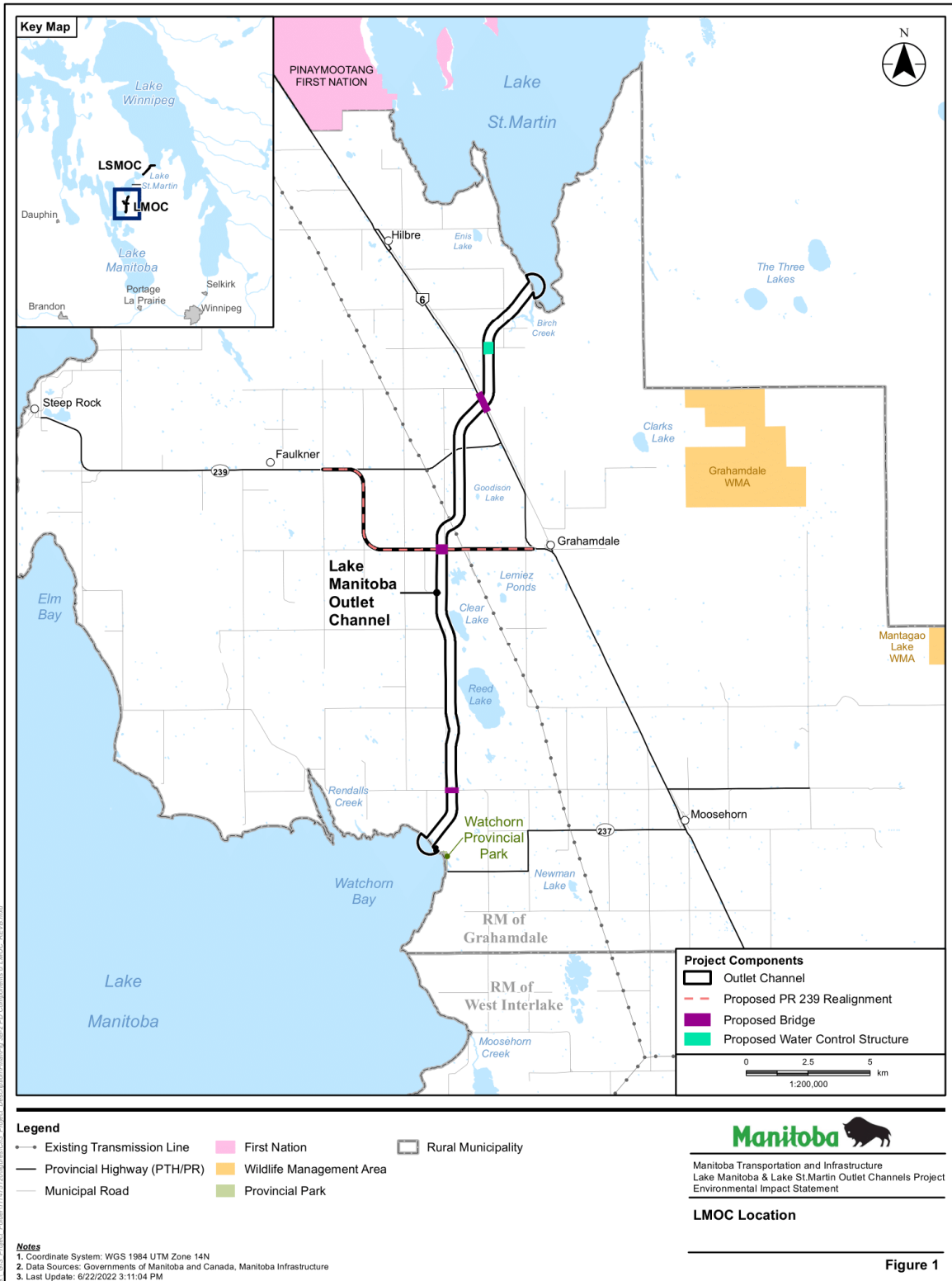


Figure 1: LMOC Location

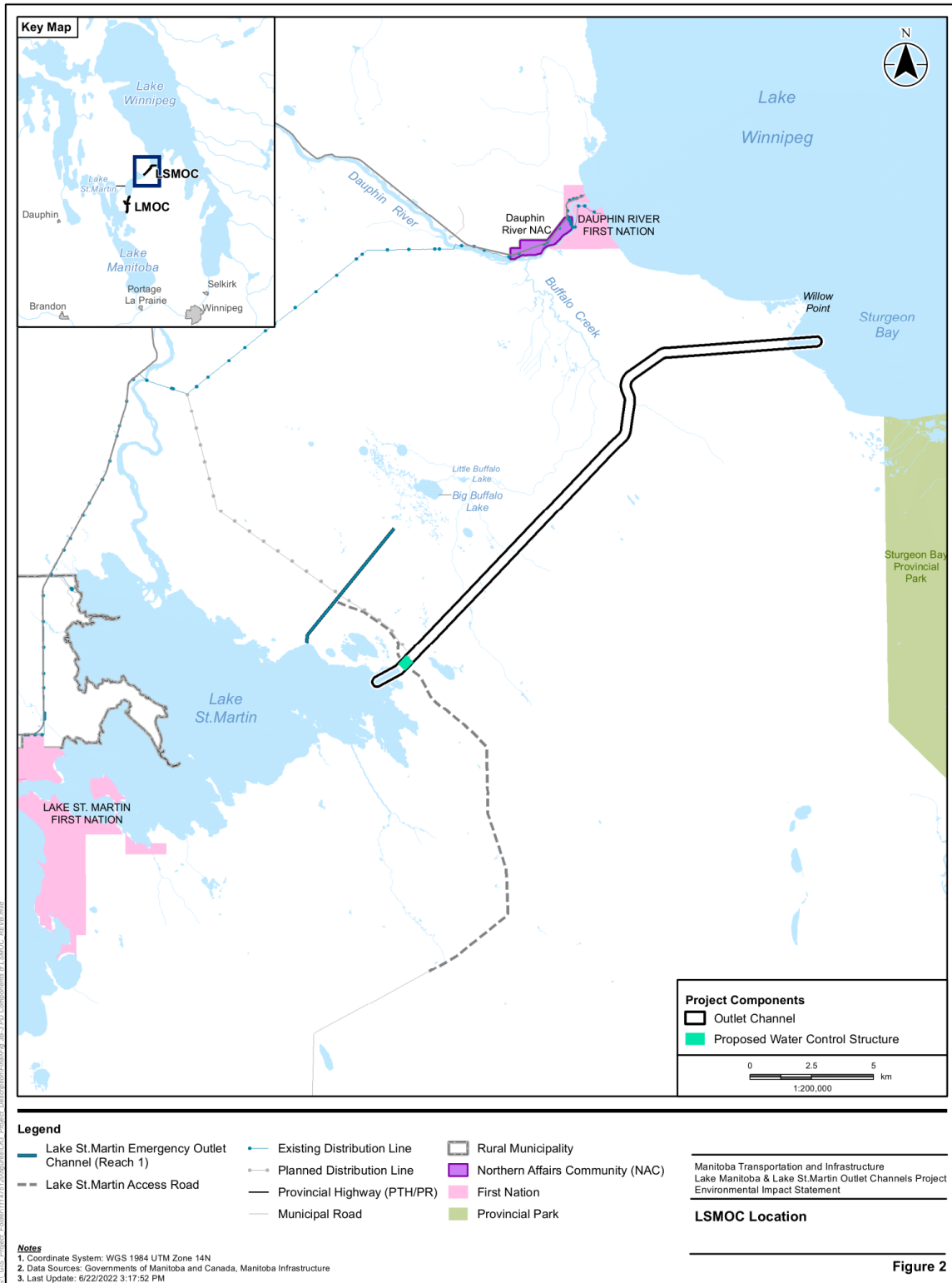


Figure 2: LSMOC Location

The Lake Manitoba Outlet Channel (LMOC) is located within the Rural Municipality (RM) of Grahamdale in Manitoba's Interlake Region, approximately 220 kilometres (km) northwest of the City of Winnipeg. It will run from Watchorn Bay on Lake Manitoba northeast to Birch Bay on Lake St. Martin and will primarily be located on private agricultural lands that will be purchased. There are more than 60 residences within 3.0 km of the LMOC, the nearest of which is approximately 0.5 km from the proposed channel. The communities of Moosehorn and Pinaymootang First Nation (FN) are located approximately 10.9 km and 9.3 km respectively, from the LMOC. The channel intersects portions of 26-8-W1, 27-8-W1, 28-8-W1, and 29-8-W1. The approximate UTM coordinates (North American Datum 1983) Zone 14 U are 5681518 N 529841 E for the inlet and 5704032 N 534074 E for the outlet.

The Lake St. Martin Outlet Channel (LSMOC) is located approximately 220 km northwest of the City of Winnipeg in Manitoba's Interlake Region between the northeastern most extent of Lake St. Martin and Sturgeon Bay on Lake Winnipeg. This area is currently considered semi-remote as road access is seasonal, with the nearest permanent residence located approximately 6.1 km from the channel in Dauphin River FN. Dauphin River FN and Lake St. Martin FN reserve boundaries are located approximately 4.6 km and 12.0 km respectively, from the LSMOC. The LSMOC will occur entirely within Crown Land, which is located within the area covered by Treaty No. 2. The channel intersects portions of 32-5-W1, 32-6-W1, 33-5-W1 and 34-4-W1. The approximate UTM coordinates (North American Datum 1983) Zone 14 U are 5738284 N 557122 E for the inlet and 5751400 N 572725 E for the outlet.

1.2 Licensing and Authorization

The proposed Project is a designated project under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012), and therefore requires an Environmental Assessment. Pursuant to Section 15(d) of the CEAA, 2012, the Impact Assessment Agency of Canada (the Agency) is the authority responsible for federal review of the proposed Project and issued Guidelines for the Preparation of an EIS for the Project. Other key federal legislation, under which approvals may be required, includes the *Fisheries Act*, *Navigation Protection Act*, *Migratory Birds Convention Act* and *Species at Risk Act* (SARA).

The proposed Project is considered a 'Class 3' development under the Classes of Development Regulation (164/88) of *The Environment Act* (Manitoba) and therefore requires an *Environment Act* Licence. Manitoba Environment, Climate and Parks (MECP) Environmental Approvals Branch is the authority responsible for provincial review of the proposed Project and provided EIS Guidelines for the Project. In addition to addressing the EIS Guidelines, provincial permits will be required under several acts to address various Project activities, such as *The Crown Lands Act* (camp development on provincial Crown lands), *The Mines and Minerals Act* (quarry development), *The Wildfires Act* (burning) and *The Dangerous Goods Handling and Transportation Act* (petroleum storage tanks).

While field investigations have been on-going to support design of the LMOC and LSMOC, no construction work or site preparation activity is to begin without having obtained the proper federal and provincial permits or authorization for the work. Federal and provincial legislation relevant to the proposed Project is summarized in Appendix 1.

