LAKE MANITOBA
LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA INFRASTRUCTURE

Agricultural Biosecurity Management Plan

November 16, 2020

Manitoba

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DISCLAIMER

This document was developed to support the Lake Manitoba and Lake St. Martin Outlet Channel Environmental Management and Monitoring Program. This document has been prepared by Manitoba Infrastructure as a way to share information and have discussion with Indigenous Communities and Groups and the public. This document has been prepared using existing environmental and preliminary engineering information, 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 and will not be considered complete until further engagement and consultation is complete. The plans may be further revised based on information and direction received from provincial and federal environmental regulators. This draft report be read as a whole, and sections or parts should not be read out of context.

EXECUTIVE SUMMARY

This document presents the Agricultural Biosecurity Management Plan (the "Plan") for the Lake Manitoba Outlet Channel (LMOC) and PR 239 realignment portions of the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). The Plan pertains to the LMOC and PR 239 realignment portions of the Project, as these portions of the Project traverse agricultural land use, including cropland, grazing land and livestock operations. Further, Project activities during construction and operation phases of the Project have the potential to harm agricultural lands adjacent to and in proximity of the LMOC and PR 239 realignment portions of the Project development area (PDA).This Plan was a commitment within the Environmental Impact Assessment (EIS; Manitoba Infrastructure, 2020a) to address agricultural biosecurity risks to crop land and livestock operations resulting from Project activities, such as:

- Noxious weed spread to crop land.
- Soil-borne pathogen transfer to crop land.
- Disease transmission to livestock.

Generally, invasive agricultural pests (e.g., noxious weeds, pathogens) can pose a significant risk to agricultural land and are costly to control and remove. Breaches in agricultural biosecurity can result in the introduction, transfer and/or transmission of invasive pests into agricultural regions, fields or livestock operations. These breaches may cause harm to crop health and/or productivity in annual crop and hayland, and to livestock health and productivity, resulting in economic losses, and, in severe cases, reductions in property values. Project activities have the potential to transfer soil, manure, and plant debris from the PDA to agricultural areas outside of the PDA. These materials may contain disease-causing pathogens, noxious weeds or other pests that may cause harm to agricultural land use and productivity.

Through this Plan, Manitoba Infrastructure will address biosecurity concerns related to Project activities. This Plan includes:

- Background information including a summary of agricultural land use in the Project area, regulatory context and industry guidelines and related Project management plans.
- Summary of biosecurity risk issues, risk mechanisms related to construction and operation activities, and risk levels to guide biosecurity management efforts.
- Required actions by Manitoba Infrastructure and Project contactors to protect agricultural biosecurity.
- Identification of specific biosecurity risk areas within and adjacent to the PDA and controlled access points where workers will enter and exit the PDA.
- Implementation plan to guide Manitoba Infrastructure in implementation of the biosecurity management plan for Project construction and operation, including roles and responsibilities, planning and preparation, facilities and equipment, worker requirements, record keeping and reporting, worker training, communication, monitoring, and implementation schedule.

Biosecurity management measures will be implemented to prevent, minimize or control the potential for these mechanisms to occur as a result of Project activities.

During the construction phase:

- Measures to protect cropland biosecurity focus on preventing and minimizing the potential of soil and weed seed transfer from the PDA to agricultural areas outside of the PDA.
- For livestock biosecurity, measures include minimizing the potential for manure transfer from the PDA to agricultural areas outside of the PDA and preventing direct worker contact with livestock.
- During the construction phase, managed revegetation will occur within the PDA, including the PR 239 realignment, to minimize the potential for weed infestations. Revegetation plans for the PDA are presented in the RVMP (Manitoba Infrastructure, 2020c, draft). The plan necessitates treatment of weed infestations prior to soil stockpiling, control of weeds on soil stockpiles, and timely and appropriate weed control response when invasive weed species are identified within the PDA following revegetation.

During the operation phase:

- The RVMP (Manitoba Infrastructure, 2020c, draft) prescribes monitoring of vegetation establishment within the PDA for a three-year period following revegetation, including assessment of non-native species and noxious weeds, Ongoing monitoring of vegetation within the PDA is planned through the remainder of the operation phase, specifically to identify weed infestations.
- If haying within the PDA is a permitted activity, private landowners/producers will be expected to enter the PDA with machinery clean and free of loose soil and plant debris, and clean machinery of loose soil and plant debris prior to exiting the PDA. Private landowners/producers will be expected to enter into a lease agreement with Manitoba Infrastructure for haying within the PDA. It is anticipated that these agreements will include these cleaning requirements expected of landowners/producers.

Effective agricultural biosecurity management is achieved through three key strategies: 1) prevent and avoid (e.g., limiting access, identification of restricted areas), 2) minimize (e.g., cleaning vehicles, equipment and footwear that have accumulated soil, manure or plant debris) and 3) control (e.g., control weeds within the PDA). The Plan includes actions to operationalize these three strategies.

The Plan includes identification of biosecurity management zones (biosecurity risk zones, restricted areas), controlled access points and construction access to Project work areas, which are critical to effective agricultural biosecurity management for the Project during construction. Cleaning of vehicles, equipment and footwear that have accumulated soil, manure and/or plant debris prior to exiting the PDA is a key required action to minimize agricultural biosecurity risk during construction. Cleaning areas and cleaning stations will be established at controlled access points to allow for effective cleaning to be conducted by field construction workers. Cleaning requirements are determined by biosecurity risk levels, identified through a combination of: 1) the risk category assigned to each controlled access point (defined by the nature of the construction access when exiting the PDA), and 2) the potential for vehicles, equipment or footwear to transfer soil, manure or plant debris from the PDA to agricultural areas outside of the PDA.

An implementation plan is presented to assist Manitoba Infrastructure and its contractors in planning and preparing for implementation of biosecurity management measures on the Project. The implementation plan includes the identification of roles and responsibilities, communication structure, planning and preparation information, facilities and equipment requirements, field worker requirements, contractor reporting expectations, monitoring program requirements and an implementation schedule.

Implementation and adherence to the Agricultural Biosecurity Management Plan will effectively manage biosecurity issues and reduce the risk to agricultural biosecurity resulting from Project activities through construction and operation. Through adaptive management, improvement actions may be implemented to address deficiencies, if identified and as required.

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 PR 239, and other ancillary infrastructure.

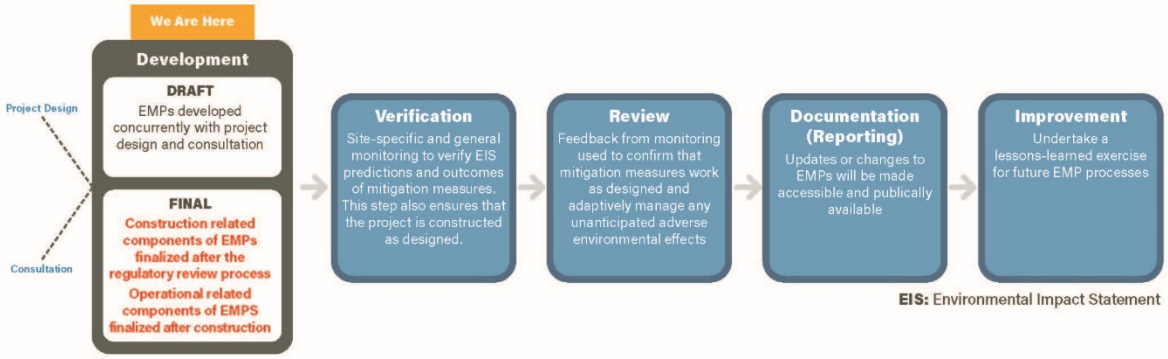
Manitoba Infrastructure (MI) is the proponent for the proposed Project. After receipt of the required regulatory approvals, MI will develop, manage and operate the Project. This Biosecurity Management Plan is one component of the overall Environmental Management Program (EMP) framework which describes the environmental management processes that will be followed during the construction and operation phases of the Project. The goal of the EMP is to ensure that the environmental protection measures committed to in the Environmental Impact Statement (EIS) and the requirements of the Environment Act Licence and Federal Decision Statement Conditions are undertaken in a timely and effective manner. This includes the verification that environmental commitments are executed, monitored, and evaluated for effectiveness, and that information is reported back in a timely manner to the Project management team for adjustment if required.

Manitoba Infrastructure remains committed to ongoing engagement and consultation with Indigenous groups and other stakeholders that are potentially impacted by the Project. Detailed EMP review discussions have been incorporated into community-specific consultation work plans and additional engagement opportunities will be provided prior to EMP finalization. Engagement opportunities include virtual open house events and EMP-specific questionnaires. EMP-specific questionnaires will be provided to Indigenous groups and stakeholders to obtain feedback and views on the draft plans, in addition to exploring opportunities for Indigenous participation in follow-up monitoring. Feedback and recommendations will be used to inform the completion of the plans.

The EMP provides the overarching framework for the Construction Environmental Management Program (CEMP) and the Operation Environmental Management Program (OEMP), which will be finalized as separate documents prior to Project construction and ideally operation, respectively. Their finalization will consider applicable conditions of the Environment Act Licence and associated approvals, any other pertinent findings through the design and regulatory review processes and key relevant outcomes of the ongoing Indigenous and public engagement and Consultation processes.

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 (e.g. surface water, groundwater, sediment, etc.), as shown in the Figure below, that will guide MI's development of the Project's contract documents and subsequently, the Contractor(s) activities, in constructing the Project in an environmentally responsible manner. The OEMP will likely include 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.

Environmental Management Program (EMP) Process



EIS: Environmental Impact Statement

EMPs

Construction Environmental Management Program[1]	Revegetation Management Plan
Operational Environmental Management Program[1]	Biosecurity Management Plan
Environmental Protection Plan	Dust Control Plan
Project Environmental Requirements	Decommissioning Plan
Access Management Plan	Ice Management Plan
Quarry Management Plan	
Surface Water Management Plan	
Ground Water Management Plan	

[1] includes information on waste management, hazardous materials management, debris management, emergency response, heritage resources protection and wildlife protection planning

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GLOSSARY OF TERMS AND ACRONYMS

Acronyms

CA	Construction access
CAP	Controlled access point
EIS	Environmental Impact Statement
LAA	Local Assessment Area
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
PDA	Project development area
POA	Point of access
PR	Public road
RAZ	Restricted access zone

Glossary of Terms

Borrow area zone: An area representing the originally anticipated extent of potential borrow area use at the time the effects assessment was completed. Subsequent engineering analysis has reduced the anticipated borrow area extent.

Agricultural Biosecurity Management Plan (the Plan): The Agricultural Biosecurity Management Plan for the Project, which includes a summary of regulatory requirements and guidelines, biosecurity risk issues, identification of risk management zones, and implementation plan components.

Agricultural biosecurity: Management practices to control the potential for introduction and/or minimize the potential to transfer or multiply pests in agricultural land and agricultural operations.

Cropland biosecurity: Management practices to control the potential for introduction, and/or minimize the potential to transfer or transmit, pests and/or disease to crops and croplands.

Disease (agricultural): A condition that impairs normal functioning of an agricultural plant or animal.

Invasive agricultural pest: A plant (weed), insect or pathogen that is not native or indigenous to an agricultural region or field, and which can adversely affect crop or livestock health and/or productivity and lead to economic harm.

Lake Manitoba Outlet Channel (LMOC): The proposed Lake Manitoba Outlet Channel, which will convey flood-level water from Lake Manitoba into Lake St. Martin. It forms a portion of the Lake Manitoba and Lake St. Martin Outlet Channels Project.

Livestock biosecurity: Management practices to control the potential for introduction, and/or minimize the potential to transfer or transmit, pests and/or disease to livestock and livestock operations.

Local assessment area: The local assessment area (LAA) comprises an area including the Project development area (PDA) plus a 1 km buffer around the PDA, as identified in the Project Environmental Impact Statement (EIS). For the purposes of the Agricultural Biosecurity Management Plan the LAA includes the Lake Manitoba Outlet Channel (LMOC) and the PR 239 realignment portions of the overall Project LAA.

Noxious weed (agricultural): A weed that is considered to be harmful to agricultural crops and cropland, and is designated as a noxious weed in Manitoba according to The Noxious Weeds Regulation (M.R. 42/17).

Pathogen (agricultural): A disease-causing agent (e.g., bacteria, viruses, fungi), which can transmit or transfer disease to agricultural plants (crops) or animals (livestock).

Pest (agricultural): A broad term encompassing organisms, including weeds, animals (e.g., insects, nematodes), and pathogens, that may cause harm to crops, croplands, livestock and/or livestock operations.

Project development area: For the purposes of the Agricultural Biosecurity Management Plan, the Project development area (PDA) includes the Lake Manitoba Outlet Channel (LMOC) and the PR 239 realignment components of the Project.

PR 239 realignment: The proposed realignment of a portion of provincial route 239, required to accommodate the Lake Manitoba Outlet Channel.

1.0 INTRODUCTION

This document presents the Agricultural Biosecurity Management Plan (the "Plan") for the Lake Manitoba Outlet Channel (LMOC) and Public Road (PR) 239 realignment portions of the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). The Plan pertains to the LMOC and PR 239 realignment portions of the Project only, as these portions of the Project traverse agricultural land use, including cropland, grazing land and livestock operations. Further, Project activities during the construction and operation phases of the Project have the potential to harm agricultural lands adjacent to and in proximity of the Project development area (PDA). The Plan was a commitment made by Manitoba Infrastructure within the Environmental Impact Assessment (EIS; Manitoba Infrastructure, 2020a) to address agricultural biosecurity risks to crop land and livestock operations resulting from Project activities.

Generally, invasive pests (i.e., plants, animals, and pathogens) pose a considerable risk to agricultural land and are costly to control and remove. Breaches in agricultural biosecurity can result the introduction, transfer and/or transmission of invasive pests into agricultural regions, fields or livestock operations. These breaches may cause harm to crop health and/or productivity in annual crop and hayland, and to livestock health and productivity, resulting in economic losses, and, in severe cases, reductions in property values. Project activities have the potential to transfer soil, manure, and weeds from the PDA to agricultural areas outside of the PDA. This includes any physical activities involving vehicles, equipment or pedestrians that disturb the soil and/or contact manure or plant material while working in the PDA, and collect these materials on tire treads, tracks, footwear or other vehicle and equipment surfaces. These materials may contain disease-causing pathogens, weeds or other pests that may cause harm to agricultural areas outside of the PDA.

Through this Plan, Manitoba Infrastructure will address biosecurity concerns related to Project activities. The Plan includes:

- Background information including a summary of agricultural land use in the Project area, regulatory context and industry guidelines and related Project management plans.
- Summary of biosecurity risk issues, mechanisms and levels and issues related to construction and operation activities.
- Required actions by Manitoba Infrastructure and Project contractors to protect agricultural biosecurity.
- Identification of specific biosecurity risk areas and controlled access points.
- Implementation plan to guide Manitoba Infrastructure in implementation of the biosecurity management plan for Project construction and operation, including roles and responsibilities, planning and preparation, facilities and equipment, worker requirements, record keeping and reporting, worker training, communication, monitoring, and implementation schedule.

An overview of the location of the LMOC is provided in Appendix 1, Map 1.

2.0 BACKGROUND

2.1 Summary of Agricultural Land Use

Agricultural land use and production within the area of the LMOC and PR 239 realignment was characterized in the EIS (Manitoba Infrastructure, 2020a). A summary of pertinent information is presented below.

Farming in the area of the LMOC and PR 239 realignment is characterized as predominantly cattle and mixed farming operations, consisting of cattle production, forage for hay production, pastures for grazing and annual crop production. Annual cropping includes such crop types as oats, barley, canola, beans, soybeans. Alfalfa and other forage species are baled for feeding cattle. Due to the prevalence of cattle production, manure application is a common practice in the LMOC and PR 239 realignment areas.

Agricultural crop type distribution within the LMOC and PR 239 realignment portions of the local assessment area (LAA), or an area within a 1 km buffer of the PDA of these components, was predominantly hay, pasture and grasses (43% of the LAA) used to support livestock production, based on 2018 land use data (Manitoba Infrastructure, 2020a). Approximately 12% of the LAA was under annual crop production, predominantly canola, soybeans and spring wheat. The remaining 45% of the LAA was considered non-agricultural and composed of forest and shrubland, wetland, open water, exposed/bare land and developed land.

Based on review of ortho-imagery (Manitoba Infrastructure 2018; Google Earth Pro 2019) and a road-side agricultural land use survey in August 2020, there are eight cattle feedlots within the LMOC and PR 239 realignment PDA or in proximity of construction access with the potential to interact with Project activities. Of these cattle operations, two are located within the PDA and will be expropriated prior to the commencement of construction. A new cattle feedlot is proposed to be constructed east of the LMOC PDA; however, this operation is beyond the LAA and is not expected to directly interact with the Project.

Areas of agricultural cropping and livestock operations are presented in Map 1 (Appendix 1).

