

LAKE MANITOBA LAKE ST. MARTIN

OUTLET CHANNELS PROJECT

MANITOBA TRANSPORTATION AND
INFRASTRUCTURE

Agricultural Biosecurity Management Plan

June 30, 2022

TABLE OF CONTENTS

- DISCLAIMER I**
- PREFACE..... II**
- EXECUTIVE SUMMARY V**
- LIST OF ACRONYMS AND GLOSSARY OF TERMS VIII**
 - Acronyms viii
 - Glossary of Terms ix
- 1.0 INTRODUCTION 1**
- 2.0 BACKGROUND 3**
 - 2.1 Summary of Agricultural Land Use 3
 - 2.2 Regulatory Requirements and Industry Guidelines 3
 - 2.2.1 Federal Environmental Requirements and Guidelines 3
 - 2.2.2 Provincial Regulatory Context and Guidelines 4
 - 2.3 Related Project Reports and Management Plans 6
- 3.0 BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT 8**
 - 3.1 Biosecurity Risk Issues and Mechanisms 8
 - 3.1.1 Cropland Biosecurity 8
 - 3.1.2 Livestock Biosecurity 10
 - 3.1.3 Biosecurity Risk Mechanisms 10
 - 3.2 Biosecurity Management Strategies, Approaches, And Practices 12
 - 3.2.1 Biosecurity Management Zones and Access Management 14
 - 3.2.2 Biosecurity Risk Levels 19
 - 3.2.3 Cleaning Practices 22

4.0 IMPLEMENTATION PLAN	27
4.1 Roles, Responsibilities and Communication	27
4.1.1 Roles and Responsibilities	27
4.1.2 Project Communication	30
4.2 Planning and Preparation	31
4.2.1 Contract/Contractor Specifications	31
4.2.2 Landowner Communication and Notification	31
4.2.3 Work Timing and Scheduling	31
4.2 Facilities and Equipment	32
4.2.1 Project Area Entry Checkpoint	32
4.2.2 Controlled Access Point Signage	32
4.2.3 Cleaning Areas and Stations	32
4.2.4 Cleaning Equipment	34
4.4 Worker Requirements	34
4.4.1 Worker Orientation	34
4.4.2 Worker Actions	35
4.4.3 Record Keeping	37
4.5 Contractor Reporting	38
4.6 Monitoring Program	38
4.7 Implementation Tasks by Project Phase	38
5.0 ADAPTIVE MANAGEMENT	42
6.0 REFERENCES	43
APPENDIX 1	44
APPENDIX 2	56
APPENDIX 3	64

List of Tables

Table 1: Summary of Project-Related Biosecurity Risk Mechanisms

Table 2: Risk Level and Required Action

Table 3: Roles and Responsibilities

Table 4: Implementation Tasks by Project Phase

Table 2-1: Designated Noxious Weeds in Manitoba (The Noxious Weeds Regulation M.R. 42/17)

List of Figures

Figure A: EMP Process

Figure 1: Three Key Strategies for Effective Biosecurity Management

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

Figure 3: Proposed Site Access Roads for LMOC and LSMOC

Figure 4: Determination of Agricultural Biosecurity Risk Categories and Risk Levels

Figure 5: Conceptual Diagram of Rough/Mechanical Cleaning Area and Fine Cleaning Station

Figure 6: Conceptual Diagram of Location of Cleaning Area or Station on PDA

Figure 7: Project Organization Structure

Figure 1-1: Overview Map

Figure 2-1: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-2: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-3: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-4: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-5: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-6: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-7: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-8: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-9: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

Figure 2-10: Agriculture Biosecurity Management Plan - Lake Manitoba Outlet Channel and PR 239
Realignment