2.0 PRIMARY RESPONSIBILITIES

All parties involved in this Project need to be aware of their responsibilities so that the CEMP is effectively and efficiently implemented and therefore maximizes environmental protection during construction. The primary responsibilities of Manitoba Transportation and Infrastructure as the Proponent and Owner, the Contract Administrator and the Contractor are listed in the following sections. Figure 3 shows the overall Project organization structure during construction, outlining the communication between Manitoba Transportation and Infrastructure, the federal and provincial regulators, Contractors and Inspectors, and Monitors

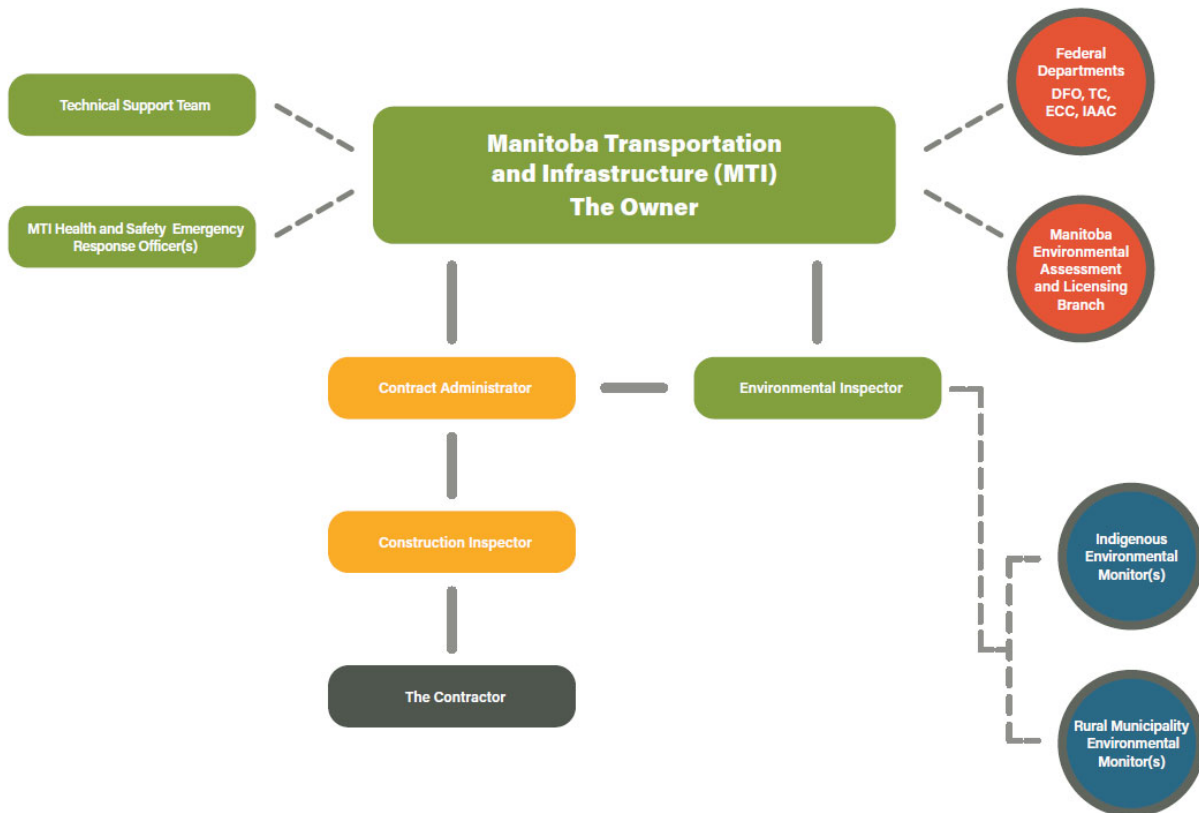


Figure 3: Project Construction Organization Structure

2.1 Manitoba Transportation and Infrastructure (the Owner)

As the proponent and Owner of the Project, Manitoba Transportation and Infrastructure will be responsible for incorporating the appropriate environmental protection measures, including BMPs, into the design of Project components. Construction contract specifications will detail the technical design as well as Project-specific restrictions respecting how the work is to be completed. All relevant plans, such as the PERs and management plans, will be among the information that will accompany the tender document(s) to be provided to prospective Contractor(s).

As the Project proponent and owner, Manitoba Transportation and Infrastructure is responsible for implementing, monitoring and amending the environmental aspects of the Project. To help avoid and control communicable diseases (including COVID-19) within its work-places and worker accommodations, Manitoba Transportation and Infrastructure will adhere to Manitoba Public Health Orders.

As demonstrated in (Figure 3) Manitoba Transportation and Infrastructure, as the Owner, will have personnel and designates in place to oversee Project activities. These individuals will be supported by advice from a Manitoba Transportation and Infrastructure Technical Support Team comprised of environmental, health and safety, and design personnel. Manitoba Transportation and Infrastructure will coordinate information sharing between on-site activities and off-site support teams. Manitoba Transportation and Infrastructure, with the support of the Technical Support Team, will also have the following responsibilities under the CEMP:

- Liaise with the Federal Responsible Authorities and Manitoba Regulators concerning authorization requirements, monitoring and follow-up.
- Provide approval, based on discussions with the Owner, in cases where a Contractor suggests methods to achieve a particular goal or objective that differ from their original site plan.
- Obtain the Fisheries Act authorization from the Department of Fisheries and Oceans Canada (DFO), as required, for in-water or near water work.
- Obtain the Canadian Navigable Waters Act permit/authorization from Transport Canada, as required, for the construction of permanent or temporary waterbody crossings and/or other in-water structures.
- Obtain the required Water Rights Act authorization from Manitoba Environment, Climate and Parks (MECP) for de-watering and the associated Live Fish Handling Permit (Assuming de-watering and/or fish/mussel salvage will be required (see Section 5.5).

The Inspector(s) will regularly report on field activities. Any information that is to be distributed to the Technical Support Team and other essential Manitoba Transportation and Infrastructure representatives will be forwarded for distribution. The Owner's Inspector will carry out the following functions:

- Inspect for compliance with the requirements outlined in permits and/or authorization associated with the Project.
- Inform the Technical Support Team and Contractor of appropriate environmental requirements and provide them a copy of relevant permits/authorizations.
- Confirm that site specific plans outlined by the Contractor are appropriate and environmentally responsible.

- Monitor the work site and document through inspection forms to verify that the PERs and other environmental mitigation and management measures are implemented and that the site is maintained in accordance with the Contract Documents. Conduct an environmental audit of the construction work being done.
- Summarize the findings of routine environmental monitoring and environmental audits of the work site in an inspection report to be retained on file and provided by the Owner to the designated regulator(s) throughout the construction phase.
- Frequently meet with the Contractor and require that regular updates be provided regarding progress on the environmental components of the work.
- Initiate and hold meetings, as required, to advise the Contractor of deficiencies in the environmental management measures, to address the deficiencies, and direct the Contractor to take appropriate and timely corrective action.
- Liaise with the Contractor and Technical Support Team regarding deficiencies in the environmental management measures implemented, Contract Documents or in other environmental matters that involve the Contractor.
- In cases of recognized non-compliance with the legal requirements, or where the Contractor fails to take appropriate timely measures to protect the environment, or fails to correct recurring deficiencies, direct the Contractor to suspend work until the appropriate measures have been met.

2.2 Contract Administrator

The Contract Administrator will be responsible to perform the following functions to facilitate environmental protection during the administration of the contract:

- Be familiar with the appropriate environmental requirements applicable to construction of the Project.
- Review the Contractor's construction submittals and make recommendation to the Owner as to whether they are appropriate for the anticipated site conditions.
- Liaise with the Owner to address concerns with the proposed construction submittals.
- Provide Contract Administrator Inspections to assist the Owner Inspector with monitoring of the work and site to confirm the Contractor implements environmental specifications and environmental management measures and maintains the site in accordance with the Contract Documents.
- Confirm that required reports received from the Contractor are forwarded to the Owner.
- While on site, notify the Owner of recognized non-compliance with the legal requirements or where the Contractor fails to take appropriate timely measures to protect the environment or fails to correct recurring deficiencies, so that the Owner can determine the need and/or extent of cessation of work associated with the particular incident. The Contract Administrator will issue an immediate cease work order in the event of a non-compliance that will have an immediate and severe effect on the environment.
- Immediately notify the Manitoba Transportation and Infrastructure Technical Support Team of orders to suspend work, or of environmental incidents, complaints or enquiries.

2.3 Contractor

The Project Contractor(s) will take the lead role in implementing the environmental management measures during the construction activities, as outlined in this CEMP, the associated plans and established through the Contract Documents. The Contractor will also be responsible to provide site specific planning (e.g., location of laydown areas) in writing in advance of starting construction for Contract Administrator Review and Owner approval. This information will be described in detail and thereby augment the EPP and other plans (e.g., PERs) that collectively describe how to build the Project, with information on sites to avoid or provide specific measures. To confirm environmental protection during construction the Contractor will perform the following functions:

- Obtain relevant permits (as required) to conduct their work (e.g., Crown Lands work permits, quarry permits, etc., as described in Appendix 1). Environmental permits or approvals obtained by the Contractor and any amendments will be identified and submitted to Manitoba Transportation and Infrastructure for compliance and record keeping purposes.
- Develop necessary submittals in accordance with the related Contract Documents, including the PERs, and permits/authorizations associated with the work.
- Requests for a change in environmental management measures initiated by the Contractor shall be forwarded to the Contract Administrator for submission to the Owner. The Owner will need to approve these changes and may require discussions with Federal Authorities and Manitoba Regulators.
- Provide training for staff and ensure Subcontractors are trained and empowered to identify, address and report potential environmental issues, as needed. Training and orientation sessions shall be documented, and copies provided to the Contract Administrator and Owner for their records and to document compliance with the Project EIS.
- Confirm that Subcontractors understand and comply with the related Contract Documents.
- Identify a dedicated environmental coordinator and other knowledgeable individual(s) who will act as the on-site emergency response coordinator(s). These individuals will liaise closely with the Contract Administrator and Owner to ensure environmental permits and requirements are adhered to. They will also have the authority to redirect manpower to respond to non-compliance, a spill or environmental emergency.
- Implement the environmental management measures, maintain environmental control and protection devices, and monitor the site for the effectiveness of the environmental management measures in accordance with the related Contract Documents and documentation requirements.
- Maintain a record file at the site in which documents relevant information relating to materials handling, spills, leaks, releases, and the implementation and adjustment of the environmental management measures. Relevant information and/or significant events are to be documented and provided to the Contract Administrator and Owner in a timely fashion and as dictated by legislation and or Contract Documents where applicable.

- Immediately report environmental incidents (e.g., spills, species at risk [SAR], nuisance wildlife, aquatic invasive species, wildfires) to the Owner, Contract Administrator, or Inspector so that the proper authorities can be notified and provide a copy of the incident report to the Owner, Contract Administrator, or Inspector. The Contractor will also be responsible for meeting reporting requirements for permits they hold.
- Take preventative action when it is identified that violation of an environmental act or regulation or a considerable impact to the environment will occur, such as work shut down, in consultation with the Contract Administrator, Inspector and/or Owner.
- Attend meetings initiated by the Contract Administrator or Owner to address concerns or deficiencies in the environmental management measures and follow-up on direction provided to take appropriate and timely corrective action.

2.4 Environmental Monitor

The role of the Environmental Monitor(s) will be developed through consultation with rights-holders and the RM of Grahamdale. At this time, it is anticipated that they will be responsible to perform the following functions to confirm that environmental protection measures are implemented during Project construction:

- Inspect for compliance with the requirements outlined in permits and/or authorization associated with the Project.
- Monitor the work site and document through daily inspection forms to verify that the PERs, environmental specifications and environmental management measures are implemented and that the site is maintained in accordance with the Contract Documents.
- Provide information to the Environmental Advisory Committee and the Owner of potential deficiencies in the environmental management measures.
- Immediately report environmental incidents (e.g., spills, species at risk [SAR], nuisance wildlife, aquatic invasive species, wildfires) to the Contract Administrator and the Owner so that the proper authorities can be notified.
- Attend meetings initiated by the Contract Administrator and/or the Owner to address concerns or deficiencies in the environmental management measures and follow-up on direction provided to take appropriate and timely corrective action.

3.0 ACTIVITY DESCRIPTION

Construction of the Project will include vegetation clearing and grubbing; excavation of peat, till and rock material; material hauling; placement and grading of dike structures and spoil material; revegetation; pile driving; sheet pile installation; installation of groundwater aquifer depressurization wells; and pouring concrete. The till material excavated during construction will be utilized to construct dikes along both sides of the channels where existing ground levels are low. Excavated material not used for dike construction will be spoiled adjacent to the channels within the right-of-way (ROW). Limestone rock riprap will be extracted most likely from existing quarry areas (to be confirmed during detail design stage) and will be used in several locations to mitigate against erosion including at the inlet, outlet, bridges, water control structures (WCS) and drop structures. Similarly, the outlet channels will be armoured to protect against erosion and sedimentation.

Construction and material details will be in accordance with the Contract Specifications and Drawings. The limits of clearing will be restricted to the approved areas. Any land outside of these areas shall not be altered without precise direction from the Contract Administrator or the Owner. A schedule outlining the physical activities required for completion of the Project is being developed as part of detailed design.

Refer to Figure 1 for the location of the LMOC, and Figure 2 for the location of the LSMOC.