2.2 Regulatory Requirements and Industry Guidelines

2.2.1 Federal Environmental Requirements and Guidelines

There are no federal legislative requirements specifically pertaining to agricultural biosecurity issues related to infrastructure developments.

The Canadian Food Inspection Agency (CFIA) provides some guidelines for agricultural biosecurity; however, these are generally focused at the farm level and on the agricultural industry and do not provide specific guidance to the Project's interaction with agricultural biosecurity.

2.2.2 Manitoba Environment Act Licence Requirements

Manitoba Environment Act Licence requirements will be added to future drafts pending regulatory approval.

2.2.3 Provincial Regulatory Context and Guidelines

With the exception of noxious weeds (Section 2.2.3.1), there is no legislation directly governing biosecurity concerns (e.g., soil-borne pathogens and diseases, livestock disease) in Manitoba. However, Manitoba Agriculture has developed biosecurity guidelines and generalized protocols for crop production (Manitoba Agriculture 2020a) and livestock production (Manitoba Agriculture 2020b). These guidelines are discussed in Section 2.2.3.2.

2.2.3.1 Noxious Weeds Act and Noxious Weeds Regulation

Administered by Manitoba Agriculture, *The Noxious Weeds Act* presents the designation of noxious weeds that may adversely impact Manitoba's environment and economy, and outlines responsibilities to control or destroy such weeds (i.e., biosecurity). It addresses one component of agricultural biosecurity, the controlling and preventing of the spread of noxious weeds.

Non-native invasive plants are regulated under the Act. Ninety noxious weeds are listed in The Noxious Weeds Regulation (MR 42/17), including those that are a threat to agricultural and natural areas. The Act designates three tiers of noxious weeds:

- Tier 1 species are those that are considered to have the most potential for negative effects though they may not yet be present in Manitoba. Under the Act, Tier 1 species must be destroyed or eradicated immediately upon discovery.
- Tier 2 species are already established in Manitoba and have been observed to spread easily. Tier 2 species infestations under five acres must be eradicated; whereas infestations larger than five acres must be controlled and kept from spreading.
- Tier 3 species are all other designated species that do not require immediate control unless the spread of the occurrence poses a threat to the economy, environment, or the well-being of residents. It should be noted that Tier 3 lists common and showy milkweed (*Asclepias syriaca* and *Asclepias speciosa*) that are native plant species and are only considered weeds in an agricultural context (i.e., agricultural crops and cropland).

The noxious weeds list for all of Manitoba is provided in Appendix 2.B.1. A summary of frequently asked questions and general information on control of noxious weeds provided by Manitoba Agriculture is presented in Appendix 2.B.2.

2.2.3.2 Provincial Guidelines

Cropland Biosecurity

Manitoba Agriculture has developed biosecurity guidelines and generalized protocols for crop production (Manitoba Agriculture 2020a; Appendix 2.A). This includes a guideline for, "Biosecurity Management on Agricultural Land for the Energy and Transportation Industries", in specific consideration of energy, construction, water management, transportation industry and municipal work on agricultural land (Manitoba Agriculture 2020c). The objective is to prevent the spread of soil-borne pests, such as diseases, weeds and nematodes in agricultural soils by limiting soil movement between fields and across rights of way. Guidance

includes developing and implementing protocols to prevent pest movement and establishment to other fields and properties. Protocols could include:

- equipment cleaning between fields
- avoid equipment traffic on fields during wet conditions
- increased communication with clients on their expectations

The protocol includes a summary of methods (cleaning/washing techniques, exposure avoidance), cleaning locations and targeted activities, inspection and record keeping requirements and responsibilities. The protocol is found at the link below:

https://www.gov.mb.ca/agriculture/crops/biosecurity-energy-and-transportation.html

Livestock Biosecurity

General information on livestock biosecurity is presented by Manitoba Agriculture (Manitoba Agriculture 2020b). No specific protocols are available. General guidance indicates vehicles and visitors are capable of transmitting disease to a livestock herd. While this method of disease transmission is not considered serious, any manure transferred (e.g., vehicles, equipment, boots, clothing) from an unknown source could be a threat to livestock biosecurity. To protect livestock biosecurity, vehicles and visitors should be evaluated for biosecurity concerns, entry to operations should be controlled and protocols for all visitors should be developed. This general information is found at the link below:

https://www.gov.mb.ca/agriculture/animal-health-and-welfare/animal-health/biosecurity-in-livestock-production.html

2.3 Related Project Reports and Management Plans

There are other related Project reports that were used to inform the development of the Plan and management plans which are connected to the delivery of biosecurity management measures on the Project. These related reports and management plans are summarized below:

- Environmental Impact Statement (Manitoba Infrastructure 2020a):
    - Potential effects to agricultural land use are evaluated in Chapter 9 – Socio-Economic Effects Assessment on Human Environment of the Lake Manitoba And Lake St. Martin Outlet Channels Project Environmental Impact Statement. Agricultural biosecurity issues in the area of the Project, Project activities during construction and operation phases that have potential risk to biosecurity, and recommended mitigation measures were addressed in this section of the EIS. A key commitment made in the EIS was the development of this Plan (Section 9.2.4.3, p. 9.77) and the associated implementation of biosecurity measures to protect agricultural biosecurity in agricultural lands in proximity of the Project.
    - Locations of manure stockpiles within the PDA will be confirmed, and these stockpiles will be relocated to suitable locations outside of the PDA or disposed of at an approved landfill facility prior to construction (Section 6.3.4.3, p. 6.118; Section 9.2.4.3, p. 9.76; Section 9.2.8, p. 9.112-

113). This will reduce the potential for construction activities to result in the spread of manure within the PDA and transfer of manure to agricultural areas outside of the PDA.

- Construction Environmental Management Program (CEMP) – the purpose of the CEMP is to provide guidance on how environmental issues will be addressed during construction, and how adverse effects will be mitigated. This Agricultural Biosecurity Plan is one of the management plans included under the CEMP. Agricultural biosecurity requirements of Manitoba Infrastructure and contractor construction staff are also summarized in the Environmental Protection Plan (EPP) and Project Environmental Requirements (PERs), which are also components of the CEMP.
- Operation Environmental Management Program (OEMP) – the purpose of the OEMP is to provide guidance on how environmental issues will be addressed during operation, and how adverse effects will be mitigated. This includes the Revegetation Management Plan, described in detail below, which provides for vegetation management within the PDA to minimize weed growth and the potential for invasive weed transfer to agricultural land adjacent to the PDA.
- Lake Manitoba and Lake St. Martin Outlet Channels Project Access Management Plan (AMP) [Draft] (Manitoba Infrastructure, 2020b, draft) – the AMP provides a framework for access management for the Project. This provides the basis for access management planning and the identification of access management features pertinent to biosecurity management, including approved access routes from major transportation routes (i.e., provincial highways/roads or municipal grid roads) to the PDA (Section 3.2.1). This allows for the identification of controlled access points for the purposes of biosecurity management. Access to the LMOC will be restricted and controlled through a limited number of controlled access points on the west side of the PDA.
- Lake Manitoba and Lake St. Martin Outlet Channels Project Revegetation Management Plan (RVMP) [Draft] (Manitoba Infrastructure, 2020c, draft) – this revegetation plan provides for managed revegetation within the LMOC and LSMOC PDAs during the construction phase of the Project, and monitoring of revegetation outcomes and for effects on vegetation through the construction and operation phases. The RVMP is included as a component of the CEMP and OEMP. The objectives of the RVMP are to establish self-sustaining permanent plant cover, provide erosion and sediment control, and control the spread of invasive plant species along the channel and into adjacent environments, including noxious weed spread into adjacent areas under agricultural land use. The plan necessitates treatment of weed infestations prior to soil stockpiling, control of weeds on soil stockpiles, and timely and appropriate weed control response when invasive weed species are identified following revegetation. The RVMP prescribes monitoring of vegetation establishment within the PDA for a three-year period, including assessment of non-native species and noxious weeds, and additional monitoring for weeds through the operation phase.
- Environmental Protection Plan (EPP) – the EPP forms part of the CEMP and prescribes environmental management practices to be implemented during Project construction to reduce effects to the environment from construction activities. The Construction Environmental Protection Plan (CEnvPP) forms part of the EPP and is map-based with specific, prescribed mitigation requirements included. Biosecurity management requirements pertinent to construction contractor workers, including restricted areas, if any, and cleaning requirements will be included in the EPP and CEnvPP.

3.0 BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

This section provides a summary of the biosecurity program elements in order to provide Project-specific context (Section 3.1 Biosecurity Risk Issues and Mechanisms), and focus management actions and level of effort on potential risk areas and risk levels (Section 3.2 Biosecurity Management Strategies, Approaches, and Practices).

3.1 Biosecurity Risk Issues and Mechanisms

This section includes a brief Project-specific overview of biosecurity issues affecting croplands (Section 3.1.1) and livestock (Section 3.1.2), and presents a summary of biosecurity risk mechanisms (Section 3.1.3) that need to be addressed by the Plan.

3.1.1 Cropland Biosecurity

CFIA provides the following definitions for cropland biosecurity:

> *Crop biosecurity is a general description for a set of measures designed to protect Canada's plant resources from crop pests at the national, regional, and individual farm levels. A pest is considered anything that is injurious or potentially injurious, whether directly or indirectly, to plants, or to products or by-products of plants, and it includes any plant prescribed as a pest.*
> (CFIA 2020a; part A) Background)
>
> *Crop biosecurity prevents, minimizes and controls the introduction and spread of plant pests at the farm level. Pest problems can severely reduce the sustainability and profitability of the Canadian agricultural sector.* (CFIA 2020b; Crop biosecurity)

Soil transport is an important mechanism for the potential spread of weeds and soil-borne diseases from the PDA to agricultural fields in proximity to the PDA. Movement of equipment and workers on and off the PDA during construction in cropland areas provides a potential pathway for disease and weed transmission to previously non-affected soils, compromising biosecurity for affected lands. There is potential for soil and plant debris to be transferred from the PDA to areas outside of the PDA during the construction phase as a result of unclean construction equipment, other vehicles and people moving from the PDA and transiting through areas of agricultural crop production, including access roads and municipal roads.

The introduction of pests can have lasting adverse effects to production (reductions in yield and quality) and production cost (increased input and management costs). Diseases can spread between regions and fields by human-related means through transport of infested seed, soil and crop residues, and within and between fields by natural means (e.g., wind, rain, water and soil erosion and insects).

Examples of two soil-borne pathogens verified in Manitoba are verticillium wilt (*Verticillium longisporum*; Manitoba Agriculture 2019c) and clubroot (*Plasmodiophora brassicae*; Manitoba Agriculture 2019c, d). Both can have deleterious effects on canola, a crop commonly grown in the Project area, and can be transferred in

soil. Movement of infected soil on vehicles, equipment and pedestrian footwear is an important mechanism for transfer of these and other soil-borne pathogens.

Cattle production is common in the LMOC area and cattle feedlots are present within the PDA. While the livestock-related biosecurity concerns are discussed in Section 3.1.2, manure can be an issue for cropland biosecurity. Manure can contain weed seeds, so if manure is transferred from the PDA on vehicles or equipment, there is potential for weed transfer to croplands outside of the PDA.

Another biosecurity concern is related to management within the PDA. Weed growth within the PDA can be a source of weeds to adjacent agricultural land through various mechanisms of transfer including weeds spreading invasively, weed seeds blowing onto land, and birds and other wildlife transferring weed seeds. Weed growth, invasive spread and weed seed transfer can occur through construction and operation phases. However, a properly managed PDA should not be a source of noxious weeds to agricultural land.

A potential land use within the PDA is haying suitable revegetated areas, or cutting and baling native vegetation for use as feed for livestock at farming operations adjacent to the PDA. Haying would be conducted by private landowners/producers under agreement with Manitoba Infrastructure. Haying activities would consist of farm machinery accessing the PDA to cut and bale vegetation and remove bales from the PDA. Hay harvest typically occurs two to three times per season, depending on growing conditions and productivity. Haying within the PDA provides mechanisms for weed seed transfer to and from the PDA: 1) from the PDA onto adjacent, privately-owned farming operations, in harvested bales, and 2) to and from the PDA due to uncleaned machinery. This potential land use within the PDA will be confirmed by Manitoba Infrastructure at a future date.

3.1.2 Livestock Biosecurity

CFIA provides the following definitions for livestock biosecurity (CFIA 2020c; What is Biosecurity in the Canadian Beef Cattle Industry?):

> *Those practices that prevent or mitigate disease from entering, spreading within, or being released from operations that may contain livestock.*
>
> *A broadly applied term encompassing the introduction, transmission, spread and/or existence of a range of pests, pathogens and other disease-causing agents, including toxins.*

Contact between workers or equipment and livestock and/or livestock manure is a vector for the transmission of various diseases (e.g., bovine tuberculosis). This is of particular concern when workers or equipment have recently been in contact with livestock within another farm or region. The introduction or spread of diseases can be devastating for livestock operations. This is especially the case for livestock operations with large numbers of animals contained close within common spaces (e.g., cattle feedlots). Workers should not come into close contact with livestock that may be in confined areas (e.g., cattle feedlots) or in open areas (e.g., grazing livestock).

The transfer of manure also has the potential to spread infectious diseases amongst livestock. As cattle feedlots and grazing lands are common throughout the LMOC, measures need to be taken to avoid transferring manure to agricultural lands outside of the PDA.

3.1.3 Biosecurity Risk Mechanisms

A summary of biosecurity risk mechanisms is provided in Table 1. Biosecurity management measures will be implemented to prevent, minimize or control the potential for these mechanisms to occur as a result of Project activities.

During the construction phase:

- Measures to protect cropland biosecurity focus on preventing and minimizing the potential of soil and weed seed transfer from the PDA to agricultural areas outside of the PDA.
- For livestock biosecurity, measures include minimizing the potential for manure transfer from the PDA to agricultural areas outside of the PDA and preventing direct worker contact with livestock.
- During the construction phase, managed revegetation will occur within the PDA, including the PR 239 realignment, to minimize the potential for weed infestations. Revegetation plans for the PDA are presented in the RVMP (Manitoba Infrastructure, 2020c, draft). The plan necessitates treatment of weed infestations prior to soil stockpiling, control of weeds on soil stockpiles, and timely and appropriate weed control response when invasive weed species are identified within the PDA following revegetation.

During the operation phase:

- The RVMP (Manitoba Infrastructure, 2020c, draft) prescribes monitoring of vegetation establishment within the PDA for a three-year period following revegetation, including assessment of non-native species and noxious weeds, Ongoing monitoring of vegetation within the PDA is planned through the remainder of the operation phase, specifically to identify weed infestations.
- If haying within the PDA is a permitted activity, private landowners/producers will be expected to enter the PDA with machinery clean and free of loose soil and plant debris, and will be expected to clean machinery of loose soil and plant debris prior to exiting the PDA. Private landowners/producers will be expected to enter into a lease agreement with Manitoba Infrastructure for haying within the PDA. It is anticipated that these agreements will include these cleaning requirements expected of landowners/producers.

Table 1: Summary of Project-Related Biosecurity Risk Mechanisms

Project Phase	Risk Category	Risk Mechanism
Construction	Cropland	Soil/manure/weed-containing plant debris material to/from the PDA by machinery movement, namely loose material falling off vehicles and equipment after exiting the PDA and traveling on public roadways through areas of agricultural land use. This material can subsequently be transported into adjacent agricultural fields by wind or other traffic

	Livestock	Direct contact between workers and livestock
Operation	Cropland	Invasive weed/noxious weed transfer from the PDA to adjacent cropland[1]
	Cropland	Weed seed transfer to/from the PDA by privately-owned haying machinery and from the PDA to adjacent privately-owned agricultural operations in harvested hay (if haying activity is permitted)[2]

Notes:

1. Weed management within the PDA, including invasive/noxious weed control and prevention of invasive/noxious weed spread from the PDA onto adjacent agricultural areas, is addressed in the revegetation plans for the LMOC (Manitoba Infrastructure, 2020c, draft).

2. Haying within the PDA by private landowners/producers may be permitted, in which case this will be considered a risk mechanism. This potential land use within the PDA will be confirmed by Manitoba Infrastructure at a future date.