DISCLAIMER

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

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

PREFACE

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

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

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

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

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

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

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

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

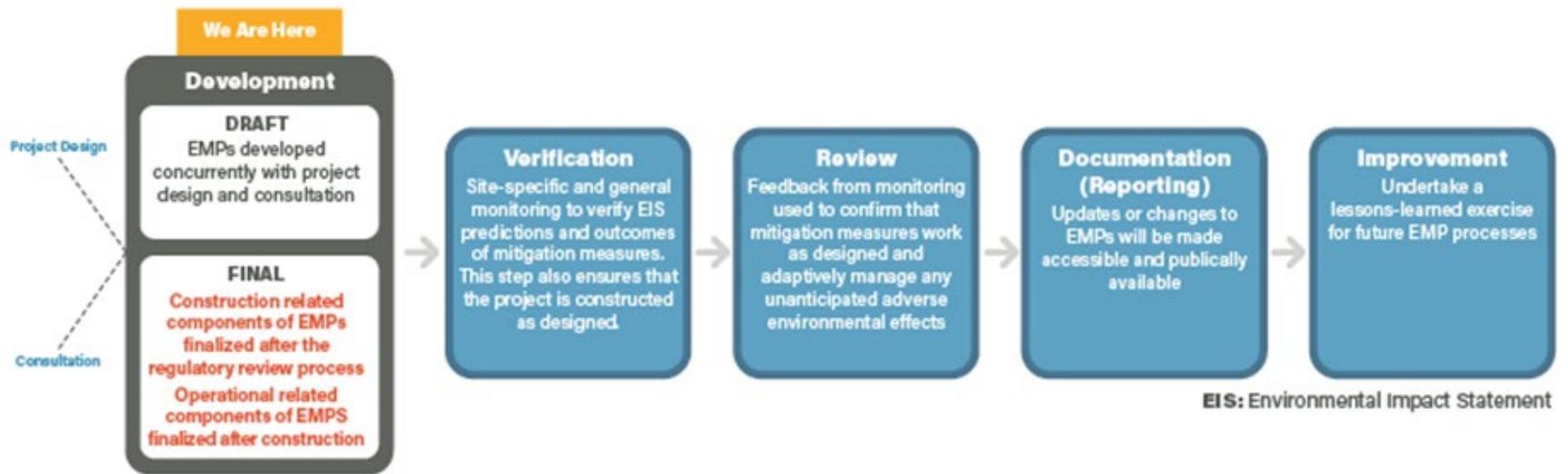


Figure A: EMP Process

EXECUTIVE SUMMARY

This document presents the Agricultural Biosecurity Management Plan (AgBMP) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). The AgBMP was a commitment within the Project Environmental Impact Assessment (EIS) 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.

The AgBMP primarily pertains to the Lake Manitoba Outlet Channel (LMOC), municipal roads realignments and Provincial Road (PR) 239 realignment portions of the Project, as these portions of the Project traverse agricultural land use, including cropland, grazing land and livestock operations. It is developed to address Project activities during the construction and operation phases of the Project that have the potential to harm agricultural lands adjacent to and in proximity of the Project development area (PDA) in these portions of the Project. While the Lake St. Martin Outlet Channel (LSMOC) portion of the Project is currently characterized predominantly as natural vegetation and wetlands, it may be used in times of severe drought during operation for haying by private agricultural producers. If this becomes a permitted activity, it would also require measures to address biosecurity issues.

Generally, invasive agricultural pests (e.g., noxious weeds, pathogens) can pose a substantial 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 Transportation and 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.
- A 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 Transportation and Infrastructure and Project contractors to protect agricultural biosecurity.
- Identification of specific biosecurity risk areas within and adjacent to the PDA and controlled access points (CAP) where workers will enter and exit the PDA.
- An implementation plan to guide Manitoba Transportation and Infrastructure in implementing 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 orientation, 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 to the PDA from agricultural areas outside of the region of the Project, and from the LMOC and realignment of PR 239 and municipal roads portions of the PDA to agricultural areas outside of the PDA.
- For livestock biosecurity, measures include minimizing the potential for manure transfer from the LMOC and PR 239 realignment portions of 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 to minimize the potential for weed infestations. Revegetation plans for the PDA are presented in the Revegetation Management Plan (RVMP). 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 noxious weeds or invasive weeds of agricultural concern are identified within the PDA following revegetation.

During the operation phase:

- The RVMP 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 Transportation and 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., single Project Area Entry Checkpoint, 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 AgBMP includes actions to operationalize these three strategies.

The AgBMP includes the need for identification of a single, controlled Project Area Entry Checkpoint into the Project area, Biosecurity Management Zones (biosecurity risk zones [BRZ], restricted access zones [RAZ]), and CAPs for construction access (CA) to Project work areas, which are critical to effective agricultural biosecurity management for the Project during construction. The Project Area Entry Checkpoint will provide a single, established location at which all incoming machinery must be checked for adequate cleanliness prior to entry into the Project area to access the PDA. 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 CAPs 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 CAP (defined by the nature of the CA 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. Restricted access zones are areas which require special management and monitoring due to elevated biosecurity risks, and include manure impacted sites and areas of weed infestations.

An implementation plan is presented to assist Manitoba Transportation and 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 a summary of implementation tasks by Project phase.