3.1 LMOC Construction Methodology

A brief high-level overview of the general construction methodology for the LMOC is provided in the following sections. The construction sequencing plan will be developed during detailed design.

3.1.1 Site Preparation

Site preparation will be the first activity to be undertaken, as it must be completed before construction can commence in all work areas. This will include tree clearing, construction of drainage works, and establishment of bridge detours to facilitate bridge construction.

Tree clearing will be done in the fall and winter months (September 1 to March 31 of the following year) to avoid interference with the nesting window for migratory birds. Grubbing will not take place at the same time as tree clearing to minimize the risk of promoting the proliferation of invasive weed species (as discussed in the AgBMP), and thus will be part of individual construction contracts. This will also reduce the potential for erosion and sediment transport prior to the start of individual construction contracts.

Permanent drainage to the west of the channel is needed to manage surface water runoff in the area and prevent it from flowing into the construction zones. Overland drainage from the west will be collected in a permanent outside drain to be constructed just to the west of the LMOC and routed to Lake Manitoba and Lake St. Martin. This drain will also be used to convey water from local construction dewatering and groundwater depressurization works along the LMOC.

Bridge detours would ideally be put in place during the construction season preceding bridge construction to avoid risk of delays.

3.1.2 Channel

The main consideration in the construction methodology and sequencing for the LMOC is managing the risks associated with the potential for basal heave and resulting fracture of the till aquitard and/or slope instability due to the high bedrock piezometric pressures that exist over the entire channel alignment. It is anticipated that an active (i.e., pumped) depressurization system will be used to lower the piezometric level at various locations along the LMOC to limit the potential for excavation-related basal heave and slope instability during construction.

To reduce the required duration of active depressurization pumping, the construction methodology involves completing the channel excavation in several discrete segments that are separated from each other by a narrow natural land barrier (plug). Targeted depressurization pumping would take place to lower the piezometric pressure within each segment, as required. Once excavation of a segment is complete, along with installation of any long-term passive groundwater depressurization works, the plug would be removed to allow that segment to fill with water to restore weight to the till aquitard and thus no longer require active pumping to address basal heave risks. Flooding of the dry segment prior to plug removal will be undertaken to reduce the water level differential across the plug and thus limit erosive forces when plug removal is underway. Appropriate erosion and sedimentation controls, such as turbidity curtains, would be in place during the plug removal activities. A fish salvage will be required within the isolated area should fish be present, as described in the AEMP.

Excavation activities within each segment are expected to advance in stages to further limit the duration of active groundwater depressurization pumping required, while managing the risks associated with basal heave, slope instability and potential fracturing of the till aquitard. In general, initial excavation of a segment would be advanced to full width down to a level where the risk of basal heave is considered acceptable. This initial excavation would not require any depressurization pumping and thus could take place in either the winter or summer months. The remainder of the excavation within a segment would then be completed to the final geometry with active depressurization pumping in place, as required, and ideally would be completed in the summer months to avoid the complications of having to pump and manage water in sub-freezing temperatures.

Channel construction is envisioned to commence from each of the lakes and progress inland towards the WCS. This will allow each successively completed segment to then be opened to the lake, and thus use the lake water to restore weight to the till aquitard. At the upstream end of the LMOC, the work would be sequenced to allow construction activities for the inlet, Township Line Road bridge and the channel segment connecting them to be completed around the same time to allow this area to be opened to Lake Manitoba. Channel excavation segments would then be progressively advanced downstream towards the WCS, with the construction activities for the PR 239 bridge and Provincial Trunk Highway (PTH) 6 bridge sequenced such that they are completed around the same time as the channel excavation segments at those locations. A similar strategy would be used at the downstream end of the LMOC where the channel excavation would be advanced from Lake St. Martin upstream towards the WCS.

An alternate construction methodology is also under consideration, as a potential mitigation effort, that would involve limiting active aquifer depressurization activities to the areas near the bridges, WCS, and potentially other discrete areas within the channel and accepting some construction risk of groundwater seepage into the channel excavation. This will require a trench to be sub-cut into the base of the channel (below final grade) that would be backfilled with graded material to act as a filter. The trench would create a controlled path for groundwater seepage, as well as a location to divert and collect water that comes into excavation. This would reduce the amount of active depressurization pumping required and in turn, reduce the impacts to the regional groundwater system during construction.

3.1.3 Inlet and Outlet

It is presently expected that construction of the inlet and outlet works will take place in the wet with the construction area isolated by a double turbidity curtain to prevent or minimize the migration of disturbed sediments into the lake. This work would take place in the summer, between July 1 and September 14, to be outside of the restricted spring (April 1 to June 15), summer (May 1 to June 30) and fall (September 15 to April 30) fish spawning windows. A fish salvage program will be required within the isolated area.

Alternate construction methods may be proposed by the contractor, such as isolating the area with a cofferdam that would be constructed behind a turbidity curtain. In this case, only the construction and removal of the cofferdam would need to take place outside of the restricted spawning windows; however, the overall construction time frame and impacted in-water area would be expected to be greater.

3.1.4 Bridges and Water Control Structure

Localized excavation and foundation preparation is required for construction of the bridges and the WCS. It is expected that these work areas will be isolated from the rest of the channel with natural land plugs. These work areas would be kept small to limit the amount of pumping required to facilitate aquifer depressurization requirements and manage surface water runoff within the excavation.

Detour roads will be established at each of the bridge locations and at the WCS to maintain traffic while those structures are being constructed.

3.2 LSMOC Construction Methodology

A brief high-level overview of the general construction methodology and a preliminary construction sequencing plan has been developed for the LSMOC as part of preliminary design and is summarized in the following sections.

3.2.1 Site Preparation

Site preparation will be the first activity to be undertaken. Along the channel alignment, this will include tree clearing, peat excavation, construction access road development, and construction of drainage works. A corridor will also be cleared to facilitate construction of a distribution line that will supply power to the Water Control Structure. The work will be performed in the fall and winter months (September 1 to March 31 of the

following year) to allow for access over the frozen peatland, to simplify water management requirements, and to avoid interference with the nesting window for migratory birds.

Construction of the permanent outside drain (to the east of the channel alignment) and excavation of the peat within the Project Development Area (PDA) will reduce (but not eliminate) surface water runoff and groundwater seepage into the work area, as well as promote drainage within the channel construction limits thus improving access to the underlying mineral soils.

Overland drainage from the east side of the channel location will be collected in the outside drain and routed towards Lake Winnipeg. Temporary discharge of the drain into the existing Reach 3 of the emergency outlet channel (EOC) may also be considered during construction depending on the final construction duration and schedule.

A pilot ditch along the centerline of the channel (within the mineral soil) will be constructed to collect and drain seepage/surface runoff entering the excavation area during construction, particularly in EOC Reach 2 and the Reach 3 Extension where there is currently no existing excavation. This will improve drainage of the materials underlying peat and promote better access conditions for the subsequent earthworks contracts.

3.2.2 Channel

Earthwork activities are anticipated to start at the downstream end of each construction reach, gradually progressing upstream to promote gravity drainage of the work areas. Earth plugs will be left in place to isolate excavation work areas and manage surface water drainage during construction.

Due to elevated confined bedrock piezometric pressures along the channel alignment, excavation activities are expected to advance in stages to manage risks associated with basal heave and fracturing of the till aquitard. Excavation within the mineral soil (following peat excavation) will be performed in stages. Stage 1 involves advancing channel excavation at full width to an invert where the factor of safety against the potential for basal heave is acceptable. Stage 2 involves advancing a new pilot channel to full channel completion depth along the channel centerline. The intent is to promote concentration of potential heaved or fractured till interconnections between the bedrock aquifer and channel invert along the centreline, while improving drainage to the remaining excavation areas moving toward the excavation slopes (Stage 3), and also reducing the underlying confined bedrock aquifer piezometric pressures due to drainage within the deepened pilot channel. Stage 3 involves expanding the new pilot ditch to full channel width, completing the excavation to the final geometry. Following channel excavation, armour stone or riprap will be installed where required.

Construction of the channel dikes and channel excavation to be used as fill source will need to occur above freezing temperatures to facilitate subgrade preparation and material compaction. The remaining channel excavation activities could occur at any time. Construction of the drop structures can occur at the Contractor's discretion during or after completion of channel excavation. Each work area will have associated roadworks, revegetation, and armour/riprap placement which can occur as soon as possible as channel excavation and dike construction advances.

3.2.3 Inlet and Outlet

The inlet and outlet are anticipated to be constructed in the dry. The work areas will be isolated from the lakes with cofferdams, which will be installed and removed outside of the restricted spring (April 1 to June 15), summer (May 1 to June 30), and fall (September 15 to April 30) fish spawning windows. Construction activities in the area isolated from the lakes will then proceed at the discretion of the Contractor for approximately a one-year period.

Alternate construction methods may be proposed by the Contractor, such as excavation in the wet behind a double turbidity curtain or winter excavation in locations where the lake ice freezes to the lake bottom. Any in-water works associated with these alternative construction methods will also abide by the restricted fish spawning windows.

3.2.4 Water Control Structure

The WCS will require localized excavation and foundation preparation. Due to high bedrock piezometric pressures (at times artesian) within the bedrock aquifer in the vicinity of the WCS, an active depressurization system will be required. Reduction of piezometric pressures within the bedrock and the till overburden is required to maintain stability of the temporary excavation slopes. The depressurization system will also be used to control, monitor, and dewater the work area once the bedrock is exposed in the excavation, and as it is being prepared for the construction of the WCS.

A distribution line will be constructed by Manitoba Hydro to provide power to the WCS. The line will extend west from the WCS to connect to the existing distribution system. Construction of the distribution line will occur in the winter to facilitate access to the alignment, which will primarily run through native peatland.

3.3 Control Measures

Standards have been established so that on-site activities are carried out with due regard for the environment. The following items summarize general environmental protection measures that will be applied on this Project, some of which are described in greater detail in the supporting management plans:

- Prior to commencement of the site work, a pre-construction meeting shall be held between the Owner, the Contract Administrator and the Contractor to discuss environmental concerns, laws, rules, regulations, and permits applicable to the Project area.
- The Owner will rely on the Contract Administrator and Inspector to monitor the implementation of this CEMP.
- Equipment mobilized from outside the Project area shall arrive on the site in a clean condition and will be kept in good working order and free of fuel, oil or fluid leaks and/or potential for leaks (for example, cracked or worn hoses). Machinery that is found to be leaking fuel, oil or other fluids will be moved off the work site immediately for repair.
- Work activities shall be confined to the designated site area.
- Efforts shall be made to prevent and control contamination of waterbodies.

ACTIVITY DESCRIPTION

- Exhaust and engine systems of equipment and vehicles shall be in good working condition and free of dried grass and other combustibles.
- Fire extinguishers will be available for fighting fires. The authorities having jurisdiction shall be notified immediately should a fire occur. All equipment and personnel shall be made available to control a fire. No fires shall be permitted unless approved by the site supervisor and with a burn permit, where required.
- Oil changes, refueling and lubricating of equipment shall be conducted in designated areas a minimum of 100 metres (m) from waterbodies to minimize the potential for water pollution. All reasonable precautions shall be taken to ensure that refueling only takes place within an area approved by the Owner. These designated areas will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection. Drip trays shall be placed under equipment being repaired or refueled and trays shall be cleaned after each use. Spent oils, lubricants, fuels and filters, etc., shall be collected and either recycled or disposed of at an approved location according to the hazardous materials guidelines and the PERs.
- Materials required for spill containment and clean-up will be available at work sites and designated areas. Vehicles will carry materials and equipment for emergency spill containment.
- In the event of an unexpected occurrence of an environmental incident or uncovering of a heritage resource, the Contractor shall immediately notify the Contract Administrator and the Owner. Additional follow-up will be required to involve an archaeologist or other specialist that can make a determination on the proper mitigation measure to take (e.g., recover an artifact).