3.2 Biosecurity Management Strategies, Approaches, And Practices

There are three key strategies to an effective biosecurity management program: 1) prevent, 2) minimize, and 3) control. These strategies and associated tactics, achieved through planning and action, are summarized below:

- Prevent – the first line of defense against biosecurity concerns is to prevent the risk. The primary means of prevention is through avoidance. Avoidance requires an understanding of potential biosecurity risk issues and Project mechanisms of risk (Section 3.1), and actions to avoid the risk from occurring during Project activities. Avoidance tactics can include keeping activities and workers removed from biosecurity concerns (e.g., restricted or no-go areas, separation from livestock and livestock facilities), timing activities to reduce higher risk situations (e.g., wet soils), and limiting access to only required and established access routes and controlled access points. Prevention and avoidance are largely the result of project planning, namely defining risk management zones and implementing access management (Section 3.2.1).
- Minimize – the second line of defense against biosecurity concerns is to minimize risks, where risks are not preventable or avoidable. Cleaning vehicles, equipment and footwear is the key approach to minimizing biosecurity risks to croplands and livestock operations in proximity of the PDA. Risk levels, as described in Section 3.2.2, are assessed to guide cleaning requirements. Cleaning techniques include cleaning the surface of vehicles, equipment and footwear that have been in contact and/or accumulated agricultural soil, manure or plant debris. This will include tires, tracks, treads, undercarriages, and portions of equipment that are in contact with soil for earth moving, excavation, drilling, etc. Cleaning of vehicles, equipment and footwear will be conducted at cleaning areas and/or

stations established at controlled access points prior to exiting the PDA. Cleaning practices are discussed in Section 3.2.3.

- Control – the last line of defense against biosecurity concerns is to control biosecurity issues when they occur due to Project activities. While unlikely, control measures may be implemented through the construction phase as a result of unforeseen or unplanned events (i.e., accident or malfunction resulting in a biosecurity breach). Control measures are planned during the operation phase, namely weed control within the PDA should weed infestations occur and create a potential risk to seed spread to adjacent agricultural lands.

The three key strategies are illustrated in Figure 1.

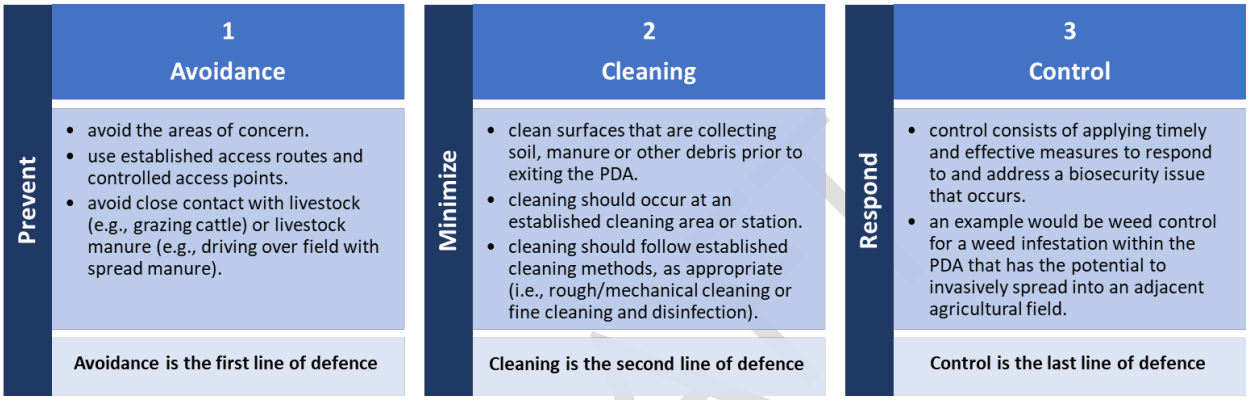

Figure 1: Three Key Strategies for Effective Biosecurity Management

3.2.1 Biosecurity Management Zones and Access Management

The identification of biosecurity management zones (risk zones, restricted areas) and access management features, including controlled access points onto the PDA and routes of access to these access points are critical to effective agricultural biosecurity management for the Project. These features and zones are summarized below:

- Access management features:
    - Controlled Access Point (CAP) – established locations at the edge of the PDA at which construction workers, vehicles and equipment can enter and exit the PDA. Controlled access points are located at various locations along the LMOC PDA and PR 239 realignment PDA. Cleaning areas or stations will be established at controlled access points and workers will have to adhere to cleaning requirements when exiting the PDA. Cleaning requirements are defined according to the biosecurity risk level (i.e., low risk, moderate risk or high risk) determined by the combination of the potential to transfer soil, manure or debris off of the PDA and the nature of the construction access from the PDA, as described in Section 3.2.2.
    - Construction access (CA) – approved routes to access controlled access points along the edge of the PDA where controlled access points are not located along major transportation routes (provincial highways/roads or municipal grid roads).

- Point of Access (POA) – the starting point of access to a construction access route from a major transportation routes (provincial highways/roads or municipal grid roads).

- Biosecurity Management Zones include:
  - Biosecurity Risk Zone (BRZ) – biosecurity risk zones are areas of agricultural land, including crop land and livestock operations, immediately adjacent to the LMOC PDA, and located along access management routes. These represent areas of agricultural production that are potentially at risk from Project activities.
  - Restricted Access Zone (RAZ) – restricted access zones are areas within and in proximity to the LMOC and PR 239 realignment PDA into which access by workers is restricted. Project activities should not be conducted, and workers should not access these zones or access the PDA through these zones without explicit permission from Manitoba Infrastructure. These areas consist of cattle feedlots/operations, which have manure-impacted soils and manure stockpiles. Construction activities should not occur within restricted access zones located within the PDA which are comprised of former feedlot areas with potentially manure-impacted soils and manure stockpiles until these areas are properly cleaned-up (i.e., manure stockpiles removed and manure-impacted soils remediated). Cleanup of these areas are addressed in the Construction Environmental Management Plan, and will be specifically addressed in the Environmental Protection Plan (Section 2.3).

A conceptual diagram of a CAP, CA and POA in relation to the PDA and a major transportation route is presented in Figure 2.

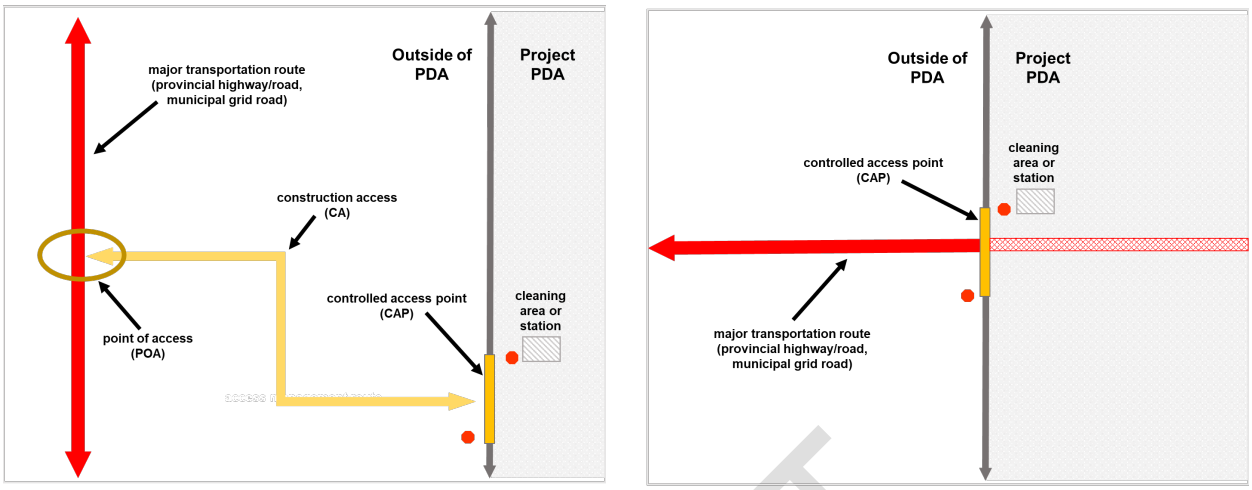

Figure 2: Conceptual Diagrams of Controlled Access Point, Construction Access, and Point of Access

Biosecurity management zones, including BRZs, RAZs, CAPs, CAs, and POAs are presented in the agricultural biosecurity map book in Map 2 (Appendix 1). The Project CEnvPP will incorporate RAZs, CAPs, CAs and POAs, which are important agricultural biosecurity management plan elements with associated management measures pertaining to construction activities. The CEnvPP will not include presentation of BRZs. While BRZs provide context for agricultural biosecurity management planning they do not provide value to planning or conducting construction activities.

3.2.2 Biosecurity Risk Levels

The identification of risk levels allows for management effort to be targeted appropriately to activities and areas of concern. Two risk categories are defined to determine potential risk levels at a CAP:

1. Level 1 Risk Category – where construction access on exit from the PDA is on established provincial highway/road or municipal grid road.
2. Level 2 Risk Category – where construction access on exit from the PDA is through areas of primary agricultural production (i.e., farmyards, livestock operations, cropping fields).

Risk levels are identified based on the risk category assigned to a CAP and on the potential for vehicles, equipment or footwear to transfer soil, manure or plant debris from the PDA to agricultural areas outside of the PDA, as follows

1. Low risk – low risk of transfer of soil, manure or plant debris from the PDA to agricultural areas outside of the PDA. Activities on the PDA have not resulted in soil disturbance and soil, manure and/or plant debris has accumulated on vehicles, equipment, and/or footwear.
2. Moderate risk – moderate risk of transfer of soil, manure or plant debris from the PDA to agricultural areas outside of the PDA. Activities on the PDA have resulted in soil disturbance and soil, manure

and/or plant debris has accumulated on vehicles, equipment, and/or footwear in a manner that this material is at risk of falling or blowing off vehicles and/or equipment after exiting the PDA. Soil, manure and/or plant debris accumulations are loose and/or in accumulated masses (e.g., chunks, lumps) and are not firmly adhered or impacted to vehicles and/or equipment. Exit from the PDA is along established transportation routes including provincial highways/roads or municipal grid roads. The potential for transfer to agricultural areas outside of the PDA is through indirect means (e.g., soil, manure or plant debris falling off vehicles and equipment onto roads and subsequently being tracked into agricultural fields by producer's machinery; wind blowing plant debris off vehicles and equipment into fields adjacent to construction access, roads or highways).

3. High risk – high risk of transfer of soil, manure or plant debris from the PDA to agricultural areas outside of the PDA. Activities on the PDA have resulted in soil disturbance and soil, manure or plant debris has accumulated on vehicles, equipment, and/or footwear, and exit from the PDA is through areas of primary agricultural production (e.g., farmyards, livestock operations, cropping fields). The potential for transfer to agricultural areas outside of the PDA is through direct contact with agricultural land uses outside of the PDA.

A decision flow process for determining the risk categories and levels is provided in Figure 3.

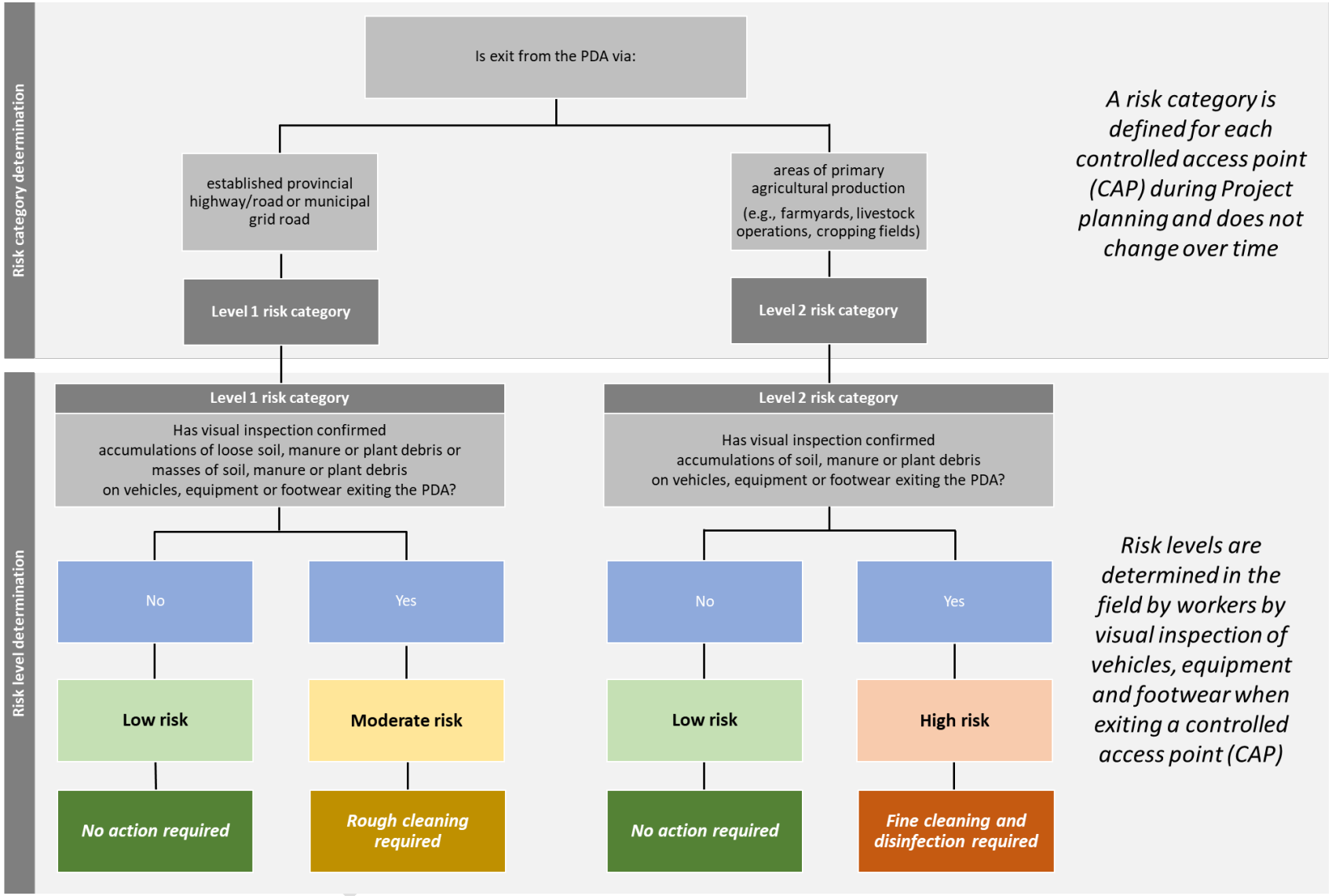

Figure 3: Determination of Agricultural Biosecurity Risk Categories and Risk Levels

As summarized in Table 2, activities considered to have low risk level have no associated required action, while activities having a moderate or high risk, have required actions comprised of mechanical and fine cleaning, respectively. Cleaning methods are described in Section 3.2.3.1.

Table 2: Risk Level and Required Action

Risk Level	Description of Risk Level	Required Action
Low risk	Activity is not resulting in soil disturbance and, soil, manure or plant debris is not accumulating on vehicles, equipment or footwear. The potential transfer of soil, manure or plant debris from the PDA to agricultural areas outside of the PDA is unlikely.	No action is required if vehicle, equipment and footwear checks for accumulation of soil, manure or plant debris prior to leaving the PDA confirm no accumulation of these materials.
Moderate risk	Activity is resulting in soil disturbance and/or soil, manure or plant debris is accumulating on vehicles, equipment, or footwear in a manner that this material is at risk of falling or blowing off vehicles and/or equipment after exiting the PDA. Soil, manure and/or plant debris accumulations are loose and/or in accumulated masses (e.g., chunks, lumps) and are not firmly adhered or impacted to vehicles and/or equipment. There is the potential to transfer soil, manure or plant debris from the PDA to agricultural areas outside of the PDA. Loose soil, manure or debris or accumulated masses of soil, manure or debris may fall off vehicles or equipment on roads and may be subsequently transferred into adjacent agricultural fields by other non-Project machinery or by the wind. The egress from the PDA is directly to a major transportation route (primary, secondary highway) or municipal road and not through an areas of primary	Rough/mechanical cleaning should be completed if vehicle, equipment and footwear checks indicate accumulations of soil, manure or debris that are loose or in masses (lumps, chunks) that are at risk of falling or blowing off vehicles and/or equipment after exiting the PDA. Cleaning should be conducted until these accumulations are removed. In these instances, it is generally considered good practice to pressure wash vehicles and equipment at commercial wash facilities after exiting the PDA (even if rough/mechanical cleaning has been completed at the Project work area).

	agricultural land use, including farmyards, livestock operations, and cropping fields.	
High risk	Activity is resulting in soil disturbance and/or soil, manure or plant debris is accumulating on vehicles, equipment, or footwear. There is the potential to transfer soil, manure, or plant debris from the PDA directly to agricultural operations outside of the PDA. The access management route from the PDA is through other areas of primary agricultural land use, including farmyards, livestock operations, cropping fields.	All affected equipment, vehicles, footwear, tools (i.e., those surface in contact with and accumulating soil, manure or plant debris) must be fine cleaned and disinfected prior to leaving the PDA and transiting to agricultural operations outside of the PDA. Note: transit between the PDA and agricultural operations outside of the PDA is not planned or anticipated.

3.2.3 Cleaning Practices

3.2.3.1 Cleaning Methods

Rough/Mechanical Cleaning

Rough/mechanical cleaning is required when a moderate risk level has been assessed when exiting the PDA. A moderate risk is assessed (as presented in Section 3.2.2) when the following criteria are met:

1. exiting the PDA at a controlled access point categorized as a Level 1 risk category (i.e., egress from the PDA is directly to a major transportation route [primary, secondary highway] or municipal road), and
2. soil, manure and/or plant debris has accumulated on vehicles, equipment, or footwear in a manner that this material is at risk of falling or blowing off vehicles and/or equipment after exiting the PDA. Soil, manure and/or plant debris accumulations are loose and/or in accumulated masses (e.g., chunks, lumps) and are not firmly adhered or impacted to vehicles and/or equipment.