4.0 POTENTIAL ENVIRONMENTAL EFFECTS

Manitoba Transportation and Infrastructure submitted a Project EIS for the proposed Lake Manitoba and Lake St. Martin Outlet Channels in March 2020. The identification and assessment of potential environmental effects and associated mitigation measures to manage adverse effects, which are detailed in the Project EIS, have been preliminarily summarized in this CEMP. This CEMP is a working document, currently in a draft stage, that has incorporated relevant environmental effects and mitigation measures that are identified and reflective of up-to-date inputs from public and Indigenous engagement and consultation, engineering design and the environmental assessment. The finalization of this CEMP will consider applicable conditions of federal and provincial permits and/or authorization, any other pertinent findings through the design and regulatory review process, and key relevant outcomes of the ongoing public and Indigenous engagement process. This CEMP focuses on managing environmental effects during construction and, therefore, only the potential adverse effects associated with construction are included as summarized below:

- Fugitive dust will be emitted from surface disturbance activities and the construction equipment usage is a source of greenhouse gas and particulate emissions that will adversely affect the local air quality. Construction activities will also result in temporary and localized increased noise from heavy machinery and ambient light levels from portable lighting.
- There is a risk of deleterious substances during construction affecting the soil quality, seeping into the groundwater, or entering the surrounding waterbodies and negatively influencing terrestrial and aquatic species and habitat. Possible sources include fuel spills or releases from equipment operation, during refueling or improper storage and handling of fuel. Additionally, hazardous material spills may occur as the result of improper handling, use, or storage of these materials on-site and while being transported to site.
- Construction of the channels will result in changes to the existing groundwater conditions within the perched peat (around LSMOC), overburden clay/till, and confined bedrock aquifer piezometric pressure conditions along the channels. Potential effects may include changes in groundwater flows, levels and quality through interaction with surface water.
- Construction of the channels will result in changes in local drainage areas and drainage patterns. LSMOC will intercept surface water drainage from the upper reaches of the Buffalo Creek system, as well as some areas of ephemeral streams and wetlands. LMOC will block existing surface water drainage paths from the portion of the watershed located to the west of the LMOC.
- Clearing, excavation and other Project construction activities could result in the release and transport of sediment and/or debris to waterways. Erosion due to precipitation and runoff can introduce sediment to the downstream receiving water bodies which can negatively affect fish and fish habitat. Further, construction of the inlet and outlet structures and excavation of the lake beds has the potential to disturb and re-suspend sediment in Lake Manitoba (LMOC inlet), Lake St. Martin (LMOC outlet and LSMOC inlet) and Lake Winnipeg (LSMOC outlet).

POTENTIAL ENVIRONMENTAL EFFECTS

- Fish habitat will be permanently altered or destroyed during construction. Additionally, fish health and mortality could potentially be affected during construction activities within or near water through the potential release of deleterious substances to streams and lakes adjacent to or downstream of the channels.
- The Project may facilitate conveyance of invasive or undesirable aquatic species, such as common carp, zebra mussel, spiny water flea and toxic algae. Aquatic invasive species could be transported to and spread in the Project area on machinery and equipment used in water during construction activities. The introduction and spread of invasive species can reduce the diversity and populations of native species and can modify habitat.
- The loss and disturbance of vegetation and wetlands associated with clearing activities will change the landscape, community and species diversity and allow for the introduction and potential spread of invasive plant species. Granular construction material and equipment used for construction activities can be a source of non-native and invasive plant species, which can displace native plant communities and modify vegetation composition and structure in the area.
- The Project site preparation and construction phases will result in changes to the physical landscape, including habitat fragmentation, alteration and loss. Numerous migratory birds and SAR have the potential to breed in the habitat types within the Local Assessment Area (LAA) and will be affected by the habitat loss or alteration resulting from Project construction. The Project has potential to affect federally designated critical habitat of two bird SAR: eastern whip-poor-will and red-headed woodpecker. Eastern whip-poor-will critical habitat is located within the LSMOC ROW at the inlet and red-headed woodpecker critical habitat is located along the PR 239 realignment. Both species are listed as Threatened and are protected federally and provincially under SARA and The Endangered Species and Ecosystem Act.
- During construction, there is potential for increased wildlife mortality risk. Ground-nesting birds and species with decreased mobility (e.g., amphibians, small mammals) are most susceptible to direct mortality during site preparation as individuals may be unable to escape construction activities. Land clearing could also put bat maternity roosts at risk, particularly in areas where large diameter trees are removed for LSMOC. Construction of Project components by excavation and earth moving have the potential to increase wildlife mortality risk because individuals, particularly small mammals such as mice and voles and amphibians, may be crushed by equipment, or become entrapped in open excavations. Increased traffic volumes during construction activities has the potential to result in increased mortality risk to wildlife, including migratory birds, due to potential vehicle collisions in the LAA.
- Site preparation and construction activities have the potential to affect a change in wildlife movement by creating physical and sensory (noise, vibration and light) barriers. During construction, noise and activity associated with heavy equipment and personnel is anticipated to deter wildlife from using or crossing the active construction portions of the LMOC and LSMOC Project Development Area (PDA) for the short-term. The LSMOC will bisect a potentially sensitive terrestrial corridor between large patches of contiguous habitat and may present a semi-permeable barrier for marten dispersal.

POTENTIAL ENVIRONMENTAL EFFECTS

- Project construction activities have the potential to affect recreational land use. Channel excavation for the ROW may physically interfere with snow mobile activities and limit the ability of recreationalists from accessing recreation areas. Construction of the channel inlet and outlet has the potential for interference with recreational fishing.
- The Project will potentially impact traditional use areas for hunting, trapping, fishing and gathering in the vicinity of LSMOC. The habitat fragmentation and loss, sensory disturbance and wildlife mortality associated with LSMOC construction activities, as previously described, could temporarily and permanently displace some wildlife and movement patterns that could result in a reduction of hunting and trapping success rates. Additionally, the presence of construction workers could result in an increase in competition for species harvested by Indigenous commercial fishers and anglers.
- Ground-disturbing Project activities, such as vegetation clearing and excavation, as well as development of temporary construction camps, staging areas and access roads, have the potential to interact with heritage resources by subsurface disturbance and alteration of the horizontal and vertical locations of intact archaeological features or objects contained therein. This in turn has the potential to affect cultural and spiritual sites and sacred areas.
- Due to the storage of combustible materials or wastes, operation of internal combustion engines (e.g., vehicles, heavy equipment) and the presence of workers during Project construction, brush and wildfires could be ignited. In particular, the accumulation of slash during clearing can contribute material for wildfires and hot combustion engines on vehicles driving over dry grass or fields can cause wildfires. An accidental fire could adversely affect air quality, vegetation, wildlife, land and resource use, infrastructure and services, economy and human health.

5.0 ENVIRONMENTAL MANAGEMENT AND PROTECTION

The environmental management and protection measures described in the following sections are proposed to mitigate potential temporary and/or permanent impacts resulting from the construction phase of this Project. They are consistent with the PERs. As previously noted, these management and protection measures will be supported by several specific or targeted management plans that provide greater details and have been submitted as separate documents. Unless otherwise stated, these measures also apply the PR 239 realignment and other temporary works associated with the Project.

5.1 Atmospheric Environment

Increased dust is not a concern during winter construction activities; however, summer construction activities shall be conducted by methods that minimize the raising of dust. The Contractor shall implement dust control practices, as described in the Dust Control Plan, during construction activities such as excavation, and transporting of materials, to mitigate the generation of dust and other particulate matter. Vehicles used to haul materials to or from the work site shall have the load covered with a tarpaulin cover during transport to minimize dust and prevent material from falling out. Material stockpiles or spoil piles prone to wind erosion shall be maintained as to minimize release of particulate matter or dust. This will include, but is not limited to, covering or stabilization of material stockpiled at the work site as required. The application of dust suppressants, preferably water, shall be limited to the roadway, driveway or designated area. The amount of dust suppressant applied should not exceed the minimum amount required to effectively suppress dust and will be visually monitored to ensure excess does not pool or run-off and impact adjacent waterbodies.

To mitigate impacts to ambient air quality and reduce increased greenhouse gases associated with construction vehicle emissions, engines and exhaust systems will be properly maintained, vehicle idling times and cold starts will be reduced to the extent possible. Additionally, the use of a work camp will reduce emissions associated with transportation of staff to and from the construction site during.

Due to the remote location of the LSMOC, there are no nearby residents that will be affected by the increased noise associated with heavy machinery and equipment during construction. However, the LMOC is located in a developed area such that nearby residents may be affected by the increased noise associated with heavy machinery and equipment during construction. Accordingly, machinery and factory supplied noise-abatement equipment (e.g., mufflers) will be maintained in good working order and machinery idling will be minimized. Additionally, Manitoba Infrastructure and Transportation will implement a Complaint Resolution Process as a formal mechanism to respond to noise complaints. Measures for mitigating the potential effects of noise on wildlife are described in Section 5.8.

To limit potential effects from the use of the mobile lighting during construction full cut-off luminaire will be used wherever possible to reduce glare, light trespass, and sky glow from the Project lighting. Lighting procedures will be designed to avoid excessive use of the mobile flood lighting units and reduce potential

effects by turning off lighting when they are not required. As much as is possible, lighting will be located such that unavoidable light spill off the working area is not directed toward possible receptors.

5.2 Soil

Soil quality in the PDA may be adversely affected during construction from leaks and accidental spills or release of fuels or other hazardous substances. Mitigation to avert impacts to soil quality includes preventing leaks, spills and releases by providing secondary containment for fuel and hazardous material storage, requiring drip trays for equipment, refueling and conducting maintenance only in designated areas and in accordance with the PERs, providing spill clean-up equipment and materials in vehicles, and providing an emergency (spill) response plan. If a spill should occur, the Contractor would be responsible to provide notification within 24 hours and contaminated soil will be appropriately disposed of at a licensed facility or stored in a designated storage area to prevent secondary contamination. Quantities of hazardous materials removed will be recorded (e.g., weigh bills) and provided to Manitoba Transportation and Infrastructure. More details on measures to protect against and clean-up the potential accidental discharge of contaminants such as fuel, hazardous materials, hazardous waste and non-hazardous waste are discussed in Section 5.11 and 5.12 of this CEMP.

5.3 Groundwater

5.3.1 Background

LMOC

A confined carbonate bedrock aquifer (commonly referred to in Manitoba as the “Carbonate Aquifer System”) is present in the area of the LMOC, which is overlain by 5 m to 18 m of till. Artesian pressures are present in the vicinity of the LMOC, with piezometric heads that can typically be up to 5 m above the ground surface. The bedrock aquifer is recharged via rainfall and snowmelt regionally. Groundwater recharge areas local to the LMOC are from upland areas as well as from local recharge zones to the east and west of the LMOC. Groundwater flow in the carbonate aquifer is interpreted to be from the LMOC area towards Lake Manitoba and Lake St. Martin.

LSMOC

Two distinct groundwater systems are known to be present within the region of the LSMOC, within the upper saturated peat and the lower confined carbonate bedrock aquifer. The upper, saturated peat unit is perched above the clays (where present) and underlying till units. The peat is recharged directly from surface rainfall and snowmelt and the flows within the peat will be locally controlled. The water table within the peat is at or near ground surface, with an overall hydraulic gradient, including surficial flow, to the east. Glaciolacustrine clays/clay tills, and silt tills form a low permeability aquitard between the perched peat groundwater flow system, and the underlying confined carbonate bedrock aquifer system. Aside from regional surface water drainage patterns, the low permeability nature of the aquitard is a key element in maintaining perched water levels in the surficial peat and confined head in the bedrock aquifer and overlying silt till. The lower, confined bedrock aquifer is comprised of a Paleozoic rock sequence commonly referred to in Manitoba as the

Carbonate Aquifer System. This aquifer system is isolated from the peat unit by the upper clay zone and underling tills.

The confined bedrock aquifer is recharged via rainfall and snowmelt regionally. Groundwater recharge areas local to the LSMOC are located on topographically high ground areas with thin sediment cover south of Lake St. Martin, and also to the southwest at the Lake St. Martin Narrows where there are bedrock outcrops at ground surface. There are several artesian groundwater spring sites in the vicinity of the LSMOC. These are important because they provide a natural pressure relief of the bedrock aquifer system in the region of the LSMOC. The groundwater flow system is interpreted to be bound by discharge to naturally occurring spring sites, to Lake St. Martin, and to Lake Winnipeg. Groundwater is also likely to discharge into the Dauphin River to the northwest and to the Mantagao River to the east.

5.3.2 Potential Changes

Construction of the LMOC and LSMOC will result in potential changes to the existing groundwater conditions within the perched peat (LSMOC only), overburden clay/till, and confined bedrock aquifer piezometric pressure conditions along the channels. These will include water level changes in aquifers, potential water quality changes, and changes in the relationship of the groundwater aquifer discharge to the surface water system. In areas where the excess confined bedrock aquifer pressures are elevated relative to the thickness of the confining till and silty clay aquitard units, particularly during channel excavation and unloading of the confining aquitard units, there is a risk of basal heave/hydraulic fracturing of the till. This would induce a connection of the bedrock aquifer to discharge at the base of the excavation, possibly producing some uncontrolled groundwater discharge to the channel excavation area(s). The creation of new groundwater discharge pathways into the channels will locally increase the direct connection of exfiltrating groundwater to channel surface water, originating from the underlying bedrock aquifer.

5.3.3 Management Measures

Groundwater management measures that will be implemented to mitigate or protect against impacts to groundwater or from groundwater during construction of the channels are detailed in the GWMP.

Active depressurization of high groundwater pressure with temporary groundwater depressurization systems pumping from bedrock wells are anticipated to be required to facilitate excavation of the LMOC as well as foundation excavations for construction of the WCS and bridge footings. The relief of artesian pressure along the LMOC will locally depressurize the carbonate aquifer. The zone of influence will expand over a limited distance and domestic water supply well pressure, as well as artesian-dependent well operation, will be affected in this area. While most domestic water supply wells are drilled to an elevation deep enough into the bedrock that the water will remain in the well, pumping will be required to mitigate the loss of artesian pressure for artesian-dependent well operations.

Excavation of the LSMOC will be done in stages with an initial central drainage channel to control and direct areas of groundwater discharge and allow for controlled pressure relief of the bedrock aquifer groundwater system. This passive depressurization will minimize the potential for uncontrolled discharge in large areas of the LSMOC base, particularly closer to the side slopes, where stability conditions are most sensitive in terms

of overall channel excavation. Active depressurization of high groundwater pressures with temporary groundwater depressurization systems pumping from bedrock wells are anticipated to be required to facilitate deep foundation excavations for construction of the WCS and potentially the sheet pile cut-off at drop structures. The relief of artesian pressure along the LSMOC will locally depressurize the carbonate aquifer; however, the zone of influence will expand over a limited distance, with no potential to affect domestic water supply wells and the regional recharge-discharge relationships will remain the same.

Groundwater quality will be monitored in regular intervals during and after the construction phase of the Project as described in the GWMP. This level of monitoring falls outside of the mandate of the CEMP; however, will occur concurrently and continue beyond the construction phase of the Project (see Section 8.1).

5.4 Surface Water

Surface water management measures that will be implemented to manage drainage and mitigate the potential transport and deposition of sediments beyond areas disturbed during construction of the channels are detailed in the SWMP. Erosion and sediment control measures shall be implemented to prevent the introduction of sediment, as described in the SMP. The Contractor shall not block or impede drainage outside the limits of construction and staging areas without written authorization from the Owner.

Several options are being considered, as part of detailed design, to re-water the Big Buffalo Lake Wetland Complex and Buffalo Creek on the west side of the LSMOC. The purpose of the options is to mitigate the loss in surface water runoff and potential subsurface flow as a result of channel construction. Options being further investigated include discharge by gravity feed from Lake St. Martin with a ditch and gated intake structure and/or discharge groundwater through construction of a passive well system.

Groundwater from the construction depressurization will need to be discharged to a suitable drainage course. The options for the LMOC could include existing municipal drains, existing lakes or Birch Creek, Watchorn Creek or the outside drain being constructed on the west side of the channel if available at that stage. The options for the LSMOC could include existing lakes and creeks on the west side of the channel or the outside drain being constructed on the east side of the channel. The quality of the groundwater from the bedrock aquifer is expected to meet surface water guidelines, but it will be tested prior to initiating discharge each year to confirm this.

Surface water quality in the PDA may be adversely affected during construction from leaks and accidental spills or release of fuels or other hazardous substances. Mitigation to avert impacts to surface water quality includes preventing leaks, spills and releases by providing secondary containment for fuel and hazardous material storage, requiring drip trays for equipment, refueling and conducting maintenance only in designated areas (located an appropriate distance from surface water) and in accordance with the PERs, providing spill clean-up equipment and materials in vehicles, and providing an emergency (spill) response plan. If a spill should occur, the Contractor would be responsible to provide notification within 24 hours, and to document the event with an incident report. Measures to protect against and clean-up the potential accidental discharge of contaminants such as fuel, hazardous materials, hazardous waste and non-hazardous waste are discussed in Sections 5.11 and 5.12 of this CEMP.

Water quality will be monitored in regular intervals during and after the construction phase of the Project as described in the SWMP and AEMP. This level of monitoring falls outside of the mandate of the CEMP; however, will occur concurrently and continue beyond the construction phase of the Project (see Section 8.1).

5.5 Erosion and Sediment Control

Erosion and sediment control measures that will be implemented to mitigate the potential transport and deposition of sediments beyond areas disturbed during construction of the channels are detailed in the SMP. These temporary measures are in addition to the various permanent mitigation measures that were built into the channel design such as the rock jetties and drop structures (where applicable), as well as riprap and armoring to protect against erosion. Establishing and maintaining vegetative cover on the slopes, embankments and adjacent perimeter drainage ditches will also provide permanent mitigation against erosion damages from flooding and heavy precipitation. These measures consider the drainage management for the Project to facilitate their intended purpose to minimize and mitigate the transport and deposition of sediment beyond construction areas and into off-site receiving water bodies.

Contractor requirements for environmental protection are based on best practices in the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, the PERs developed by Manitoba Transportation and Infrastructure and Manitoba Transportation and Infrastructure's Manual of Erosion and Sedimentation Control During Highway Construction.

Sedimentation from the erosion of exposed soils can negatively influence fish and fish habitat. To mitigate this effect, the Contractor shall install effective erosion and sediment control measures in accordance with the SMP, Contract Documents and Manitoba Transportation and Infrastructure's PER prior to commencing work and manage water runoff during construction to prevent undesirable soil movement or soil releases and discharges to a waterbody. Erosion and sediment control measures shall be maintained in disturbed sites until soils have stabilized and revegetation of disturbed areas is achieved. Necessary repairs and adjustments to erosion and sediment control measures shall be made immediately to ensure that measures are effective in controlling erosion and sedimentation. Measures include, but are not limited to, rock riprap, erosion control blankets, check dams, straw wattles, silt fences, floating silt barriers (turbidity curtain) and sediment ponds. If erosion control blankets are used the product shall be 100% biodegradable, composed of natural fibers including netting, filling and thread.

When de-watering is required on site, as part of the water management plans, sediment ponds shall be constructed. Discharge from construction activities shall be diverted into a sediment pond to allow suspended material to settle out before the water re-enters a natural waterbody. All pump discharge points shall be lined with clean rock or other acceptable flow dissipating applications to prevent erosion and the release of suspended sediments. The Contractor shall take necessary precautions to ensure contaminants (including sediments) do not enter Lake Manitoba, Lake St. Martin, Lake Winnipeg or other surrounding waterbodies during the construction process.

5.6 Fisheries and Aquatic Ecosystem

Construction of the channels will permanently alter or destroy fish habitat, particularly associated with the excavation of the lake bed at the inlet and outlet, construction of the rockfill groynes at the LSMOC inlet and outlet; blockage of drainage courses and creeks along the channel length; changing groundwater inflows to water bodies adjacent the channel; and potentially increasing sediment transport and deposition. The LMOC and LSMOC will create new fish habitat within the channels that will help to mitigate permanent alteration or destruction of fish habitat. A detailed description of the Project and potential effects will be provided in a submission to DFO to obtain the required *Fisheries Act* authorization for the Project prior to construction. Therefore, no specific authorization conditions have been received to date and once received will be incorporated into the final CEMP. However, standard advice typically issued with a project authorization would still be applicable for reducing potential effects during project construction. Environmental measures likely to be expressed by DFO, some of which are contained within the PERs, may include the following:

- Work shall be conducted in adherence to DFO authorization(s).
- Follow DFO's Manitoba Restricted Activity Timing Windows for the protection of Fish and Fish Habitat for instream work, as practical, particularly for instream work required "in-the-wet".
- Comply with the Manitoba Aquatic Invasive Species regulations to reduce the risk of increasing dispersal of invasive aquatic species. In particular heavy machinery will be required to be cleaned and disinfected prior to arriving on site and before moving between work areas at different lakes and drainages.
- Activities related to the Project shall be undertaken in accordance with the "Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat," applicable best practices and mitigation measures identified in DFO's codes of practices, and in consideration of the Fish Swimming Performance User Guide, 2016 and provincial fisheries objectives.
- Appropriate precautions shall be taken so that potential deleterious substances (such as fuel, hydraulic fluids, oil, or sediment) do not enter a waterbody. Equipment operating near a waterbody is to be free of external fluid leaks, grease, oil and mud and the cleaning, fueling and servicing of equipment shall be conducted in a manner to prevent the entry of deleterious substances into the surface water.
- Removal of riparian vegetation shall be kept to a minimum to help maintain the stability of waterbody banks. The area over which vegetation in riparian vegetation areas is removed shall affect no more than one third (1/3) of the total woody vegetation in the ROW within 30 m of the ordinary high-water mark of a waterbody. Clearing within 30 m of a waterbody shall be done by hand and vegetative root masses found within the waterbody banks shall remain undisturbed unless specified in the Contract Documents.
- Erosion and sediment control measures shall be implemented as appropriate in compliance with Contract Documents in order to prevent the entry of sediment in waterbodies. Suitable temporary and long-term erosion control measures shall be installed where required to ensure disturbed areas are not subject to erosion prior to the establishment of vegetation. These measures are to be inspected regularly to verify that they are functioning properly until vegetation is reestablished, and necessary repairs or adjustments will be made if damage is discovered or if these measures are not effective in controlling erosion and sedimentation.

- The work area for construction of the inlet and outlet shall be isolated from the adjoining waterbody using appropriate methods (turbidity curtain, temporary cofferdam, etc.). Isolated areas should be the minimum area required to safely complete the construction activities.
- If required, de-watering of a cofferdam area shall be pumped to a settling basin or filtering system protected with flow dissipating applications and then discharged onto the riprap shoreline prior to re-entering the waterbody. Alternatively, the dewatering could be pumped through dense terrestrial vegetation a sufficient distance from the waterbody to allow sediment deposition prior to discharge water reaching a waterbody.
- Live fish or mussels salvaged within a de-watering area shall be transferred to the natural waterbody which it was from.
- Implement measures for materials handling, waste handling and disposal, and fuel handling and storage in designated areas located a minimum of 100 m from a waterbody and with secondary containment.
- Debris and material shall be removed from the ice cover (over waterbodies) on an on-going basis and disposed of in an appropriate landfill or other location.
- Implementation of an emergency response plan (ERP) for spills including educating the workforce and maintaining accessible spill control and clean-up equipment.
- Appropriately sized rock riprap will be used for armouring areas vulnerable to erosion and scour.

Water quality will be monitored in regular intervals during and after the construction phase of the Project as described in the SWMP and AEMP.

5.7 Vegetation

Clearing along the LMOC, the new PR 239 alignment, and LSMOC will entail the loss of existing native upland vegetation, primarily dense coniferous and mixedwood forest, and wetland area. Mitigation to reduce the adversity of this effect includes clearly staking or marking the work area to restrict clearing and grubbing to the construction or contract limits. In particular, the EPP will identify any environmentally sensitive sites that need to be avoided or mitigated as part of the construction. The Contractor shall not remove vegetation or excavate outside the limits of construction and staging areas without written authorization from the Owner.