Rough/mechanical cleaning is accomplished using hand tools (i.e., shovels, scrapers, brushes and brooms, etc.) or compressed air, or a combination of these means, to physically remove loose and accumulated masses of soil, manure and/or plant debris from vehicles, equipment and footwear..

Fine Cleaning and Disinfection

Fine cleaning and disinfection is required when a high risk level has been assessed when exiting the PDA. A high risk is assessed (as presented in Section 3.2.2) when the following criteria are met:

1. exiting the PDA at a controlled access point categorized as a Level 2 risk category (i.e., the access management route from the PDA is through other areas of primary agricultural land use, including farmyards, livestock operations, cropping fields.), and
2. soil, manure and/or plant debris has accumulated on vehicles, equipment, or footwear exiting the PDA.

Fine cleaning is accomplished using a pressure washer to wash down vehicles and equipment. Footwear can be cleaned using rough cleaning or fine cleaning methods. Rough cleaning before fine cleaning can reduce fine cleaning efforts if a substantial amount of soil and other material has accumulated on vehicles or equipment. Disinfection is accomplished using an approved disinfection solution (e.g., one to two per cent bleach solution or commercial disinfectant such as Virkon®) on surfaces that have already undergone fine cleaning. Disinfectants must be used according to industry and/or manufacturers guidelines. All surfaces in contact with soil (e.g., tire treads, tracks) and any remaining soil on vehicle, equipment or footwear following cleaning must be adequately treated (i.e., thoroughly wetted) with disinfectant for effective disinfection.

3.2.3.2 Cleaning Areas and Stations

Cleaning areas and/or stations should be established at CAPs where there is potential for a moderate or high biosecurity risk to occur, as defined in Table 2. Cleaning areas or stations should be established as appropriate relative to the biosecurity risk level, as follows:

- Rough/mechanical cleaning area – cleaning area will accommodate rough/mechanical cleaning requirements, including an established zone for vehicle and equipment cleaning, and an area for soil and other material cleanings. Soil, manure and plant debris cleanings should be managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff). Rough/mechanical cleaning areas should be established at CAPs where there is the potential for a Moderate risk (i.e., Level 1 Risk Category – construction access from the PDA directly onto major transportation routes [provincial highways/roads, municipal grid roads).
- Fine cleaning station – cleaning station will accommodate fine cleaning and disinfection requirements, including an established zone with matting for vehicle and equipment cleaning, and an on-site/in-situ sump or other collection system for washing water. Wash water can be allowed to remain on-site but should be managed such that it is not prone to running off of the PDA (e.g., collected in in-situ sump and allowed to infiltrate into the soil). Fine cleaning stations should be established at CAPs where there is the potential for a High risk (i.e., Level 2 Risk Category – construction access from the PDA through areas of primary agricultural production [farmyards, livestock operations, cropping fields]).

Figure 4 provides a conceptual diagram of the potential layout and components for a rough/mechanical cleaning station and a fine cleaning station.

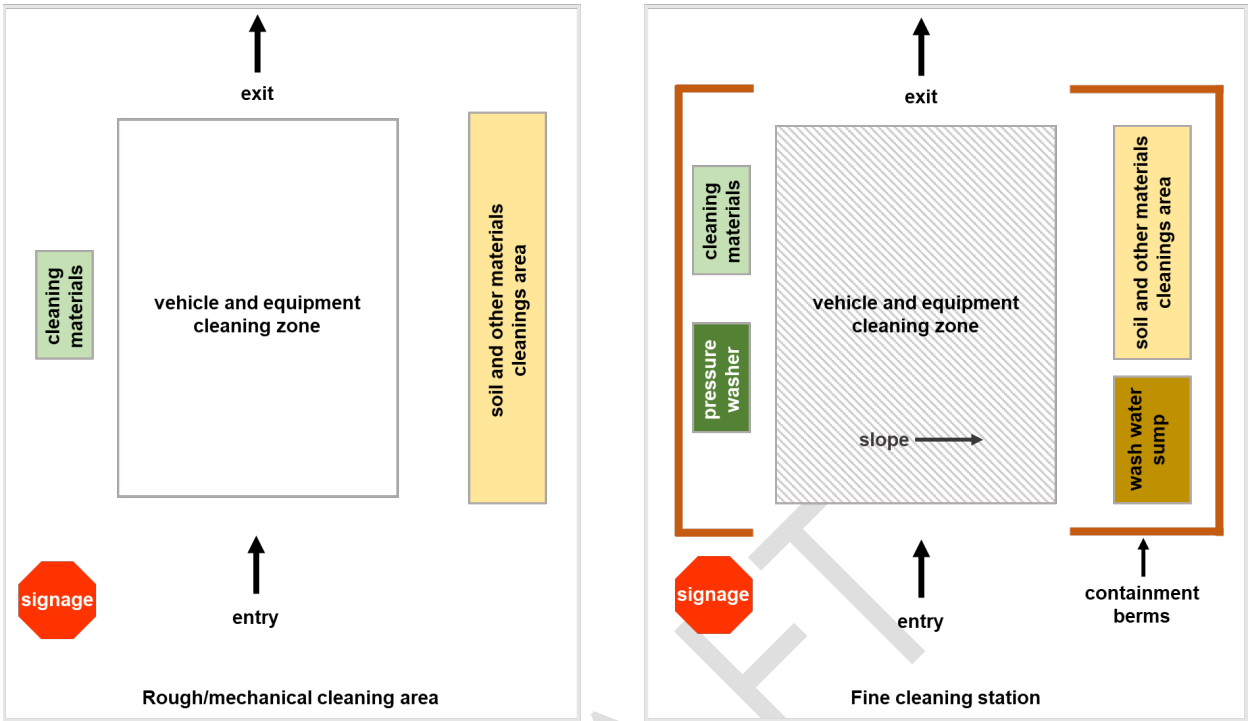

Figure 4: Conceptual Diagram of Rough/Mechanical Cleaning Area and Fine Cleaning Station

Cleaning areas and stations should be set back from the main line of travel for accessing and exiting the PDA to prevent traffic interference and to avoid trafficking over soil and plant debris cleanings. Areas for cleaning stations need to be adequate to accommodate the construction vehicles and equipment being cleaned. Cleaning areas and stations should also be located on relatively high and dry land (i.e., not prone to flooding or runoff events), and sufficiently set back from drainage ditches and field edges, such that soil, manure and plant debris cleanings are not prone to loss from the PDA into these features. Figure 5 shows an example representation of the location of a cleaning area or station on the PDA, in relation to the main line of traffic accessing and exiting the PDA, and in relation to the edge of the PDA.

Cleaning station locations are displayed in Map 2 (Appendix 1).

Additional details on cleaning areas and stations, to support implementation on the Project, are presented in Section 4.3.2.

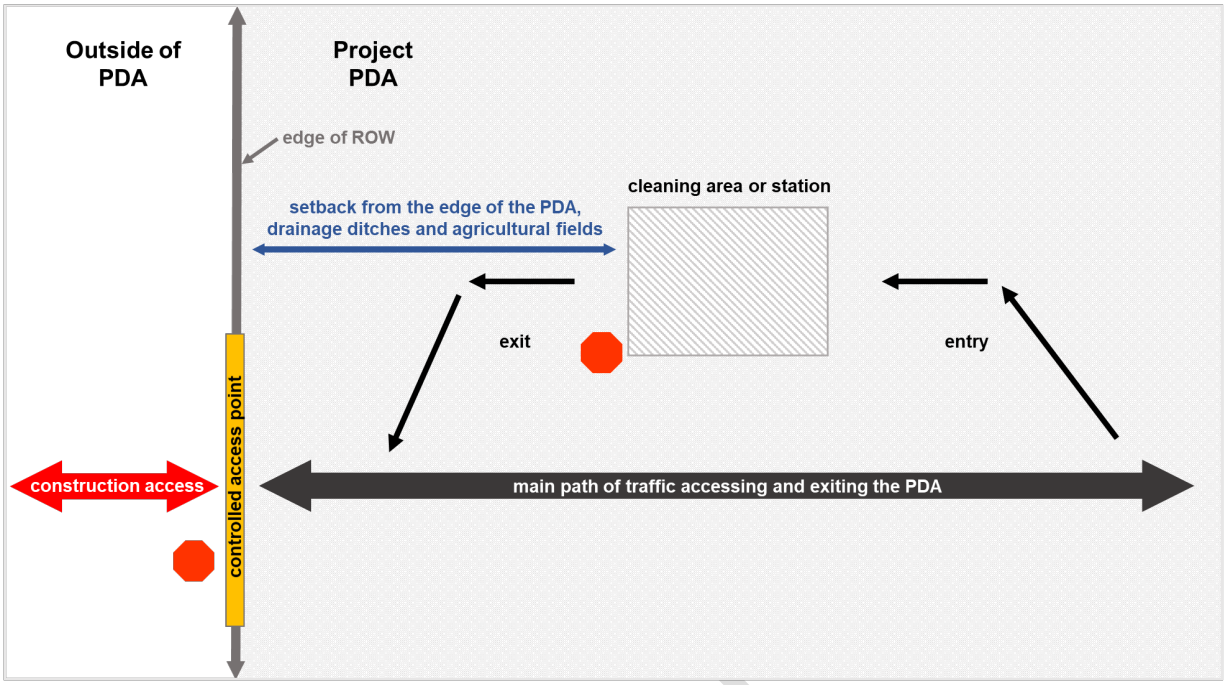

Figure 5: Conceptual Diagram of Location of Cleaning Area or Station on PDA

3.2.3.3 Frozen Ground Conditions

Ground conditions are variable throughout the year. The ground is frozen through much of the year and when ground is frozen, the risk associated with agricultural biosecurity is reduced. Frozen ground conditions are defined as ground that is frozen, or frozen and snow-covered, to the degree that soil, manure and plant debris is not accumulating on vehicle, equipment and footwear. During frozen ground conditions, cleaning is not required. However, if activities are causing soil disturbance (e.g., earth-moving, drilling, hydro excavation/hydrovacing), or are otherwise accumulating soil, manure or plant debris, frozen ground conditions are not applicable and regular cleaning requirements apply for those vehicles, equipment and footwear accumulating soil, manure or plant debris when exiting the PDA.

4.0 IMPLEMENTATION PLAN

This section provides a planning framework for Manitoba Infrastructure and its contractors to use for the implementation of the Plan for construction and operation of the Project.

4.1 Roles, Responsibilities and Communication

4.1.1 Roles and Responsibilities

Roles and responsibilities for Manitoba Infrastructure, construction contractors and biosecurity monitors are summarized in Table 3.

Table 3: Roles and Responsibilities

Organization	Role	Responsibility
Manitoba Infrastructure (or its representative)	Manitoba Infrastructure Project Manager or Contract Administrator, or designate	• Ensure biosecurity management is implemented effectively and manage the biosecurity management plan through Project construction and operation phases • Provide for contractor biosecurity management requirements in construction contract documents and specifications (e.g., required actions, signage, cleaning areas and/or stations) • Determine final locations of controlled access points (this may be done in conjunction with Construction Contractor) and associated biosecurity risk categories (i.e., Level 1 Risk Category or Level 2 Risk Category) • Lead and coordinate communication between internal staff, contractors, biosecurity monitors and landowners • Conduct worker training (internal staff) • Confirm appropriate implementation of facilities (i.e., signage and cleaning areas and/or stations) and equipment (i.e., cleaning equipment) • Implement weed management within the PDA through Project construction and operation phases (i.e., per requirements of the Revegetation Management Plan)
Construction Contractor(s)	Project Manager / Supervisor Construction Contractor	• Deliver requirements of the biosecurity management plan through the Project construction phase • Ensure staff working on the Project are adequately trained to follow the requirements of the biosecurity management plan, including determining biosecurity risk category at

		controlled access points, inspecting vehicle/equipment for cleanliness prior to entering or exiting the PDA, completing required cleaning, and completing required record-keeping • Provide materials and establish biosecurity management facilities and equipment (i.e., signage and cleaning areas and/or stations) • Provide training to construction field workers such they understand and are able to conduct biosecurity management requirements • Provide adequate equipment (i.e., cleaning equipment) to allow for workers to adhere to the Plan requirements • Provide field guidance (i.e., EPP and associated mapbook; additional guidance, as required) to construction field workers • Document biosecurity management activities and issues and report to Manitoba Infrastructure, as required • Implement improvements as identified in conjunction with Manitoba Infrastructure through adaptive management
Manitoba Infrastructure or Contract administrator or designated third-party consultant	MI Senior Environmental Assessment Officer, MI Environmental Assessment Officer, and Indigenous Environmental Inspector	• Conduct field monitoring for implementation of facilities, including adequacy of signage (i.e., risk level category, direction to stop, inspect, vehicle/equipment, and clean, as required) at controlled access points, and adequacy of cleaning areas and/or stations (e.g., adequate area established, area setback from edge of PDA, adequate cleaning equipment available, proper management of cleanings and wash water) • Conduct field monitoring for construction worker adherence to requirements of biosecurity management plan (i.e., stop at controlled access point, inspect vehicle/equipment, assess risk level, clean vehicle/equipment, as required, record activity) • Review biosecurity management plan reporting completed by contractor • Conduct monitoring reporting including identification of corrective actions (i.e., to achieve adherence to the Plan) and improvement actions (i.e., adaptive management)

4.1.2 Project Communication

Timely and effective communication between all organizations and staff involved in biosecurity management is critical to the successful implementation of the biosecurity management plan and ongoing biosecurity management. Communication will occur between Manitoba Infrastructure, the Construction Contractor, and

the Environmental Assessment officers on a regular and ongoing basis during the Project planning, as well as with Indigenous Environmental Inspectors during the construction phase. These communications will allow for effective planning and Plan implementation, and biosecurity monitoring throughout Project construction. The Project organization structure is provided in Figure 6.

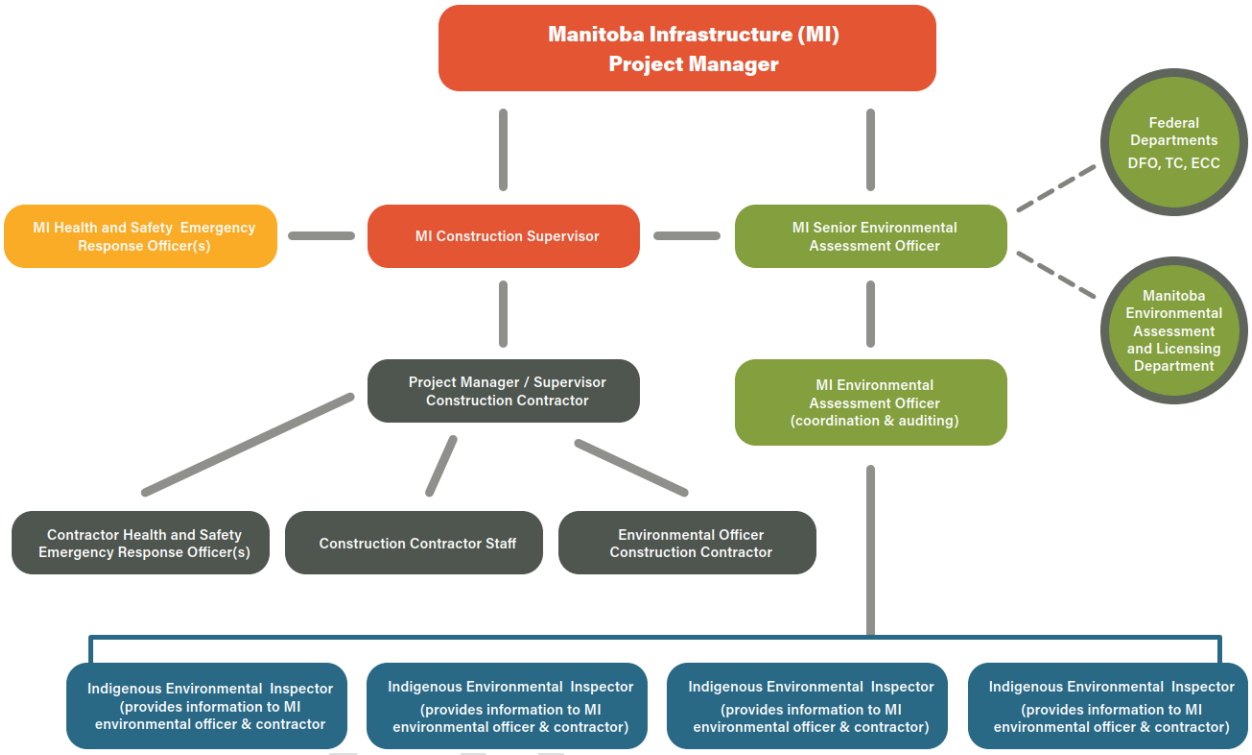

Figure 6: Project Organization Structure

4.2 Planning and Preparation

4.2.1 Contract/Contractor Specifications

Biosecurity management requirements by contractors and their workers need to be provided in contract/contractor specifications to support effective consideration and planning by contractors for successful implementation of their portions of the biosecurity management plan. Contract/contractor specifications should include the components listed below and detailed in subsequent sections:

- Facilities and equipment requirements – signage, cleaning areas and stations and cleaning equipment (see Section 4.3 for more information)
- Construction worker action requirements – training, required actions, record-keeping (see Section 4.4 for more information)

- Contractor reporting – required reporting on biosecurity management (see Section 4.5 for more information)

4.2.2 Landowner Communication and Notification

Manitoba Infrastructure has been in communication with the RM of Grahamdale and other stakeholders, including local landowners, since 2013. Through open houses and other targeted engagement, stakeholders have been kept apprised of the Project planning as it progresses. Ongoing engagement prior to construction will provide a means for stakeholders to communicate with Manitoba Infrastructure on Project plans, including biosecurity management.