Clearing and grubbing for the LMOC and LSMOC is expected to primarily occur in the winter months. For wetlands areas, priority will be given to clear and grub during dry or frozen conditions whenever possible. The topsoil (i.e., the organic layer) along both channels will be salvaged and temporarily stockpiled to be used as a seed bed to spread over the containment dikes and areas to be re-vegetated as described in the RVMP. Temporary staging areas will be located in the ROW wherever feasible and leaving short shrubs and herbaceous, graminoid and non-vascular cover in place to promote recovery of native vegetation. As part of the AMP, construction-related traffic will be restricted to the Project ROW and associated access routes. Removal of riparian vegetation will be minimized to help maintain the stability of waterbody banks. A 30 m setback will be applied to known occurrences of provincially listed Species of Conservation Concern (SOCC); however, where avoidance of SOCC is not possible, construction in sensitive areas will be restricted to the winter months (outside of the growing season). While there are no vegetation species along the LMOC and

LSMOC that are protected federally under the SARA or provincially under *The Endangered Species and Ecosystem Act*, as described in the Project EIS, SOCC also include vegetation species ranked by the Manitoba Conservation Data Centre as critically imperiled (S1), imperiled (S2) or vulnerable (S3).

As a component of the erosion and sediment control program, during construction, temporary seeding of topsoil stockpile areas is required if it will not be used to re-vegetate disturbed areas within the same growing season. Areas disturbed during construction activities will be leveled to natural or pre-existing grade and slope and then re-vegetated. Where seeding is not required, temporary site locations will be left in a manner which promotes natural re-vegetation of the site.

Construction activities including excavation, transportation of materials and blasting (if required) will result in increased fugitive dust, which can settle on vegetation in the study area resulting in impaired growth and development. Mitigation measures to control dust are outlined in Section 5.1 and described in the Dust Control Plan.

To control the spread of invasive species during construction, weed areas identified in the RVMP will require treatment prior to construction, as well as weed maintenance treatment of topsoil stockpiles. Equipment will need to be clear of debris and weeds prior to coming on to the construction site and will be inspected prior to work commencing. The weed control program will continue after construction in accordance with monitoring and maintenance measures outlined in the RVMP.

5.8 Wildlife

Given the availability of suitable habitat and known occurrences of SAR within the LAA, the SAR most likely to be affected by the direct loss or alteration of habitat are northern leopard frog, least bittern, and yellow rail in wetlands; short-eared owl and bobolink in grasslands; bank swallow and common nighthawk in quarries; and bats, eastern whip-poor-will, red-headed woodpecker, and olive-sided flycatcher in forests. Both eastern whip-poor-will and red-headed woodpecker are Threatened species protected federally and provincially under SARA and *The Endangered Species and Ecosystem Act*.

Key mitigation to reduce the adversity of wildlife habitat fragmentation and loss during construction includes restricting clearing and grubbing to the construction or contract limits unless otherwise approved. In accordance with the *Migratory Birds Convention Act* to avoid impacts to migratory birds including eastern whip-poor-will and red-headed woodpecker, tree and brush clearing will not be conducted between April 1 and August 30 of any year unless circumstances rendered for an emergency and otherwise approved by Manitoba Transportation and Infrastructure. While rarely used, if clearing needs to be conducted for an emergency during this breeding period or other critical nesting periods, a qualified biologist will conduct a nest survey to identify if active nests are present. In the event that quarry or borrow sites need to be reinstated during the breeding bird window, the surveys to determine presence or absence of nests will need to be conducted by a qualified biologist. If nests are discovered, work will be suspended, and the Inspector will be contacted.

Measures to protect large nests of sticks, active dens, burrows or other sensitive wildlife features, if encountered, will be applied as per guidance described in the PERs. No blasting will be permitted within approximately 1 km of known sensitive wildlife habitat during critical lifecycle periods. Additionally,

appropriate terrestrial buffers as identified in provincial guidelines will be adhered to. As described in the RVMP, areas disturbed during construction will be revegetated to restore wildlife habitat with consideration for sediment control and invasive plant species management. The potential to restore wildlife habitat in appropriate areas along the LMOC will include measures such as red-headed woodpecker snag installation and replacing coarse woody debris and planting shrubs to enhance eastern-whip-poor-will habitat.

To reduce wildlife mortality associated with vehicle-wildlife collisions, vehicle speed will not exceed posted speed limits and wildlife warning signs will be installed where appropriate. Project-related vehicle-wildlife collisions will be tracked as part of the WMP. Contractors will be required to keep construction camps and worksites clean with food, garbage or waste that may attract wildlife stored and disposed of in an appropriate manner so that problem wildlife attractants are not created. Nuisance wildlife will be immediately reported to the Natural Resources Officer and the Contract Administrator. Employees, workers and other staff will not hunt, trap or harass wildlife and gates or other barriers will be installed to limit public from accessing the LMOC and LSMOC ROWs.

While sensory barriers to wildlife movement will be temporary during construction the adversity will be mitigated by ensuring that equipment supplied for use on the Project is effectively “sound-reduced” by means of proper silencers, mufflers, acoustic linings, acoustic shields or acoustic sheds. Night lighting, if required, will be directed downward to reduce light disturbance to wildlife.

5.9 Land and Resource Use

Routing of the channels included the consideration of recreation and tourism. No lodges, campgrounds, resorts or cottages are traversed by the channel alignments. Mitigation to address potential Project effects on recreational land use and tourism includes restricting clearing and excavation to the limits of construction and staging areas. Additionally, Manitoba Transportation and Infrastructure will provide Project development information on the Manitoba Transportation and Infrastructure website.

To mitigate potential Project effects on resource use, Manitoba Transportation and Infrastructure will communicate the schedule of Project activities throughout the construction phases to affected rights-holders, stakeholders, recreational users and/or organizations, area resource users and MECP Regional representatives. In particular, Manitoba Transportation and Infrastructure will engage with Indigenous commercial fish harvesters and anglers to address potential conflict, disturbance, or access restrictions to fishing/harvesting areas and availability of fish resources. Construction workers will not hunt, trap or harass wildlife on the construction sites. No person will remove, disturb, spring or in any way interfere with a trap set out lawfully by another person for the purpose of taking furbearing animals.

5.10 Heritage Resources

As an outcome of the Heritage Resource Impact Assessment conducted, a HRPP has been prepared specifically to deal with potential effects to heritage resources. It outlines measures to mitigate effects to cultural and heritage resources. If heritage resources, or objects thought to be heritage resources, are discovered during site preparation and construction the Historic Resources Branch (of the Manitoba Sport, Culture and Heritage Department) will be informed immediately. The Contractor will cease construction

activities in the immediate vicinity of the heritage resources, protective barriers will be placed around heritage resource sites and heritage resources discovered will be left in their original position until the Project Archaeologist is contacted and prescribes instruction.

The current Project design and routing of the channels was influenced by the Indigenous engagement and consultation process to limit effects and concerns that were expressed in relation to changes to cultural and spiritual sites and sacred areas. Detailed recording and mapping of sites of cultural and spiritual importance will be developed by Manitoba Transportation and Infrastructure in partnership with rights-holders, leading to a decision made about the relative importance of the site and potential mitigations strategies. An appropriate ceremony will be held prior to commencement of construction under the direction of local rights-holders.

5.11 Materials and Waste Management

The Manitoba Transportation and Infrastructure Emergency Spill Response and Reporting Procedures covers the transportation, use, storage and transfer of hydraulic fluid, other mechanical lubricants, petroleum fuels, antifreeze and herbicides. To prevent potential environmental accidents and contain potential spills, hazardous materials shall be transported, stored, and handled as recommended by the suppliers and/or manufacturers, and in compliance with applicable federal, provincial, or municipal regulations. Dangerous goods/hazardous wastes are identified by and shall be handled according to *The Dangerous Goods Handling and Transportation Act* and Regulations. The Contractor shall have on-site staff that are trained and certified in the handling of the dangerous/hazardous goods being utilized on site.

Fuel storage shall be in compliance with the *Manitoba Storage and Handling of Petroleum Products and Allied Products Regulation 188/2001*. Fuel stored in drums or containers of 230 L or less will comply with the requirements of the Manitoba Fire Code. Designated area(s) will be established for fuel storage, hazardous materials handling and storage, equipment cleaning, refueling and servicing. Designated areas will be located at least 100 m from a waterbody or wetland and will be kept clear of snow and/or miscellaneous materials to allow for clear access and routine inspection and leak detection. Dedicated petroleum storage areas will provide additional spill containment (impervious liner and berms). Only above ground storage tanks will be used for the storage of bulk petroleum products. The tanks will be equipped with overfill protection and spill containment consisting of perimeter dikes or secondary containment in the tank design.

Equipment maintenance and inspections are a key component to preventing small leaks from contaminating the waters and riparian areas associated with a project. This is particularly important for equipment working temporarily over the wetted area or within close proximity to Lake Manitoba, Lake St. Martin, Lake Winnipeg or other waterbodies. Construction equipment will arrive on site in a clean condition and shall be kept in good working order free of external fluid leaks, grease and oil. Equipment working at the construction site will be inspected daily for small leaks. Machinery that is found to be leaking fuel, oil or other fluids will be moved off the work site immediately for repair. When equipment is stationary for extended periods of time within the work area drip trays will be installed to contain potential leaks. For mobile equipment on site, drip trays should be readily available, and used as needed. Implementation of these measures will be documented in reports as described in Section 8.2.

The Contractor shall conduct day-to-day operations in such a manner as to avoid creating conditions that will be detrimental to the surrounding area. Different waste streams shall not be mixed, and waste materials and refuse shall be removed and disposed of promptly in a manner that will not contaminate the surrounding area. Effort shall be made to prevent debris from falling into, or accumulating on, ground surfaces or into the waterway at and in the immediate vicinity of the Project. The construction area shall be kept clean and orderly during and at completion of construction. At no time during construction shall domestic solid, demolition or construction waste be permitted to accumulate for more than one day at a location on the work site, other than at a dedicated temporary waste storage site. These waste materials shall be recycled to a degree that is economically and practically feasible or disposed of at a Waste Disposal Ground operating under the authority of a permit issued pursuant to Manitoba Waste Disposal Grounds Regulation 150/91. All sewage and seepage from on-site sanitary facilities will be disposed of at a local licensed facility and in accordance with the *Manitoba Onsite Wastewater Management Systems Regulation 83/2003*.

Dangerous goods/hazardous waste storage areas shall be located at least 100 m away from the high-water line of the nearest water body and be contained within a diked area or another form of secondary containment. Liquid wastes or fuels shall not be permitted to be deposited upon the ground. When equipment servicing requires the drainage or pumping of lubricating oils, or other fluids from the equipment, a groundsheet of suitable material and size shall be spread on the ground to catch fluids in the event of a leak or spill. Bulk waste oil will be stored in aboveground oil tanks, which will have secondary containment and a weatherproof cover. Waste oil will be recycled by a reputable recycling agency. Used oil filters will be drained, placed into suitable storage containers and disposed of at approved facilities. Empty containers from equipment refueling and servicing will be removed to a licensed disposal site. Disposal of dangerous/hazardous wastes shall be at approved hazardous waste facilities.

5.12 Emergency Spill Response and Reporting Procedures

The ERP applies to spills, accidents, or malfunctions involving the release of fuels, dangerous goods or hazardous materials/waste. Due care and caution shall be taken to prevent spills. In the event of a release during Project construction, Contractors will follow their own spill response plans, which will have been reviewed and approved by Manitoba Transportation and Infrastructure as part of their contracts. Manitoba Transportation and Infrastructure has developed PERs, which Contractors will have to adhere to, that describe measures to address accidents and spills, including reporting, cleanup, compliance training, inspection, and enforcement. An updated list of key contacts and telephone numbers for reporting spills, accidents or malfunctions shall be kept on site. A Workplace Hazardous Materials Information System (WHMIS) file shall be maintained on site for the hazardous materials at the work area. Prior to commencement of the work, Safety Data Sheets shall be submitted to the Owner for hazardous materials to be used on site. The Contractor shall provide training for staff and ensure subcontractors are trained and empowered to identify, address and report potential environmental problems.