Manitoba Infrastructure will notify landowners in advance of construction activities that may have the potential to cause biosecurity concerns specific to an individual landowner's operation (e.g., travel required into or through private agricultural lands), if any. Manitoba Infrastructure will work with landowners to address any related concerns in a timely manner.

4.2.3 Work Timing and Scheduling

This section will be finalized as Project planning advances.

4.3 Facilities and Equipment

4.3.1 Signage

Access to the LMOC PDA will be restricted and controlled through a limited number of controlled access points on the west side of the Project. Signage at controlled access points will inform construction field workers of biosecurity management plan requirements. This will include the following:

1. Identification of biosecurity risk category (i.e., Level 1 Risk Category or Level 2 Risk Category)
2. Direction for workers to:
   a) Stop
   b) Inspect vehicle, equipment and footwear for accumulated soil, manure or plant material
   c) Assess risk level (i.e., for Level 1 Risk Category – Low risk or Moderate risk; for Level 2 Risk Category – Low Risk or High risk))
   d) Complete cleaning if soil, manure or plant material has accumulated on vehicle, equipment or footwear, as follows:
      - If Level 1 risk category:
        - Rough/mechanical cleaning is required – complete rough cleaning until soil, manure or plant debris accumulations have been removed from the vehicle, equipment, or footwear

- If Level 2 risk category:
    - Fine cleaning and disinfection is required - complete fine cleaning until soil, manure or plant debris has been removed from the vehicle, equipment, or footwear. Complete disinfection according to product manufacturer's directions.

4.3.2 Cleaning Areas and Stations

There are two types of cleaning areas or stations to be established throughout the PDA:

1. Rough/mechanical cleaning area – cleaning area will accommodate rough cleaning requirements at controlled access points with a potential for up to a moderate risk level only (i.e., CAPs defined as Level 1 risk category). Rough/mechanical cleaning areas should:
    - be of adequate size/area to accommodate vehicles and equipment to be cleaned.
    - include a contained area for soil, manure and plant debris and other material cleanings.
    - be established on relative high ground with good drainage.
    - be set back from the primary line of traffic through the controlled access point to avoid cross-contamination.
    - be set back from drainage ditches, agricultural field boundaries.
    - be maintained in good condition.
    - be stocked with dedicated rough/mechanical cleaning equipment, unless cleaning equipment is carried in individual vehicles and equipment (see Section 4.3.3).
2. Fine cleaning station – cleaning station will accommodate fine cleaning and disinfection requirements at controlled access points with a potential for up to a high risk level (i.e., CAPs defined as Level 2 risk category). Fine cleaning stations should:
    - be of adequate size/area to accommodate vehicles and equipment to be cleaned.
    - include area for soil, manure and plant debris and other material cleanings.
    - include a sump pit for collecting washing water.
    - be established on relative high ground with good drainage.
    - be set back from the primary line of traffic through the controlled access point to avoid cross-contamination.
    - be set back from drainage ditches, agricultural field boundaries.
    - be maintained in good condition.
    - be stocked with dedicated rough/mechanical cleaning equipment and fine cleaning equipment (see Section 4.3.3).
    - be stocked with approved and active disinfectant.

Soil, manure and plant debris cleanings should be managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff).

If fine cleaning is required, washing water should be collected in an on-site/in-situ sump or other collection system. Wash water can be allowed to remain on-site but should be managed such that it is not prone to running off of the PDA (e.g., collected in in-situ sump and allowed to infiltrate into the soil). .

4.3.3 Cleaning Equipment

The contractor should provide the following cleaning equipment at each cleaning area and/or station as outlined below.

Rough/Mechanical Cleaning Area

Rough/mechanical cleaning equipment must be adequate to complete soil removal and should be appropriate to the type of vehicle or equipment that needs to be cleaned. Cleaning equipment can be dedicated to a cleaning area or can be carried in individual vehicles and equipment. Rough/mechanical cleaning equipment will include:

- Shovels and scrapers
- Brushes
- Air compressor (optional)

Fine cleaning station

Fine cleaning and disinfection equipment should be dedicated to a cleaning station and will include:

- Shovels and scrapers
- Brushes
- Pressure washer
- Disinfectant equipment, consisting of a hand pressurized sprayer, or similar equipment, of adequate size and capacity to effectively treat vehicles and equipment to be disinfected
- Approved disinfectant, such as one to two percent bleach solution or a commercial product such as Virkon®. Propylene glycol or other suitable anti-freeze product would be required in the event that disinfection is required during freezing temperatures.

4.4 Field Worker Requirements

The following section summaries construction field worker responsibilities and requirements under the biosecurity management plan, including training, required actions while working on the Project and record-keeping.

4.4.1 Worker Training

All field construction workers require biosecurity management training prior to working on the LMOC and PR 239 portions of the Project. Biosecurity program training will introduce workers to the biosecurity management plan and biosecurity issues related to Project construction activities, and develop awareness of their roles and responsibilities under the Plan. Training needs to develop an adequate understanding of biosecurity management requirements of all field construction workers working on the LMOC and PR 239 portions of the Project. Biosecurity training will be the responsibility of the construction contractor(s) and it is assumed it will form part of overall Project-specific training.

Training should include the following components:

- Biosecurity issues overview
- Biosecurity management plan awareness
- Roles, responsibilities, and communications
- Access management plan, access routes and controlled access points
- Cleaning stations, tools, and methods
- Vehicle, equipment, and footwear inspection
- Record-keeping and reporting

4.4.2 Worker Actions

Actions by workers while accessing and exiting the PDA will ultimately determine the level of effectiveness of the biosecurity management plan through the construction phase. Worker actions while Biosecurity is a concern for croplands and livestock during construction and operation phases of the Project. Typical procedures for reducing soil transport, and disease and weed transmission, include:

- Record keeping for filled-out agricultural biosecurity checklists, vehicle and equipment cleaning records, and equipment cleaning inspection

Construction Phase

During the construction phase of the Project, workers must:

- Not work within the PDA without having completed the biosecurity training module of the required Project-specific training
- Avoid restricted areas, if any
- Avoid livestock operations (i.e., cattle feedlots), areas of recently spread manure and close contact with livestock (i.e., grazing animals)
- Access and exit the PDA using identified construction access (CAs) and controlled access points (CAPs)
- Ensure all vehicles and equipment arrive at the construction site clean and free of soil, manure or plant debris
- Prior to exiting the PDA at a CAP
    - Stop
    - Inspect vehicle, equipment and footwear for accumulated soil, manure or plant material
    - Assess risk level (i.e., for Level 1 Risk Category – Low risk or Moderate risk; for Level 2 Risk Category – Low Risk or High risk))
    - Complete cleaning, if required, as follows:
        - If Level 1 risk category:
            - If soil, manure or plant material has not accumulated on vehicle, equipment or footwear:
                - No cleaning required prior to exiting the PDA
            - If soil, manure or plant material has accumulated on vehicle, equipment or footwear in a manner that this material is at risk of falling or blowing off vehicles and/or equipment

after exiting the PDA (i.e., soil, manure and/or plant debris accumulations are loose and/or in accumulated masses [e.g., chunks, lumps] and are not firmly adhered or impacted to vehicles and/or equipment):
    - Rough/mechanical cleaning is required – complete rough cleaning until soil, manure or plant debris has been removed from the vehicle, equipment, or footwear
- If Level 2 risk category:
  - If soil, manure or plant material has not accumulated on vehicle, equipment or footwear:
    - No cleaning required prior to exiting the PDA
  - If soil, manure or plant material has accumulated on vehicle, equipment or footwear:
    - Fine cleaning and disinfection is required - complete fine cleaning until soil, manure or plant debris has been removed from the vehicle, equipment, or footwear. Complete disinfection according to product manufacturer's directions and ensure all surfaces in contact with soil (e.g., tire treads, tracks) and any remaining soil on vehicle, equipment or footwear following cleaning is adequately treated (i.e., thoroughly wetted) with disinfectant for effective disinfection.

- Ensure cleaning areas and stations and cleaning equipment are in good condition. Communicate to supervisors if attention is required
- Communicate any biosecurity management issues to supervisors
- Record vehicle inspection and cleaning actions completed and submit to supervisors (see Section 4.4.3)
- Notify supervisors if weed infestations are identified within the PDA

During the construction phase of the Project, contractors must:

- Control any weed infestations within the LMOC portion of the PDA, as indicated in the revegetation plan for the LMOC (Stantec Consulting Ltd., 2020a), and within the PR 239 portion of the PDA according to Manitoba Infrastructure standard operating procedures

Operation Phase

During operation phase of the Project, workers should

- Notify supervisors if weed infestations are identified within the PDA

Vegetation monitoring within the LMOC PDA will conducted for a period of three years following the completion of construction as per the LMOC Vegetation Monitoring Plan (Stantec Consulting Ltd., 2020b). This monitoring will include assessing the PDA for non-native species and invasive weeds.

4.4.3 Record Keeping

Record keeping is a critical component of the biosecurity management plan and will be used to document completion of required activities by workers. Record-keeping is to be completed daily by construction contractors working within the PDA to document biosecurity management activities completed when entering and exiting through controlled access points.

Daily record keeping includes:

- Inspection of vehicles and equipment for cleanliness prior to entering the PDA
- Cleaning of vehicles and equipment prior to entry onto the PDA, if required
- Inspection of vehicles and equipment for cleanliness prior to exiting the PDA
- Cleaning of vehicles and equipment prior to exiting the PDA, if required

Record-keeping should be documented on the Project-specific Weekly Vehicle and Equipment Cleaning Record form found in Appendix 3.A. Records should be maintained for all vehicles and equipment entering and exiting the PDA, should be included in contractor reporting (Section 4.5), and should be maintained for auditing purposes.

4.5 Contractor Reporting

Reporting will be conducted monthly by the contractor to Manitoba Infrastructure. Reporting will be conducted using a standardized reporting format to be developed or approved by Manitoba Infrastructure. Reporting will include a summary of activities, compliance checks (e.g., signage and cleaning station adequacy), daily records, and recommended and/or implemented improvement actions (as identified by the contractor or required by Manitoba Infrastructure).

4.6 Monitoring Program

Third-party monitoring will be conducted on behalf of Manitoba Infrastructure for the biosecurity management program. Monitoring will be completed to confirm contractor adherence to requirements in the biosecurity management plan, including:

- adequacy of facilities, including signage at controlled access points informing workers to stop and check their vehicles and equipment, and informing workers of cleaning requirements, if required, and adequacy of cleaning areas and cleaning stations
- adequacy of equipment, including cleaning equipment and supplies
- worker actions, including adherence to vehicle and equipment cleanliness inspections before entering or exiting the PDA, adequate completion of cleaning activities, as required
- record-keeping, namely confirming biosecurity management records are being adequately maintained.

It is anticipated that monitoring will occur periodically throughout the construction phase at a frequency to be determined by Manitoba Infrastructure. Monitoring reporting will include findings of monitoring events, including a summary of compliance and deficiencies, and will identify potential improvement actions for consideration by Manitoba Infrastructure.

4.7 Implementation Schedule

The implementation schedule provided in Table 4 will help assure Manitoba Infrastructure effectively delivers the biosecurity management plan, including tasks required prior to the commencement of construction of the LMOC and the PR 239 realignment.

Table 4: Implementation Schedule

Task	Description	Responsibility	Timeline
Preliminary identification of access routes, controlled access points, and cleaning station locations (these may be refined during the contract tendering process)	Access routes and controlled access points will be confirmed to allow for finalization of risk category identification and cleaning station requirements at each controlled access point.	Manitoba Infrastructure (may require input from Construction contractor[s])	TBD
Contract specifications for tender package	Develop specifications for contractor requirements under the biosecurity management plan (e.g., cleaning stations, cleaning equipment, worker training, record-keeping, reporting) and/or include reference to this Plan as part of contract specifications.	Manitoba Infrastructure	TBD
Record-keeping and reporting templates	Develop standardized record-keeping and report templates for contractors to use for biosecurity management plan documentation.	Manitoba Infrastructure	TBD
Monitoring program development	Develop monitoring program to monitor contractor adherence to biosecurity management plan requirements.	Manitoba Infrastructure	TBD
Training program development	A biosecurity management program training module will be developed to be delivered to construction workers prior to working on the LMOC and PR 239 portions of the PDA. The training program will have to be developed to the satisfaction of Manitoba Infrastructure.	Construction contractor(s)	TBD
Worker training	Worker training on the biosecurity management plan requirements will be conducted for construction workers prior to working on the LMOC and PR 239 portions of	Construction contractor(s)	Ongoing, as required

	the PDA. Records of construction worker completion of training should be maintained.		
Construction phase biosecurity management, record-keeping, reporting and monitoring	Biosecurity management through the construction phase.	Construction contractor(s)	TBD
Construction phase biosecurity monitoring	Monitor construction worker adherence to biosecurity management requirements.	Manitoba Infrastructure	TBD
Operation phase biosecurity management	Biosecurity management through the operation phase. Agricultural producer adherence to requirements of haying leases, including equipment cleaning before entering and exiting the PDA, as required.	Manitoba Infrastructure	TBD

5.0 CLOSURE

This report provides an Agricultural Biosecurity Management Plan for the Lake Manitoba Outlet Channel and PR 239 realignment of the Lake Manitoba and Lake St. Martin Outlet Channels Project. The report provides a summary of agricultural biosecurity risk issues and Project-related mechanisms through the construction and operation phases of the Project, identification of biosecurity management zones, access management considerations, risk categories and risk levels, and biosecurity management practices to be implemented on the Project. In addition, an implementation plan is presented to assist Manitoba Infrastructure and its contractors in planning and preparing for implementation of biosecurity management measures on the Project.

This report has been developed according to a professional standard of care. Information relied upon from existing and publicly-available data sources, and received from Manitoba Infrastructure or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

This report has been prepared for the exclusive use of Manitoba Infrastructure on the Lake Manitoba and Lake St. Martin Outlet Channels Project as identified herein, and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report.

6.0 REFERENCES

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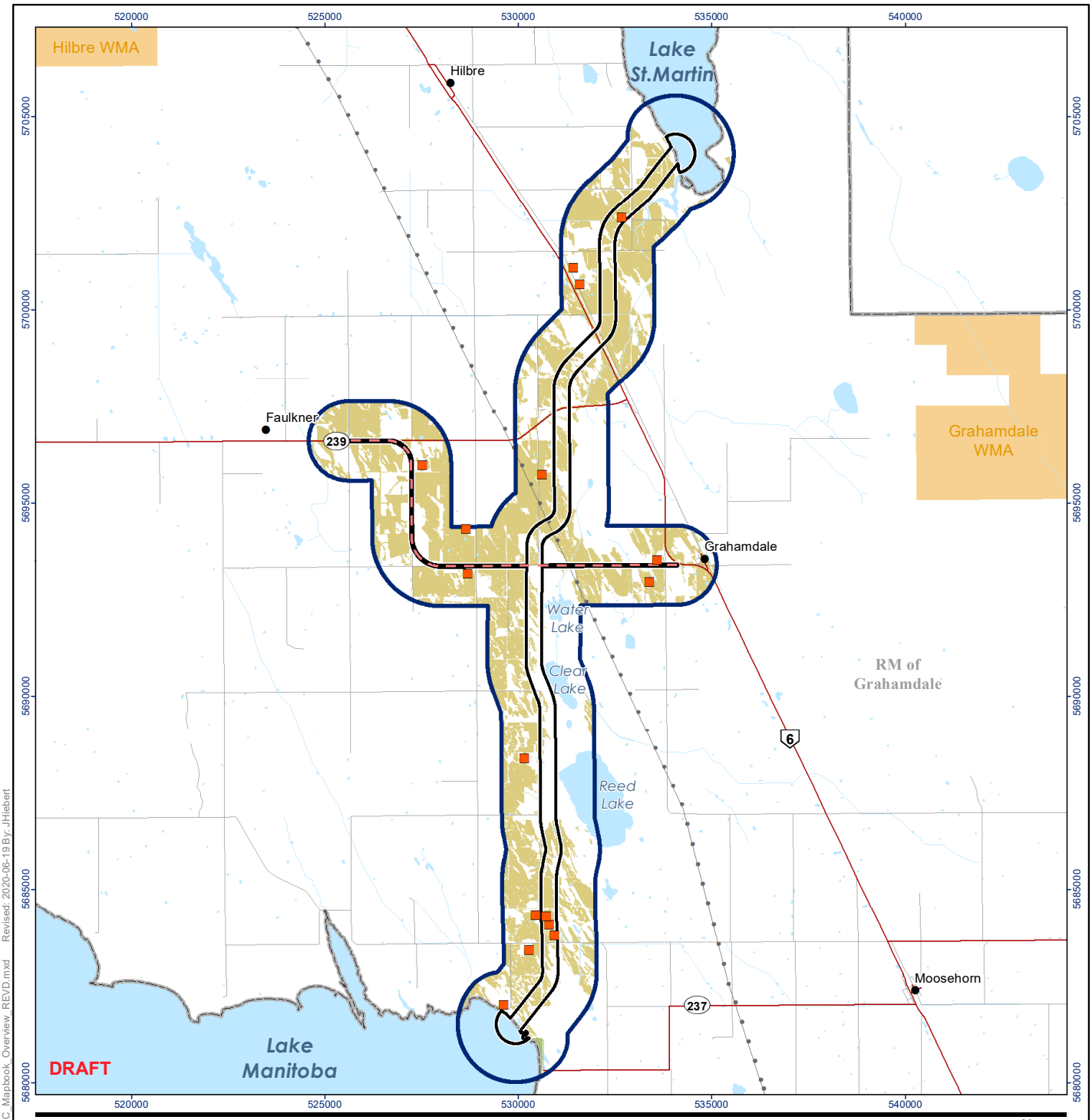
APPENDIX 1

Maps

Map 1 Lake Manitoba Outlet Channel/PR 239 Realignment Overview

Map 2 Agricultural Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239 Realignment



Notes
1. Coordinate System: NAD 1983 UTM Zone 14N
2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure

Legend

- Lake Manitoba Outlet Channel (LMOC)/ PR 239 Realignment Project Develoment Area (PDA)
- Proposed PR 239 Realignment
- LMOC/PR239 PDA 1km Buffer
- Livestock Operations

Agricultural Land Class

- Agricultural Cropping
- Existing Transmission Line
- Provincial Highway (PTH/PR)
- Municipal Road
- Wildlife Management
- Provincial Park
- Rural Municipality

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Stantec agriearth consulting ltd.

Project Location
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Manitoba

Prepared by JH on 2020-06-19
TR by DW on 2020-06-19

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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel & PR 239 Realignment

Figure No.
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Title
Lake Manitoba Outlet Channel/ PR 239 Realignment Overview

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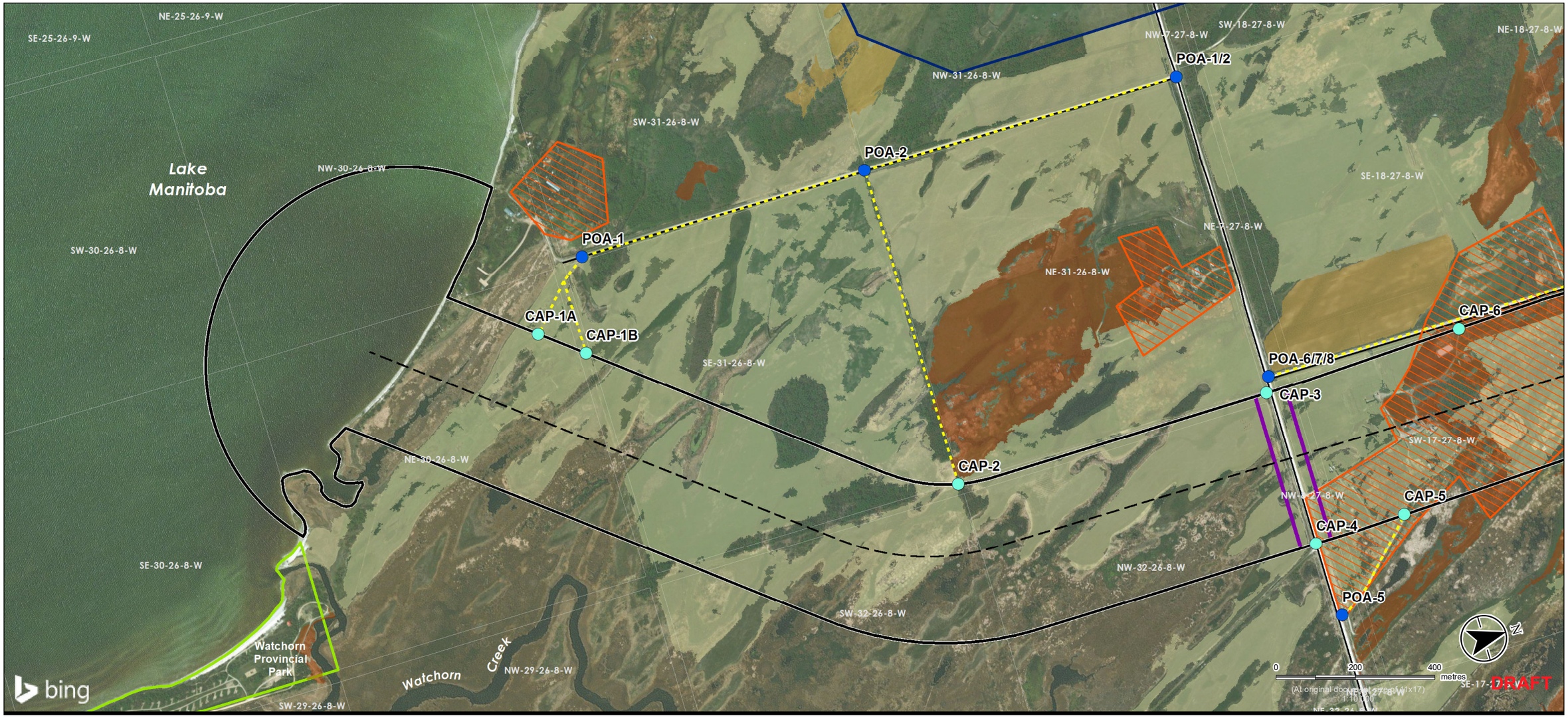

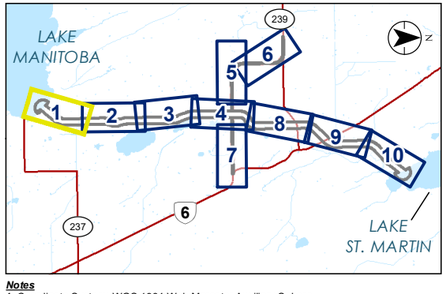

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LEGEND

- Lake Manitoba Outlet Channel (LMOC)/ PR 239 Realignment Project Development Area (PDA)
- LMOC Approximate Centerline
- LMOC/PR239 PDA 1km Buffer
- Proposed Bridge
- Municipal Road
- Provincial Park
- Quarter Sections

ACCESS MANAGEMENT FEATURES*

- Access Management Route (AMR)
- Point of Access (POA)

Controlled Access Point (CAP)

- Low/Moderate Risk CAP
- Low/High Risk CAP

BIOSECURITY MANAGEMENT ZONES*

Biosecurity Risk Zone (BRZ)

- Annual Cropping
- Hayland
- Hayland & Pasture

Restricted Access Zone (RAZ)

- Livestock Operations

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change following engagement and consultation, field windshield survey (groundtruthing) and Project access management planning"

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Project Location
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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel and PR 239 Realignment

Figure No.
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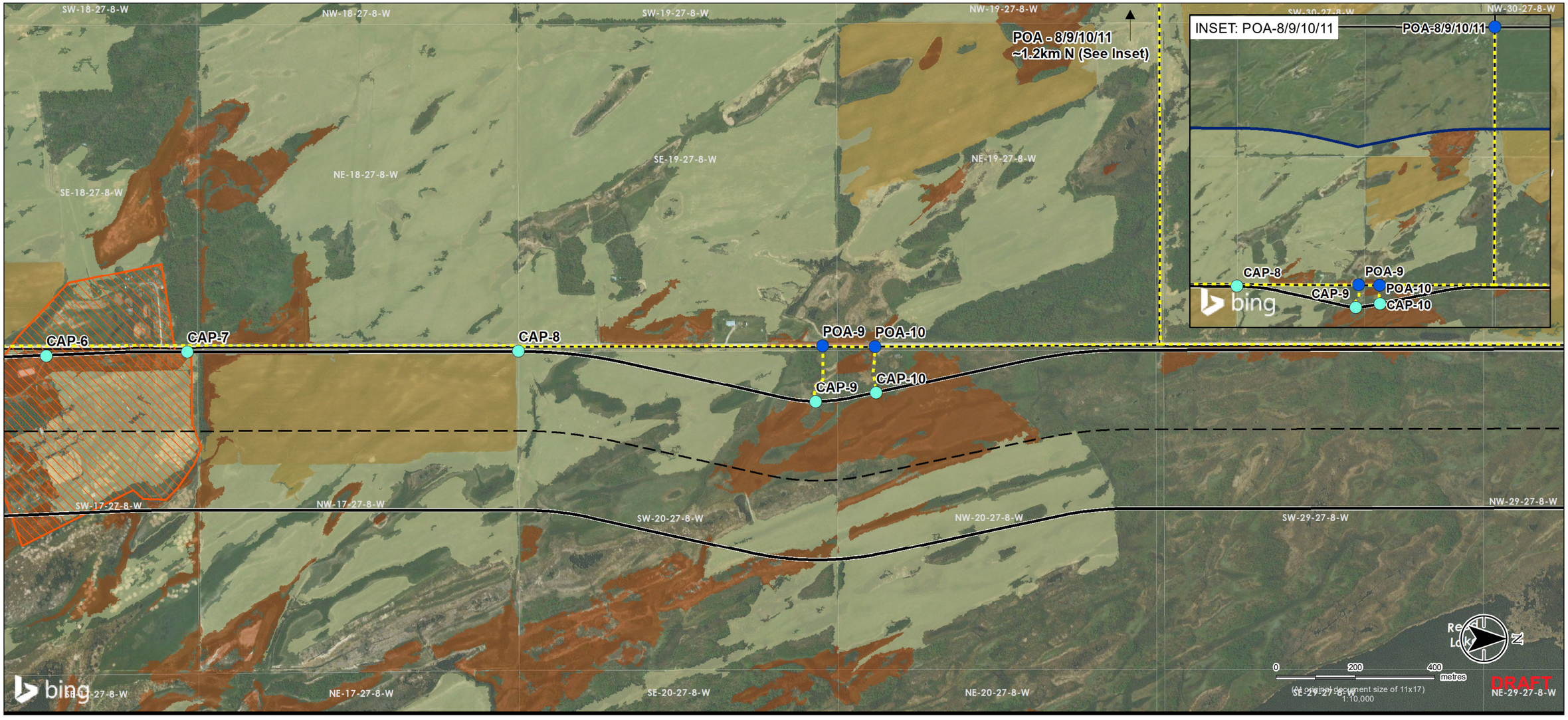

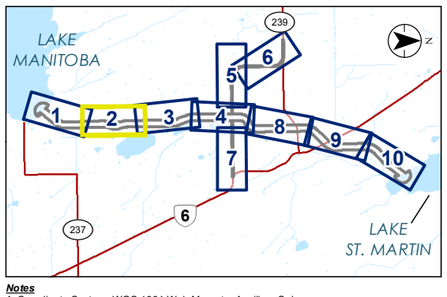

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ACCESS MANAGEMENT FEATURES*

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BIOSECURITY MANAGEMENT ZONES*

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Notes

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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel and PR 239 Realignment

Figure No.
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Title
Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239 Realignment

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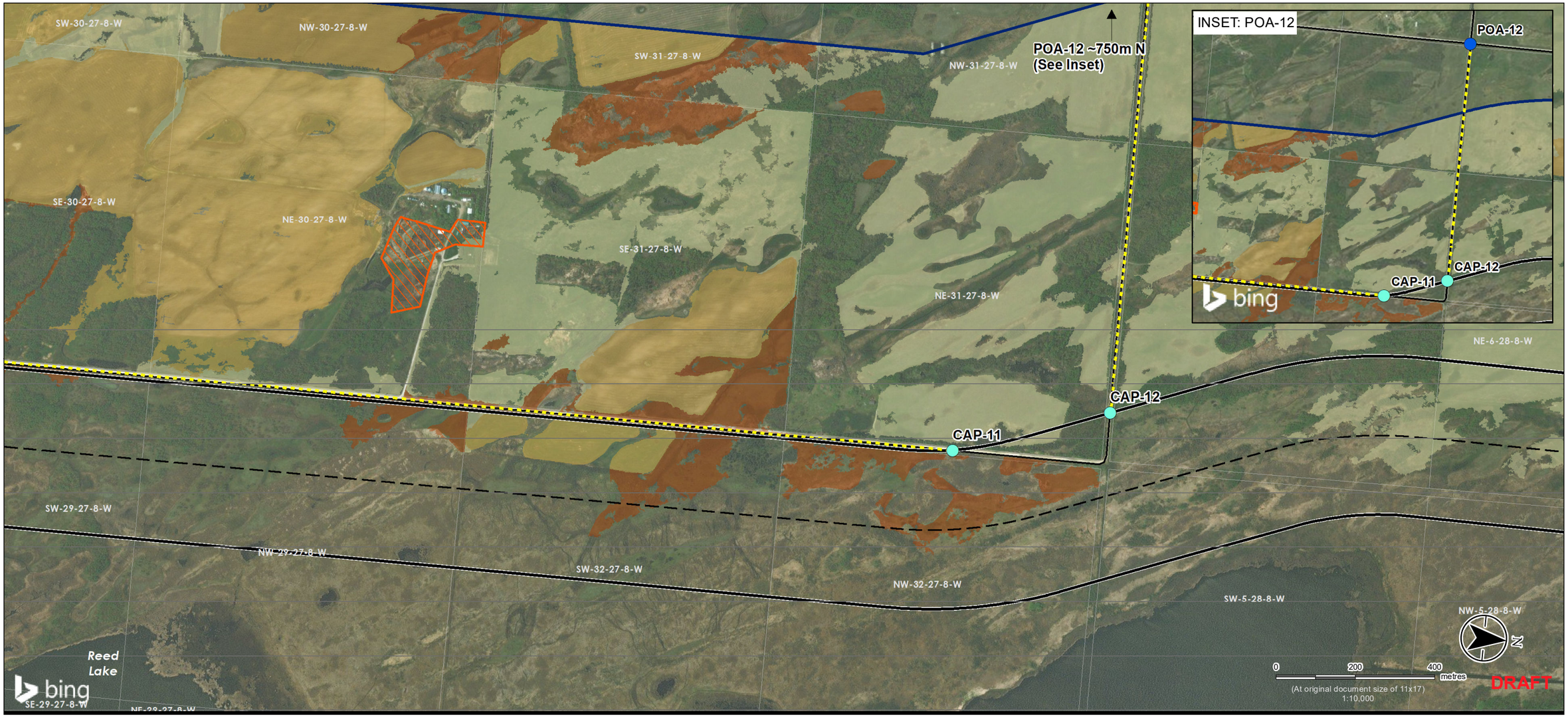

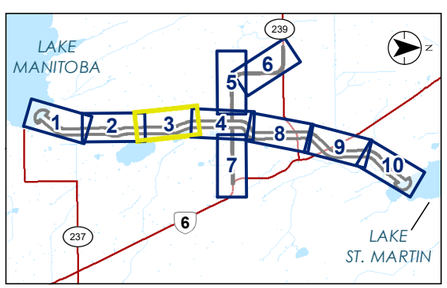

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LEGEND

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- LMOC Approximate Centerline
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ACCESS MANAGEMENT FEATURES*

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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel and PR 239 Realignment