Spills will be contained and cleaned up immediately by on-site personnel in accordance with the approved on-site emergency response and containment plan. In the event that petroleum products (e.g., fuel or oil) spill or leak at the work site the source of the spill should be stopped by shutting down equipment, closing valves and pumps, or plugging hoses. If possible, the spilling or dripping materials should be contained by a

spill pan and diking around the spill to prevent it from entering the drainage system. These mitigation procedures should be conducted by the operator(s) that identified/were involved in the spill or leak. Any pooled liquids should be recovered by placing in appropriate drums for temporary storage and disposal by approved agencies. The residual liquids shall be cleaned up using absorbent pads and contaminated soil and/or materials must be removed immediately and transported to an approved location for disposal. In the event that a petroleum product enters a natural waterbody (e.g., equipment leak while conducting in stream works in, or while working along the periphery of Lake Manitoba, Lake St. Martin and Lake Winnipeg), the appropriate spill kit resources must be implemented immediately.

The Contractor shall immediately report any reportable spills to MECP's Accident Reporting Line at (204) 944-4888 pursuant to *Manitoba Environmental Accident Reporting Regulation 439/87*. The Contractor shall report spills to the Owner within 24 hours, whether it was necessary to report the spill to MECP or not. A follow-up report shall be provided to the Director of MECP, at their request, for any reportable environmental accident outlining the causes(s) and proposed corrective action to prevent reoccurrence. This follow-up report will also be provided to other regulators, as required, such as DFO for example to adhere to the *Fisheries Act* Section 38(5) Duty to Notify – Deleterious Substance.

An adequate supply of suitable absorbent material and other supplies and equipment necessary to immediately cleanup inadvertent spills will be available on-site during construction, including an emergency spill kit for in water use. Each machine working on site shall also have a spill kit. Spill kits should contain at a minimum: absorbent material, high-density polyethylene groundsheets and absorbent oil booms when working near water. Storage and disposal of residual material from spill cleanup must be done in an environmentally safe manner and in accordance with applicable regulations. The Inspector and/or Contract Administrator will inspect storage areas to ensure requirements are being met.

5.13 Fire Prevention and Response Procedure

Wildfires can be a threat to people, property and activities. Advance planning, preparation and the implementation of safety measures is required to effectively respond to wildfires when they do occur. The Manitoba Emergency Plan (<https://www.manitoba.ca/emo/provincial/mep.html>) provides information on prevention and mitigation, preparedness, response and recovery in relation to fires. Manitoba Transportation and Infrastructure has developed PERs, which Contractors will have to adhere to, that describe measures to address burning and brush disposal. An evacuation and emergency preparedness plan addressing wildfires shall be implemented and submitted by the Contractor prior to commencing construction. On-site personnel will be trained in fire prevention, including proper disposal of hot or burning material and designated smoking areas, and response.

Fire prevention is based upon the principle of keeping fuel sources, oxygen sources and ignition sources separate. Fire prevention starts with good housekeeping, which ensures that materials are stored in the right place and do not accidentally spill and cause fire. A primary zone will be established around camp sites and other longer-term temporary structures associated with construction and maintenance activities. Flammable materials such as leaves, brush, dead limbs, and fallen trees will be cleared from the area regularly. Exhaust and engine systems of equipment and vehicles shall be in good working condition and free of dried grass and

other combustibles. Fire extinguishers shall be available in heavy and light construction equipment and in equipment storage facilities and offices for fighting fires.

Reasonable steps will be taken to prevent a fire from burning out of control or spreading from land owned or occupied for construction purposes. No fires shall be started without first taking sufficient precautions to ensure that the fire can be kept under control. Burning or smoldering matter will not be placed where it may cause a fire to spread. Brush pile burning will be located far enough away from the ROW edge to avoid damaging uncleared vegetation, and where feasible, will be located on mineral (sand and gravel) or previously cleared areas. Fires will be completely extinguished after burning of slash and burn piles and will be monitored so that no hot spots remain. Open fires are prohibited from April 1st to November 15th annually. In the event that burning is required during that period, an application for a burning permit will be submitted for approval to MECP and the conditions imposed by the burning permit will be adhered to.

In the event that a wildfire occurs, it shall be immediately reported to Manitoba Transportation and Infrastructure and to MECP at 1-800-782-0076. All construction and related activities taking place in the vicinity of a wildfire shall cease until advised by the Owner that it is safe to resume operations. Additionally, reasonable attempts will be made to extinguish the wildfire with available equipment, services and labor made available at the disposal of an officer for the purposes of wildfire protection operations.

6.0 COMMUNICATION

6.1 Pre-Job Briefings

A 'pre-job' briefing will be held at the start of the first day that a worker/subcontractor commences work on site. The meeting is intended to review the activities that the worker/subcontractor will be participating in and to express potential health, safety, and environmental issues related to their proposed work.

6.2 Project Meetings

Early and ongoing communication between Manitoba Transportation and Infrastructure, the Contractor and Inspector(s) is expected. Regular weekly progress meetings will be held to review aspects of the Project's progress. The Inspector will be responsible for providing appropriate up to date descriptions of adherence to, and the effectiveness of, environmental management measures outlined in this CEMP.

6.3 External Communication

The primary line of communication to right's holders, the public and stakeholders will be through Manitoba Transportation and Infrastructure, in addition to Project development information provided on the Manitoba Transportation and Infrastructure website. When and if required, the Contract Administrator will be responsible for developing submissions on environmental matters and issuing to Manitoba Transportation and Infrastructure, including Technical Support Staff, for distribution to Project stakeholders, identified rights-holders and government agencies. In the case of a spill requiring notification under the Manitoba reporting regulations, reporting will occur as specified in Section 5.12.

A CRP will also be implemented to provide opportunities for local residents, stakeholders and rights holders to notify Manitoba Transportation and Infrastructure of issues or concerns. Further details on this process is provided in the CRP.

7.0 TRAINING

The Contractor shall provide mandatory training and awareness sessions for their entire workforce and subcontractors prior to the start of construction, and to new personnel before they begin work. All employees involved in the storage, handling and use of dangerous goods and fuels shall have WHMIS and spill prevention and response training. Additionally, if herbicides are used, they will be applied by trained personnel who meet provincial licensing requirements. All training and orientation sessions shall be documented and issued to Manitoba Transportation and Infrastructure for their records and submission to regulators where required.

The purposes of the training and orientation sessions is to ensure Contractor personnel are aware of and understand the environmental provisions of the Contract Documents including relevant drawings, specifications and Contractor submittals and updates. This orientation is intended to cover several topics that are considered important to the newly arrived workers. In particular, the contents of this CEMP will be reviewed to ensure that environmental protection measures are followed throughout the Project. Topics of particular importance to be discussed with workers/subcontractors include:

- what is a spill or discharge
- what to do if there is a spill in water or on land
- what spills are reportable and within what time frame
- fire prevention and response
- what is a heritage resource and the management of resources encountered

The Contractor shall submit the planned frequency and records of these meetings. However, this information will likely be presented during the weekly Project/construction meetings and the daily safety meetings that are held before each shift. The Contractor shall maintain access to environmental provisions of the Contract Documents including relevant drawings, specifications and Contractor submittals and updates, in a location and manner accessible to employees, subcontractors, and agents.

8.0 MONITORING

Monitoring and reporting are critical elements of this CEMP as a method to verify that the environmental management measures outlined in Section 5.0 and the supporting topic specific management plans are being implemented, maintained and are effective in mitigating the adverse environmental effects of the Project. Additionally, it allows these measures to be adapted where necessary, and to anticipate potential unforeseen adverse environmental effects. Manitoba Transportation and Infrastructure, the Contract Administrator, the Contractor and Environmental Monitors each have responsibilities for monitoring and reporting, as outlined in Section 2.0 and shown in Figure 3. More details characterizing the monitoring and follow-up are described in the EMP Framework.

8.1 Monitoring

Monitoring includes surveillance to document progress in construction, identification of problems, issues and concerns, and environmental effects not predicted in the Project EIS. Throughout construction of the channels, the Inspector shall monitor the work activity on a daily basis to facilitate adherence to, and the effectiveness of, environmental management measures outlined in this CEMP and the supporting topic specific management plans. There will also be monitoring of surface water quality, groundwater levels and quality fish and fish habitat, vegetation and wildlife throughout the construction phase and operation of the Project where required to fulfill conditions of environmental approvals.

8.2 Reporting

On a daily basis, the Inspector will use the Environmental Daily Inspection Checklist (Appendix 2) so that mitigation methods outlined in this CEMP are regularly adhered to, when applicable. Any request for a change in environmental management measures or contract restrictions initiated by the Contractor shall be submitted to the Owner. The Inspector will complete a Weekly Environmental Inspection Form (Appendix 2) during their site visits. The form will summarize information including, but not limited to:

- a description and status of construction activities
- a description and status of environmental protection measures (in particular, erosion and sediment control)
- any deficiencies, issues or complaints and the corrective action to be taken
- environmental incident(s) reported and corrective action implemented
- summaries of key correspondence
- site photos documenting the observations

If an environmental incident/accident occurs, a separate Environmental Incident/Accident Report Form (Appendix 2) will be filled out by the Contractor with assistance from the Inspector, which describes the incident, lists the individuals involved, and details the cause of the incident and corrective actions taken to prevent the incident from occurring in the future. The Inspector will keep an Environmental Incidents

Running Record Form (Appendix 2) on site which identifies each incident that occurred and identifies “when” the actions were taken to clean up and/or prevent the incident from occurring in the future.

In the event of a reportable spill, the Inspector will immediately report to the proper authorities and provide a copy of the incident report to the Owner. As noted in Section 5.12, a follow-up report shall be provided to the Director of MECP, at their request, for a reportable spill outlining the cause(s) and proposed corrective action to prevent reoccurrence. There are also regulatory reporting obligations when hazardous substances are transported to or from the site and/or stored on site.

Upon completion of the construction components of the Project, copies of the environmental reports will be submitted to the Technical Support Team. These reports will be summarized by the Technical Support Team and an overview document of construction activities and related environmental concerns, and mitigation actions will be prepared for submission to the Owner and, if required, submission to Provincial/Federal Authorities.

8.3 Record Keeping

Record keeping includes maintaining files and documentation related to environmental management measures and associated monitoring and reporting. Copies of permits, approvals, or other authorizations required for the work to proceed shall be retained on site, along with other approvals, monitoring and compliance/enforcement orders from regulatory authorities. If an order is submitted directly to the Contractor, the Contractor shall notify Manitoba Transportation and Infrastructure in writing and provide copies of the correspondence between the regulator and the Contractors as it will have implications to regulatory reporting that may be required as part of the Project’s Environmental Assessment Decision Statement or Environment Act Licence. The Contractor shall provide the Owner and the Contract Administrator with the identity of knowledgeable individual(s) who will act as the on-site emergency response coordinator(s) with the authority to redirect manpower to respond to a spill or environmental emergency. Additionally, the Contractor shall provide the identity of an environmental coordinator capable of redirecting work to address non-compliance issues. As a general requirement, work shall be photo-documented, and notification of the work will be provided to Manitoba Transportation and Infrastructure on a monthly basis for record keeping purposes.