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Title
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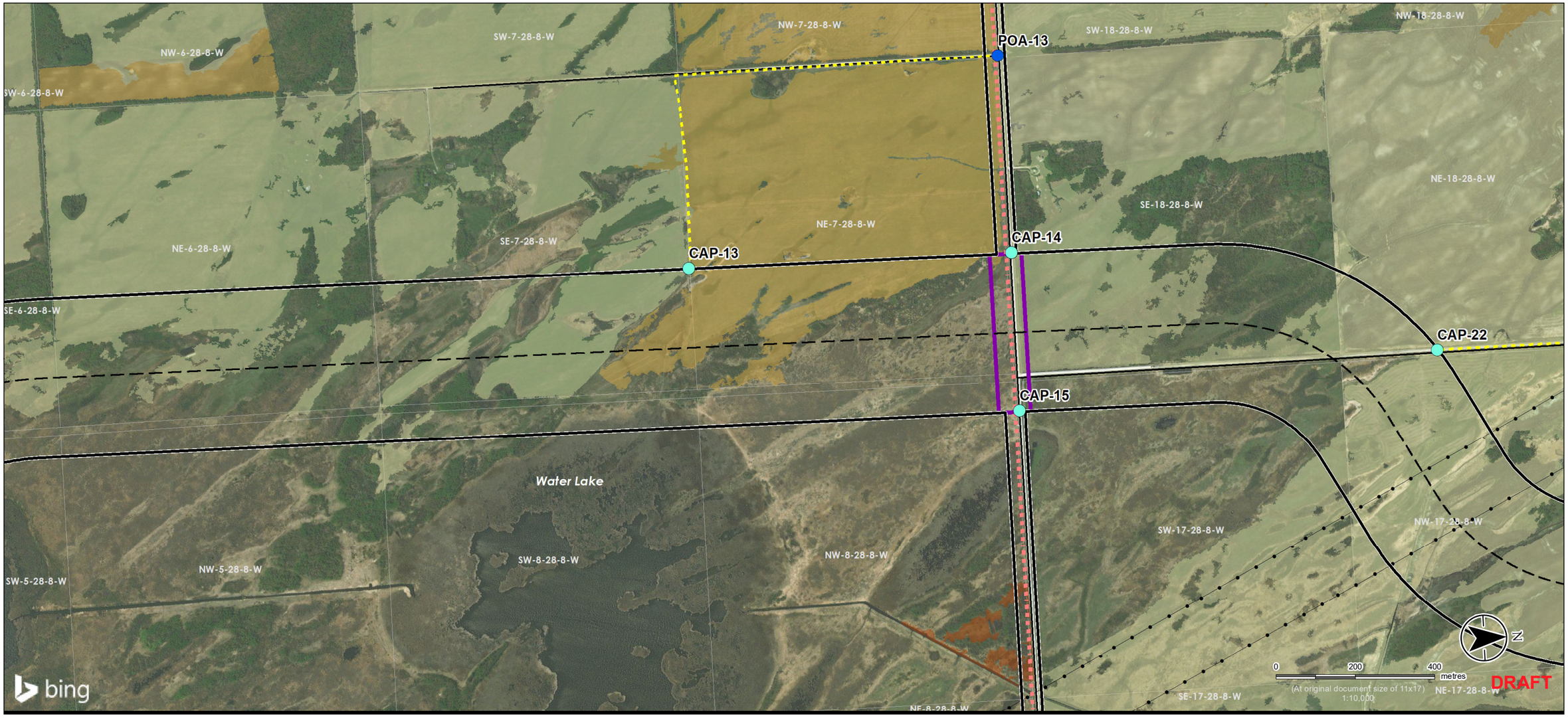

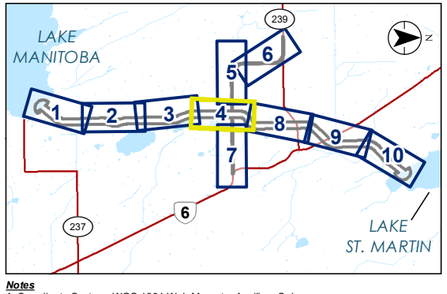

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- Quarter Sections

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- Point of Access (POA)

Controlled Access Point (CAP)
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- Low/High Risk CAP

BIOSECURITY MANAGEMENT ZONES*

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Lake Manitoba Outlet Channel and PR 239 Realignment

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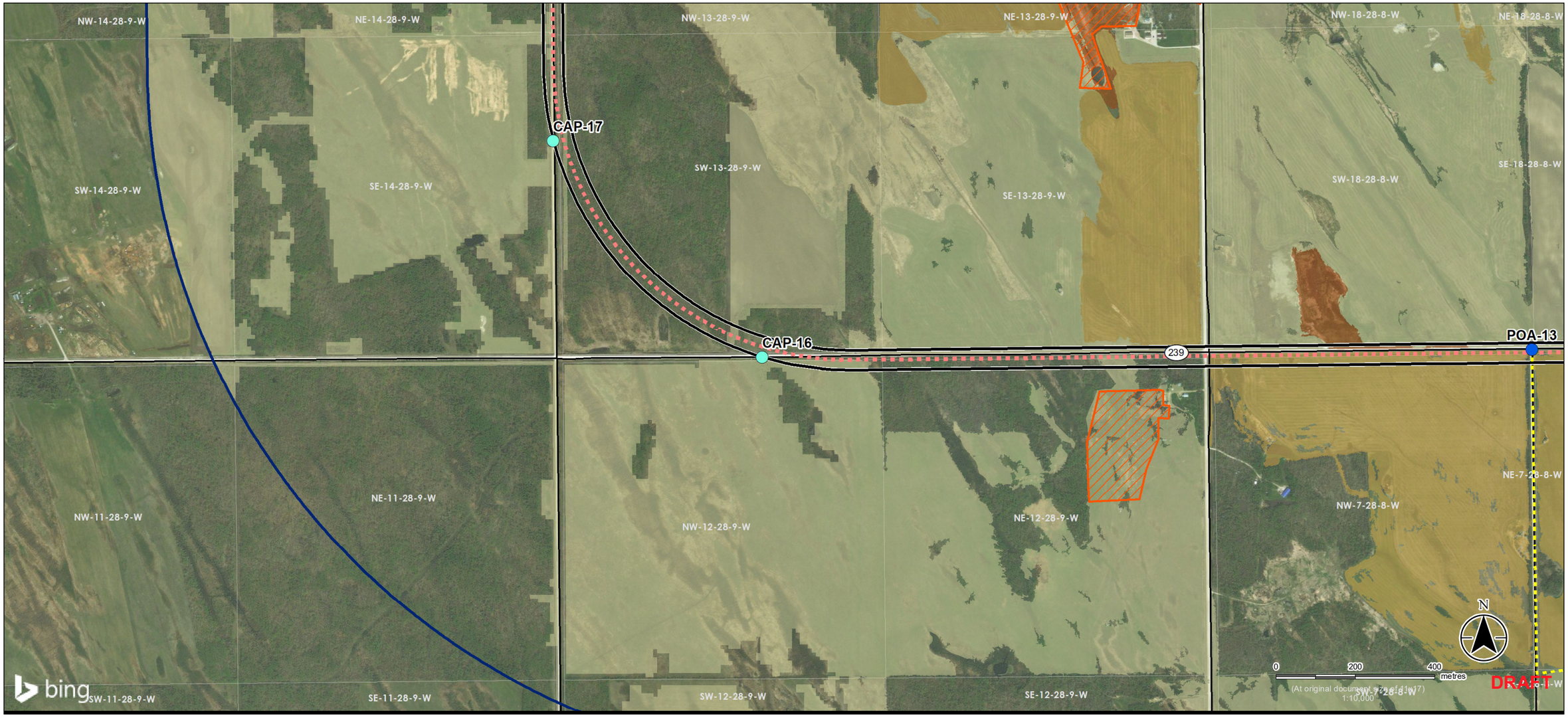

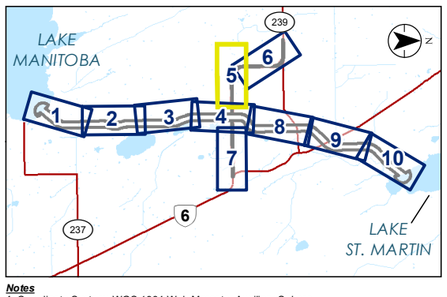

LEGEND

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- Proposed PR239 Realignment
- LMOC/PR239 PDA 1km Buffer
- Municipal Road
- Quarter Sections

ACCESS MANAGEMENT FEATURES*

- Access Management Route (AMR)
- Point of Access (POA)

Controlled Access Point (CAP)

- Low/Moderate Risk CAP
- Low/High Risk CAP

BIOSECURITY MANAGEMENT ZONES*

Biosecurity Risk Zone (BRZ)

- Annual Cropping
- Hayland
- Hayland & Pasture

Restricted Access Zone (RAZ)

- Livestock Operations

Notes

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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel and PR 239 Realignment

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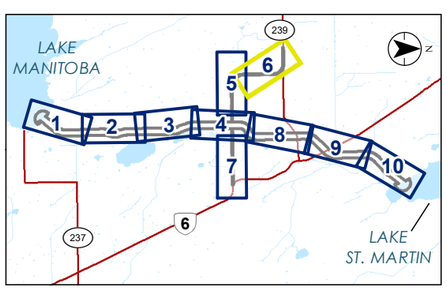

LEGEND

- Lake Manitoba Outlet Channel (LMOC)/ PR 239 Realignment Project Development Area (PDA)
- Proposed PR239 Realignment
- LMOC/PR239 PDA 1km Buffer
- Provincial Hwy (PTH/PR)
- Municipal Road
- Quarter Sections

ACCESS MANAGEMENT FEATURES*

- Access Management Route (AMR)
- Point of Access (POA)

Controlled Access Point (CAP)

- Low/Moderate Risk CAP
- Low/High Risk CAP

BIOSECURITY MANAGEMENT ZONES*

Biosecurity Risk Zone (BRZ)

- Annual Cropping
- Hayland
- Hayland & Pasture

Restricted Access Zone (RAZ)

- Livestock Operations

Notes

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TR by DW on 2020-06-19

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Agriculture Biosecurity Management Plan -
Lake Manitoba Outlet Channel and PR 239 Realignment

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Title
Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239 Realignment

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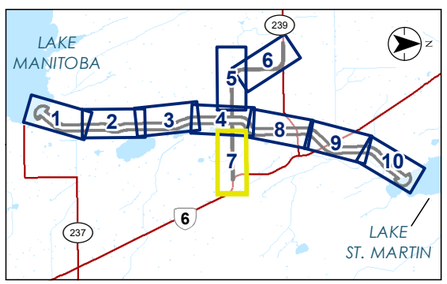

LEGEND

- Lake Manitoba Outlet Channel (LMOC)/ PR 239 Realignment Project Development Area (PDA)
- Proposed PR239 Realignment
- LMOC/PR239 PDA 1km Buffer
- Existing Transmission Line
- Provincial Hwy (PTH/PR)
- Municipal Road
- Quarter Sections

ACCESS MANAGEMENT FEATURES*

- Access Management Route (AMR)
- Point of Access (POA)

Controlled Access Point (CAP)

- Low/Moderate Risk CAP
- Low/High Risk CAP

BIOSECURITY MANAGEMENT ZONES*

Biosecurity Risk Zone (BRZ)

- Annual Cropping
- Hayland
- Hayland & Pasture

Restricted Access Zone (RAZ)

- Livestock Operations

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
3. Background Imagery: Service Layer Credits: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change following engagement and consultation, field windshield survey (groundtruthing) and Project access management planning"

Manitoba

Stantec

agriearth consulting ltd.

Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Prepared by JH on 2020-06-19
TR by DW on 2020-06-19

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Agriculture Biosecurity Management Plan -
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Figure No.
Figure 2- 7

DRAFT

Title
Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239 Realignment

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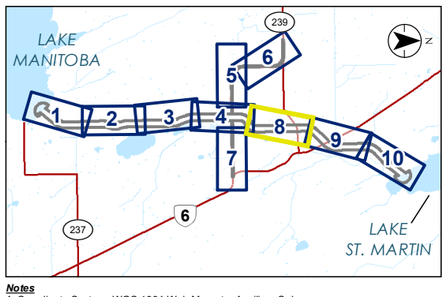

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Agriculture Biosecurity Management Plan -
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Figure No.
Figure 2- 8

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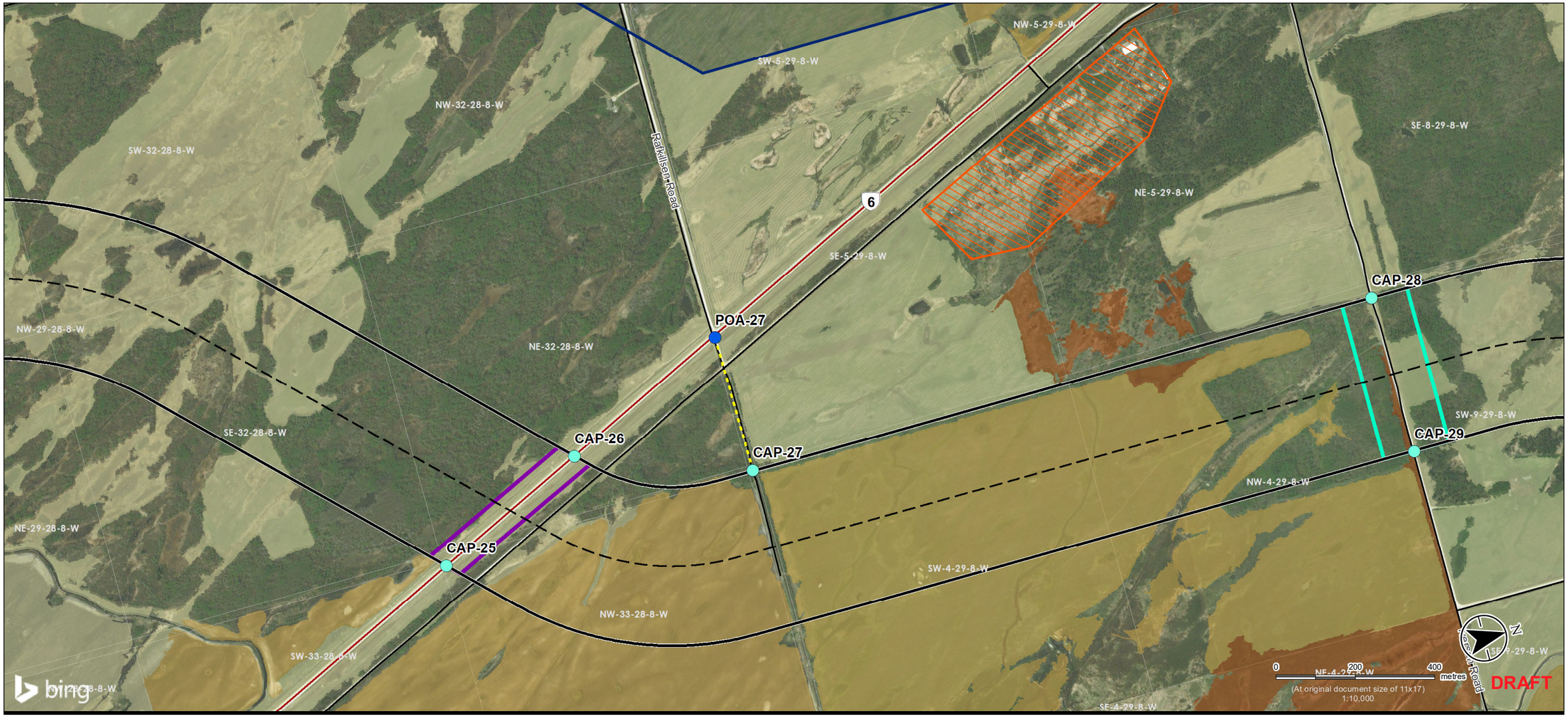

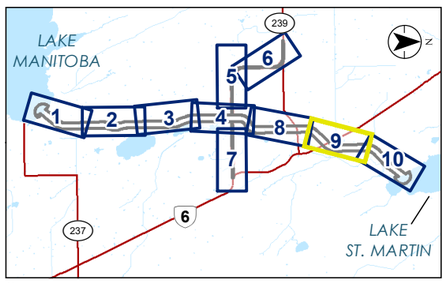

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Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239 Realignment