The Contractor shall maintain a record file at the site in which relevant information relating to materials handling, spills, leaks, releases, and the implementation and adjustment of the environmental protection measures is documented. The Contractor shall maintain a copy of these records for a minimum of five (5) years after contract closeout. Relevant information and/or significant events are to be documented and provided to Manitoba Transportation and Infrastructure in a timely fashion. Records would include, but are not limited to:

- all accidents, spills, leaks, and releases and the reporting and clean-up procedures used
- any reviews, improvements, and adjustments to the environmental protection measures
- details of environmental training sessions, including the schedule of these sessions and the names of participants
- a full inventory of dangerous goods brought onto the site

- a full inventory of hazardous wastes encountered on the site
- records of waste hauled from the site for disposal, including the location, name and description of the disposal facility and waybills/manifests
- records of material hauled from the site for recycling, including the location, name and description of the person or facility the material was delivered to
- records of fuel transported and stored at the site
- records of equipment inspections and maintenance
- records of public complaints
- records of actions taken to remove deleterious substances and debris from waterbodies
- records of annual use of pesticides
- wildlife encounters and/or management measures employed

APPENDIX 1

Applicable Federal and Provincial Legislation

Table 1-1: Applicable Federal and Provincial Legislation

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
Federal Legislation		
<i>Canadian Environmental Assessment Act, 2012, SC 2012, c 19, s 52</i>	<ul style="list-style-type: none"> Physical Activities, Regulations Designating, SOR/2012-147. Prescribed Information for the Description of a Designated Project Regulations, SOR/2012-148. 	<ul style="list-style-type: none"> Identifies requirements and provides guidance for environmental assessments of designated projects. Project requires environmental assessment and approval. Includes federal Decision Statement with conditions that must be adhered to.
<i>Canada Water Act, RSC 1985, c C-11</i>	<ul style="list-style-type: none"> Management of water resources including conservation and utilization of water resources and provides guidelines for Canadian drinking water quality. 	<ul style="list-style-type: none"> Protection of water resources, including water quality.
<i>Canadian Environmental Protection Act, 1999 (S.C. 1999, c. 33, s 64, shed 1)</i>	<ul style="list-style-type: none"> Provides a series of regulations for toxic substances. 	<ul style="list-style-type: none"> The potential risks of environmental pollutants and toxic substances are evaluated under this Act that addresses pollution prevention and the protection of the environment (Environment Canada) and human health (Health Canada) to contribute to sustainable development.
<i>Explosives Act, RSC 1985, c E-17</i>	<ul style="list-style-type: none"> Explosives Regulations 2013, SOR/2013-211. 	<ul style="list-style-type: none"> Legislates and regulates the manufacturing, testing, acquisition, possession, sale, storage, transportation, importation and exportation of explosives. Blasting activities, explosives storage and transport will need to be licenced.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>Federal Sustainable Development Act, S.C. 2008, c. 33</i>	<ul style="list-style-type: none"> The Governor in Council may make regulations for the purpose of achieving any of the goals of this Act. 	<ul style="list-style-type: none"> An Act to require the development and implementation of a Federal Sustainable Development Strategy and the development of goals and targets with respect to sustainable development in Canada, and to make consequential amendments to another Act.
<i>Fisheries Act, RSC 1985, c F-14</i>	<ul style="list-style-type: none"> Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations, SOR/2013-191. Paragraph 36(3) Prohibits deposition of a deleterious substance of any type in water frequented by fish or in any place where the deleterious substance may enter the water, except those authorized by regulation. Aquatic Invasive Species Reg. SOR/2015-121. 	<ul style="list-style-type: none"> Protects fish (as defined by the Act) from serious harm. Identifies general prohibitions, fisheries protections and pollution prevention, as well as requirements for authorization of works which may cause serious harm to fish prior to construction. Protects against introductions of pollutants or high levels of sediment that could be deleterious to fish. Lists invasive species that are prohibited and controlled. Identifies activities and regulatory tools to prevent the introduction of aquatic invasive species into Canadian waters and to control and manage their establishment and spread, once introduced. Authorization or Letter of Advice required if carrying out work that may affect fish or fish habitat.
<i>Migratory Birds Convention Act, 1994, SC 1994, c 22</i>	<ul style="list-style-type: none"> Migratory Birds Regulations, CRC, c 1035. 	<ul style="list-style-type: none"> To protect and conserve designated migratory birds and their nests. Permit required to kill, capture, take, or remove or eliminate migratory birds or nests.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>Navigation Protection Act, RSC 1985, c N-22</i>	<ul style="list-style-type: none"> • Navigable Waters Bridges Regs. CRC, c 1231. • Navigable Waters Works Regs. CRC, c 1232. 	<ul style="list-style-type: none"> • Protection of the right to navigation on navigable and scheduled waterways. Identifies prohibitions for the construction, placement, alteration, repair, reconstruction, removal or decommissioning or works in, on, over, under, through or across scheduled navigable water. Identifies requirements for authorization of works, and the potential for opting in for works at non-scheduled waters prior to construction. • MI will opt-in and obtain Transport Canada Authorization.
<i>Species at Risk Act, SC 2002, c 29</i>	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Prohibits killing, harming or harassing endangered or threatened species at risk, provides for plans and strategies to enable the recovery and management of endangered, threatened or extirpated species, prohibits destruction of critical habitat, and allows for the management of species of special concern to prevent them from becoming endangered or threatened. • Permit required for activities affecting a wildlife species or any part of its critical habitat.
<i>Transportation of Dangerous Goods Act, 1992, SC 1992, c 34</i>	<ul style="list-style-type: none"> • Transportation of Dangerous Goods Regulations, SOR/2008-34. 	<ul style="list-style-type: none"> • Defines methods for handling, containment and transportation of substances that could cause damage to personal safety or the environment.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
Provincial Legislation		
<i>The Environment Act, C.C.S.M. c. E125</i>	<ul style="list-style-type: none"> • Classes of Development Reg. 164/88. • Environment Act Fees Reg.168/96. • Licensing Procedures Reg. 163/88. • Notice and Reporting Reg. 126/2010. • Onsite Wastewater Management Systems Reg. 83/2003. 	<ul style="list-style-type: none"> • Classifies developments and identifies requirements for provincial licencing and environmental assessment. • Defines the application fees. • Defines information required to apply for licencing under The Environment Act. • Defines requirements regarding the notice of a licencing decision and reporting of releases to the environment. • Defines proper construction and disposal for onsite water management systems.
<i>The Crown Lands Act, C.C.S.M. c. C340</i>	<ul style="list-style-type: none"> • Crown Lands Fees Regulation 130/91. • Vehicle Use on Crown Lands Resource Roads Regulation 145/91. 	<ul style="list-style-type: none"> • Identifies requirement for and issuance of leases, permits, easements and rights-of-way for specified works on provincial Crown lands. Work permits will be required.
<i>The Dangerous Goods Handling and Transportation Act, C.C.S.M. c. D12</i>	<ul style="list-style-type: none"> • Dangerous Goods Handling and Transportation Fees Reg. 164/2001. • Dangerous Goods Handling and Transportation Reg. 55/2003. • Environmental Accident Reporting Reg. 439/87. • Hazardous Waste Reg. 195/2015. • Storage and Handling of Petroleum Products and Allied Products Reg.188/2001. 	<ul style="list-style-type: none"> • Identifies requirements for handling, containment and transportation of substances that could cause damage to personal safety or the environment. • Outlines reporting requirements in the case of an accidental spill. • Defines categories of hazardous wastes and registration of generators of hazardous waste. • Outlines requirements of storage systems for petroleum products. • Permit required for carriers, and to dispose of hazardous waste.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>The Endangered Species and Ecosystems Act, C.C.S.M. c. E111</i>	<ul style="list-style-type: none"> Threatened, Endangered and Extirpated Species Reg. 25/98. 	<ul style="list-style-type: none"> Regulates the protection of Manitoba’s threatened and endangered species. Conserves and protects threatened and endangered ecosystems in Manitoba and promotes their recovery. Permit needed to kill, take, collect, or capture an endangered species.
<i>The Fires Prevention and Emergency Response Act C.C.S.M. c. F80</i>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Any activities associated with combustible materials. Provides for control of activities regarding the prevention, detection and extinguishment of fires. Work camp occupancy permit required.
<i>Forest Act, C.C.S.M. c. F150</i>	<ul style="list-style-type: none"> Forest Use and Management Regulation, 227/88 R 	<ul style="list-style-type: none"> Permit required to enter forest land to cut or remove timber.
<i>The Groundwater and Water Well Act C.C.S.M. c. G110</i>	<ul style="list-style-type: none"> Groundwater and Water Well (General Matters) Regulation 214/2015. Well Standards Regulation 215/2015. 	<ul style="list-style-type: none"> The purpose of this Act is: <ul style="list-style-type: none"> to provide for the protection and stewardship of Manitoba's aquifers and groundwater; to ensure that the construction, maintenance and sealing of wells and test holes meet standards that protect; the environmental quality of Manitoba's aquifers and groundwater, and human health and safety; to provide for the collection and sharing of well, aquifer and groundwater information to better understand, manage, conserve, protect, develop and use Manitoba's aquifers and groundwater.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>The Heritage Resources Act, C.C.S.M. c. H39.1</i>	<ul style="list-style-type: none"> Heritage Resources Forms Regulation 99/86. Heritage Objects Designation Regulation 160/89. Heritage Sites Designation Regulation 122/88R. 	<ul style="list-style-type: none"> Designates heritage sites and identifies protections for heritage resources and heritage resource sites, including the requirement to conduct a Heritage Resource Impact Assessment (HRIA). A permit is required for the HRIA.
<i>The Highway Traffic Act, SM 1985-86, c. 3</i>	<ul style="list-style-type: none"> Designated Construction Zones Regulation 145/2014. 	<ul style="list-style-type: none"> Provides guidelines and requirements for vehicles and driving on Manitoba highways.
<i>The Mines and Minerals Act, C.C.S.M. c. M162</i>	<ul style="list-style-type: none"> Quarry Minerals Regulation, 1992, Reg.65/92. Drilling Regulation, 1992, Reg. 63/92. 	<ul style="list-style-type: none"> Identifies and outlines requirements for sustainable development of mineral product exploration and production, including quarrying, in Manitoba. Quarry permits will be required.
<i>The Noxious Weeds Act, C.C.S.M. c. N110</i>	<ul style="list-style-type: none"> Noxious Weeds Reg. 35/96. 	<ul style="list-style-type: none"> Identifies noxious weeds that may adversely impact Manitoba's environment or economy, outlines responsibilities to control or destroy such weeds and prohibits their spread during construction works.
<i>The Pesticides and Fertilizers Control Act, P40</i>	<ul style="list-style-type: none"> Pesticides and Fertilizers Licence Regulation, 216/87 R 	<ul style="list-style-type: none"> Application license required
<i>The Public Health Act, P210</i>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Relates to the preservation of health including conditions that may contaminate or pollute air, food or water. Food handling permit is required for construction camps if they have kitchen facilities.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>The Climate and Green Plan Implementation Act</i>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Provides a framework through which the government develops a plan to reduce greenhouse gas emissions, address the effects of climate change, promote sustainable development and protect Manitoba's water resources and natural areas.
<i>The Water Protection Act, C.C.S.M. c. W65</i>	<ul style="list-style-type: none"> Aquatic Invasive Species Regulation 173/2015. Nutrient Management Regulation 62/2008. 	<ul style="list-style-type: none"> Provides protection and stewardship of Manitoba's water resources and aquatic ecosystems.
<i>The Water Resources Administration Act, C.C.S.M. c. W70</i>	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Outlines a framework for the use and administration of water control works, including requirements and processes for approval of operating guidelines.
<i>The Water Resources Conservation Act C.C.S.M. c. W72</i>	<ul style="list-style-type: none"> Water Resources Conservation Regulation 179/2010. 	<ul style="list-style-type: none"> Provides for the conservation and protection of Manitoba's water resources, and of the ecosystems associated with and reliant upon those water resources.
<i>The Water Rights Act, C.C.S.M. c. W80</i>	<ul style="list-style-type: none"> Water Rights Regulation 126/87. 	<ul style="list-style-type: none"> Identifies rights and use of water in Manitoba and prohibitions against diversion of water or operation of water works and sets requirements for permitting and protections of aquatic ecosystems. Permits may be required for drainage works.
<i>The Wildfires Act, C.C.S.M. c. W128</i>	<ul style="list-style-type: none"> Burning Permit Areas Regulation 242/97. 	<ul style="list-style-type: none"> Outlines wildfire controls, duties and prohibitions. A permit is required to burn clearing debris.

Act	Regulations/Policy with Potential Project Implications	Regulatory Objectives, Project Linkages and Permits
<i>The Wildlife Act, C.C.S.M. c. W130</i>	<ul style="list-style-type: none"> • General Hunting Regulation, Reg. 351/87. • Hunting Areas and Zones Regulation, Reg. 220/86. • Trapping Area and Zones Regulation, Reg. 149/2001. • Wildlife Protection Regulation, Reg. 85/2003. 	<ul style="list-style-type: none"> • Designates provincial wildlife lands, regulates licensed harvest of wildlife, and identifies other protections for wildlife in Manitoba.
<i>The Workplace Safety and Health Act, C.C.S.M. c. W210</i>	<ul style="list-style-type: none"> • Workplace Safety and Health Regulation 217/2006. • Operation of Mines Regulation 212/2011. 	<ul style="list-style-type: none"> • Outlines safety related duties in the workplace and identifies measures to ensure that safe work practices are being followed to protect health and safety of workers.

APPENDIX 2

Environmental Inspection Forms

This will be included once developed during Detailed Design