Figure No.
Figure 2- 9

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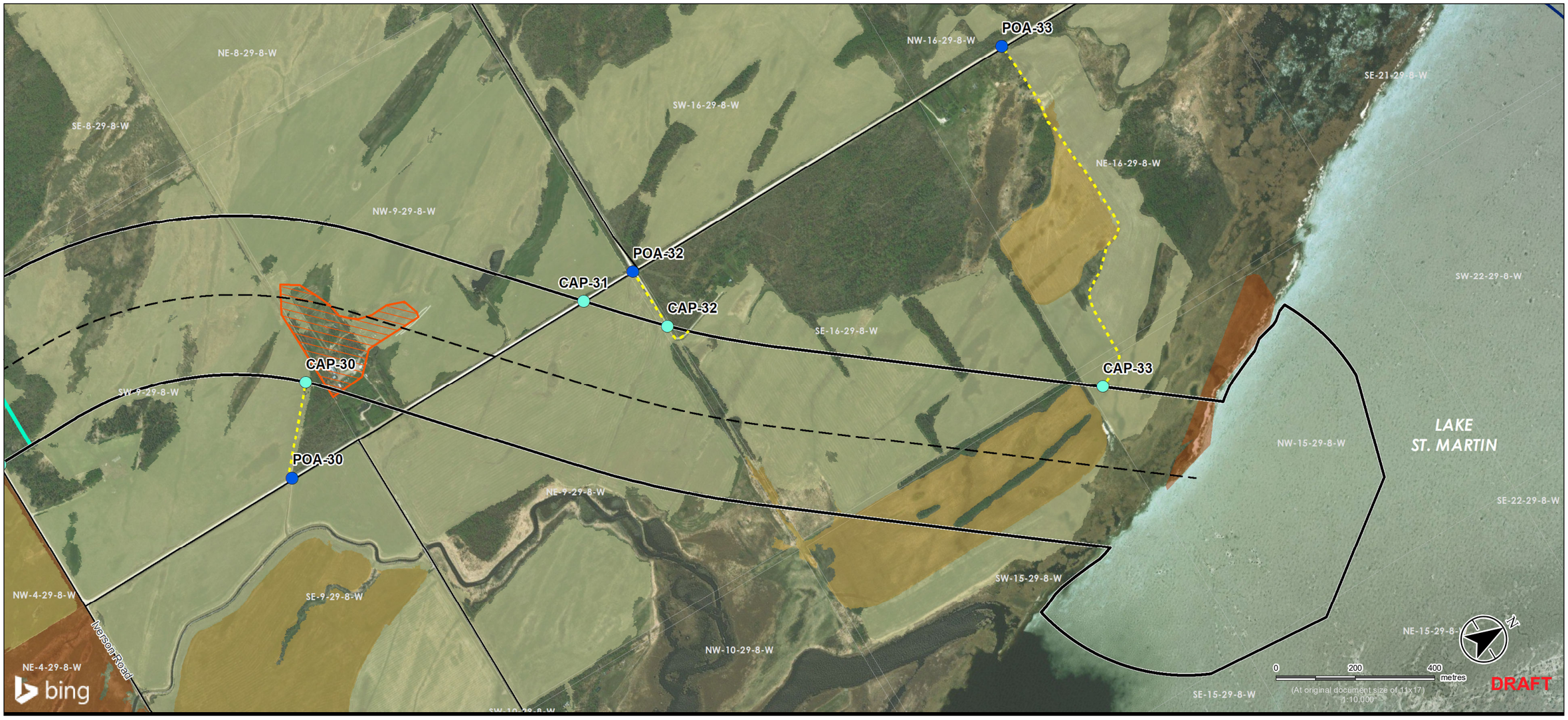

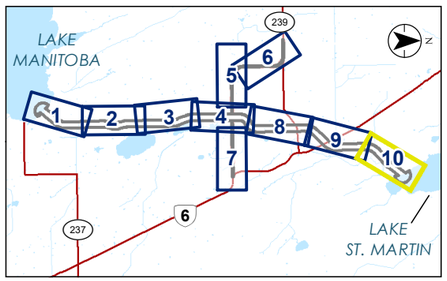

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Agriculture Biosecurity Management Plan -
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Figure 2- 10
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APPENDIX 2

Provincial Resources

2.A Biosecurity Factsheet

Biosecurity

Help protect the health of livestock and crops

New and existing pests and diseases can have a devastating impact on both our natural and agro-ecosystems. We can all take steps to limit human impact on the spread of noxious weeds, disease and insects.

The best defense to reduce pest and disease outbreaks is to set up good biosecurity measures.

Manitoba Agriculture continues to work with farmers, other government departments, Crown corporations, industry and outside agencies to develop and promote realistic and effective biosecurity protocols that protect agricultural crop, livestock and poultry farms.

Biosecurity protocols supported by Manitoba Agriculture have helped limit the impact of significant livestock diseases such as Porcine Epidemic Diarrhea and Avian Influenza and are important for reducing the impact of crop pests such as Bacterial Ring Rot, Clubroot and Verticillium Wilt.

Biosecurity guidelines

As farmers and the industry become more aware of the importance of biosecurity, many sectors have developed standards for farmers and service providers to use. It is essential for employees of government and non-government agencies to use effective biosecurity practices to protect the animals and crops they visit.

Biosecurity and pest management practices are designed to:

- **Prevent** – recognize potential pests and diseases and how and where they can enter a farm
- **Minimize** – reduce the spread or increase of pests or diseases currently on a farm
- **Control** – apply effective and timely measures
- **Communicate** – risks, strategies and protocols for specific pest and disease management

Farmers are responsible for their operations, but others working or visiting agricultural lands have responsibilities to limit the spread of noxious weeds, diseases and pests. Guidelines for both sectors are available online:

- Livestock: www.manitoba.ca/agriculture/animals/animal-health/biosecurity-in-livestock-production.html
- Crops: www.manitoba.ca/agriculture/crops/biosecurity.html

Staff across government have implemented biosecurity protocols to limit the spread of pests and diseases. Protocols are updated as new information becomes available.

For more information

- Livestock biosecurity: contact Manitoba Agriculture at 204-794-9816.
- Crop biosecurity: contact Manitoba Agriculture at 204-745-5660.

Manitoba

2.B Noxious Weeds Information (Manitoba Agriculture)

2.B.1 Noxious Weeds List

The noxious weeds list includes a list of weeds designated as Tier 1, Tier 2, and Tier 3 noxious weeds in Manitoba under the Declaration of Noxious Weeds in Manitoba under The Noxious Weeds Regulation (M.R. 42/17). The list was accessed May 2020 at: https://www.gov.mb.ca/agriculture/crops/weeds/declaration-of-noxious-weeds-in-mb.html

Designated Noxious Weeds in Manitoba
(The Noxious Weeds Regulation M.R. 42/17)

Common Name	Scientific Name	Area for which Designation Applies
Designated Tier 1 Noxious Weeds		
Amaranth, Palmer	*Amaranthus palmeri*	Whole province
Bartsia, red	*Odontites vernus*	All areas of the province outside the Municipality of Bifrost-Riverton and the Rural Municipalities of Armstrong, Fisher, Gimli, Rockwood, St. Andrews and St. Clements
Crupina, common	*Crupina vulgaris*	Whole province
Cupgrass, wooly	*Eriochloa villosa*	Whole province
Goatgrass, jointed	*Aegilops cylindrica*	Whole province
Hawkweed, orange	*Hieracium aurantiacum*	Whole province
Hogweed, giant	*Heracleum mantegazzianum*	Whole province
Hound's-tongue	*Cynoglossum officinale*	Whole province
Knapweed, diffuse	*Centaurea diffusa*	Whole province
Knapweed, Russian	*Acroptilon repens*	Whole province
Knapweed, spotted	*Centaurea stoebe*	Whole province

Knapweed, squarrose	*Centaurea virgata*	Whole province
Knotweed, Japanese	*Fallopian japonica*	Whole province
Mile-a-minute weed	*Persicaria perfoliata*	Whole province
Mustard, garlic	*Allaria petiolata*	Whole province
Patterson's curse	*Echium plantagineum*	Whole province
Pigweed, smooth	*Amaranthus hybridus*	Whole province
Saltcedar	*Tamarix ramosissima*	Whole province
Star-thistle, yellow	*Centaurea solstitialus*	Whole province
Tussock, serrated	*Nassella trichotoma*	Whole province
Waterhemp, tall	*Amaranthus tuberculatus*	Whole province
Designated Tier 2 Noxious Weeds		
Alyssum, hoary	*Berteroa incana*	Whole province
Baby's-breath	*Gypsophila paniculata*	Whole province
Bartsia, red	*Odontites vernus*	Municipality of Bifrost-Riverton and the Rural Municipalities of Armstrong, Fisher, Gimli, Rockwood, St. Andrews and St. Clements
Bouncingbet	*Saponaria officinalis*	Whole province
Brome, downy	*Bromus tectorum*	Whole province
Brome, Japanese	*Bromus japonicas*	Whole province
Campion, bladder	*Silene vulgaris*	Whole province
Chamomile, scentless	*Matricaria perforata*	Whole province
Common reed, invasive	*Phragmites australis australis*	Whole province

Daisy, ox-eye	*Leucanthemum vulgare*	Whole province
Nutsedge, yellow	*Cyperus esculentus*	Whole province
Scabious, field	*Knautia arvensis*	Whole province
Spurge, Cypress	*Euphorbia cyparissias*	Whole province
Spurge, leafy	*Euphorbia esula*	Whole province
St. John's-wort	*Hypericum perforatum*	Whole province
Tansy, common	*Tanacetum vulgare*	Whole province
Thistle, nodding	*Carduus nutans*	Whole province
Toadflax, Dalmatian	*Linaria dalmatica*	Whole province
Designated Tier 3 Noxious Weeds		
Absinth	*Artemisia absinthium*	Whole province
Barberry	*Berberis vulgaris*	Whole province
Barley, foxtail	*Hordeum jubatum*	Whole province
Bellflower, creeping	*Campanula rapunculoides*	Whole province
Buckthorn, European	*Rhamnus cathartica*	Whole province
Burdock, common	*Arctium minus*	Whole province
Burdock, greater	*Arctium lappa*	Whole province
Burdock, woolly	*Arctium tomentosum*	Whole province
Campion, biennial	*Silene dioica*	Whole province
Catchfly, night-flowering	*Silene noctiflora*	Whole province
Cleavers	*Gallium aparine*	Whole province
Cleavers, false	*Gallium spurium*	Whole province

Cockle, white	*Silene alba*	Whole province
Dandelion	*Taraxacum officinale*	Whole province
Dodder	genus *Cuscuta*	Whole province
Fleabane, Canada	*Conyza canadensis*	Whole province
Flixweed	*Descurainia sophia*	Whole province
Hawk's-beard, narrow-leaved	*Crepis tectorum*	Whole province
Hemlock, poison	*Conium maculatum*	Whole province
Hemp-nettle	*Galeopsis tetrahit*	Whole province
Hoary-cress	*Cardaria draba*	Whole province
Jimsonweed	*Datura stromonium*	Whole province
Kochia	*Kochia scoparia*	Whole province
Lamb's quarters	*Chenopodium album*	Whole province
Lettuce, prickly	*Lactuca serriola*	Whole province
Milkweed, common	*Asclepias syriaca*	Whole province
Milkweed, showy	*Aslepias speciosa*	Whole province
Mustard, wild	*Sinapis arvensis*	Whole province
Nightshade, American black	*Solanum americanum*	Whole province
Nightshade, cutleaf	*Solanum triflorum*	Whole province
Nightshade, hairy	*Solanum sarachoides*	Whole province
Parsnip, wild	*Pastinaca sativa*	Whole province
Ragweed, common	*Ambrosia artemisiifolia*	Whole province
Ragweed, false	*Iva xanthifolia*	Whole province

Ragweed, giant	*Ambrosia trifida*	Whole province
Sow-thistle, annual	*Sonchus oleraceus*	Whole province
Sow-thistle, perennial	*Sonchus arvensis*	Whole province
Sow-thistle, spiny annual	*Sonchus asper*	Whole province
Stinkweed	*Thlaspi arvense*	Whole province
Stork's bill	*Erodium cicutarium*	Whole province
Thistle, bull	*Cirsium vulgare*	Whole province
Thistle, Canada	*Circium arvense*	Whole province
Thistle, Russian	*Salsola pestifer*	Whole province
Toadflax, yellow	*Linaria vulgaris*	Whole province
Water hemlock, bulb-bearing	*Cicuta bulbifera*	Whole province
Water hemlock, northern	*Cicuta virosa*	Whole province
Water hemlock, spotted	*Cicuta maculata*	Whole province
Water hemlock, western	*Cicuta douglasii*	Whole province
Whitetop, hairy	*Cardaria pubescens*	Whole province
Whitetop, lenspod	*Cardaria chalepensis*	Whole province

2.B.2 Manitoba Agriculture FAQs and Control of Noxious Weeds

The following document provides an FAQ and information on control of noxious weeds provided by Manitoba Agriculture. This was accessed at: https://www.gov.mb.ca/agriculture/crops/weeds/declaration-of-noxious-weeds-in-mb.html [May 2020].

Controlling Noxious Weeds

The Noxious Weeds Act (C.C.S.M. c. N110) sets out requirements regarding various control or destruction measures for different plants. It applies to anyone owning or occupying land in Manitoba on which the plant is located.

Is it a Noxious Weed?

The listing of noxious weeds is found in The Noxious Weeds Regulation (Man.Reg.42/17), which contains schedules that rank plants according to their threat levels and specifies the areas of the province to which these levels apply. A noxious weed means, a plant that is designated as a Tier 1, Tier 2 or Tier 3 noxious weed in the Noxious Weeds Regulations and includes the seed of a noxious weed, whether it is still attached to the noxious weed or is separate from it.

How are different Tiers of weeds managed?

The Act requires that Tier 1 weeds, considered a significant threat, must be eradicated without conditions. Tier 2 weeds must be managed according to the size of the infestation. Tier 3 weeds have to be controlled if the weed's uncontrolled growth or spread would have a negative impact on the economy, the environment or the well-being of residents near-by.

Who is responsible?

The control of noxious weeds is the responsibility of all landowners, including:

- Farmers: conventional & organic
- Construction
- Industry: Hydro, Oil & Gas, etc.
- Railways
- Governments: Municipal, Provincial & Federal
  - Rights-of-way, crown land, parks, etc.

The provincial mandate to control noxious weeds is provided through the Noxious Weeds Act, but the implementation of the Act is at the Municipal or Weed Control District Level. On an annual basis, each municipality or Weed Control District appoints a Weed Inspector or Supervisor whom is tasked with inspecting and enforcing the Noxious Weed Act. The Weed Inspector or Supervisor will work with landowners to develop control strategies on private lands for particularly invasive weeds such as leafy spurge. If necessary, Weed Inspector or Supervisor is authorized to regulate weed control under the authority of the Noxious Weeds Act.

How do I get a weed controlled?

To establish control of a Tier 3 noxious weed, a complaint should be lodged with the appropriate municipality or Weed Control District. At that point, an assessment of the concern can take place to establish if there is a negative affect. This would include the collection of the following information.

1. Photographs of the area (date on photos):
   a. A landscape photo with landmarks to help locate the area
   b. Close-up of weeds to confirm it is a Tier 3 weed
   c. Landscape shot of the total infestation
2. Documentation of the complaint filed (or in the event that the Weed Supervisor/ Inspector located the weed infestation on their own, feedback from a municipal or weed control board member and/or MB Weed Specialist)

APPENDIX 3

Record-Keeping Forms

3.A Weekly Vehicle and Equipment Cleaning Record

Weekly Vehicle and Equipment Cleaning Record
Agricultural Biosecurity Management Plan

DRAFT

LAKE MANITOBA
LAKE ST. MARTIN
OUTLET CHANNELS PROJECT

Weekly period Date starting (Monday; dd-mm-yy): _____ Date ending (Friday; dd-mm-yy): _____

Vehicle/equipment info Vehicle/Equipment Type: _____ Vehicle/Equipment ID: _____

Date (dd-mm)	Controlled Access Point (CAP) ID	Controlled Access Point (CAP) Risk Category: 1=Level 1 Risk Category 2=Level 2 Risk Category	Entering the Project Development Area (PDA): Time	Vehicle/equipment inspection (mark with "x"): No soil/manure/plant debris accumulation	Vehicle/equipment inspection (mark with "x"): Soil/manure/plant debris accumulation on machinery	Cleaning completed (mark with "x"): No cleaning required	Cleaning completed (mark with "x"): Rough/mechanical cleaning (scraping, brushing)	Cleaning completed (mark with "x"): Fine cleaning (pressure washer) and disinfection	Exiting the Project Development Area (PDA): Time	Vehicle/equipment inspection (mark with "x"): No soil/manure/plant debris accumulation	Vehicle/equipment inspection (mark with "x"): Soil/manure/plant debris accumulation on machinery	Assessed risk level*: L=Low risk M=Moderate risk H=High risk	Cleaning completed (mark with "x"): No cleaning required	Cleaning completed (mark with "x"): Rough/mechanical cleaning (scraping, brushing)	Cleaning completed (mark with "x"): Fine cleaning (pressure washer) and disinfection	Initial complete

*Risk level is determined by: 1. risk category of the Controlled Access Point, and 2. cleanliness of vehicle/equipment entering/exiting the PDA			2. Vehicle/equipment cleanliness inspection: Has soil, manure or plant material accumulated on vehicle, equipment or footwear?	
			No	Yes
1. Risk category of the Controlled Access Point (CAP)	Level 1 Risk Category	Risk level	Low risk	Moderate risk
		Cleaning requirement	No cleaning is required	Rough/mechanical cleaning (brushing, scraping) is required until loose or clumped soil/manure/plant debris has been removed from the vehicle, equipment, or footwear
	Level 2 Risk Category	Risk level	Low risk	High risk
		Cleaning requirement	No cleaning is required	Fine cleaning (pressure washer) is required until all soil/manure/ plant debris has been removed from the vehicle, equipment, or footwear. Complete disinfection according to product directions.

Manitoba