Adaptive management is part of the follow-up process that provides a mechanism for continual improvement of the AgBMP. Specific aspects of the adaptive management program include delineating RAZ if weed infestations are identified through vegetation monitoring, updating Risk Categories at CAPs if necessitated by changes to Project access management, and using learnings from the biosecurity monitoring program to modify or change measures within the AgBMP.

Implementation and adherence to the AgBMP 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 will be implemented to address deficiencies, if identified and as required.

LIST OF ACRONYMS AND GLOSSARY OF TERMS

Acronyms

%	percent
AgBMP	Agricultural Biosecurity Management Plan
AMP	Access Management Plan
BRZ	Biosecurity Risk Zone
CA	construction access
CAP	controlled access point
CEMP	Construction Environmental Management Program
CEnvPP	Construction Environmental Protection Plan
CFIA	Canadian Food Inspection Agency
EDRR	Early Detection and Rapid Response
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ISCM	Invasive Species Council of Manitoba
km	kilometre
LAA	Local Assessment Area
LMOC	Lake Manitoba Outlet Channel
LSMOC	Lake St. Martin Outlet Channel
m	metre
OEMP	Operation Environmental Management Program
PDA	Project development area
PERs	Project Environmental Requirements
POA	point of access
PR	Provincial Road
the Project	Lake Manitoba and Lake St. Martin Outlet Channels Project
RAZ	restricted access zone
RM	Rural Municipality
RVMP	Revegetation Management Plan

Glossary of Terms

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.

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

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.

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

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

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.

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

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

Invasive weed (agricultural): A plant species that is not native or indigenous to an agricultural region or field, and whose introduction can adversely affect crop or livestock health and/or productivity and lead to economic harm. The Invasive Species Council of Manitoba (ISCM) provides lists of invasive plant species, some of which are of concern to agriculture, and direction on management, control and eradication (ISCM 2022).

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 (LAA): The local assessment area 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 (AgBMP) 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).

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

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 (PDA): For the purposes of the Agricultural Biosecurity Management Plan (AgBMP), the Project development area 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 Road 239, required to accommodate the Lake Manitoba Outlet Channel.

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

1.0 INTRODUCTION

This document presents the Agricultural Biosecurity Management Plan (AgBMB) for the Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). It has been developed to address agricultural biosecurity risks to crop land and livestock operations resulting from Project activities. The AgBMB primarily pertains to the Lake Manitoba Outlet Channel (LMOC), municipal roads realignment and Provincial Road (PR) 239 realignment portions of the Project, as these portions of the Project traverse agricultural land use, including cropland, grazing land and livestock operations. It is developed to address Project activities during the construction and operation phases of the Project that have the potential to harm agricultural lands adjacent to and in proximity of the Project development area (PDA) in these portions of the Project. While the Lake St. Martin Outlet Channel (LSMOC) portion of the Project is currently characterized predominantly as natural vegetation and wetlands, it may be used during operation for haying by private agricultural producers in times of severe drought. If this becomes a permitted activity, it has the potential to harm the vegetation community within the LSMOC portion of the PDA and agricultural lands alike and would also require measures to address biosecurity issues. The AgBMB was a commitment made by Manitoba Transportation and Infrastructure within the Project Environmental Impact Assessment (EIS) to address these agricultural biosecurity risks.

Generally, invasive agricultural pests (i.e., plants, animals, and pathogens) pose a considerable risk to agricultural land and operations and are costly to control and remove. Breaches in agricultural biosecurity can result in the introduction, transfer and/or transmission of invasive agricultural pests into agricultural regions, cropping 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.

The Project pathways of concern for biosecurity during construction are related to the transfer of materials that may contain disease-causing pathogens, and weeds or other pests that may cause harm to agricultural areas adjacent to the PDA, as well as to the PDA itself, and include:

- The transfer of soil, manure, and weeds from areas outside of the agricultural region surrounding the Project to agricultural areas local to the Project via vehicles and equipment incoming to the Project area.
- The transfer of soil, manure, and weeds from the PDA to adjacent agricultural land via vehicles, equipment or pedestrians exiting the PDA.
- Direct contact between workers and livestock.

During the operation of the Project the pathways of biosecurity concern are related to the transfer of noxious weeds or invasive agricultural plants to and from the PDA, including:

- Invasive spread of weeds from the PDA to adjacent agricultural 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 is permitted activity within the PDA.

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

- Background information including a summary of agricultural land use in the Project area, regulatory context and industry guidelines and related Project management plans.
- A summary of biosecurity risk issues, mechanisms and levels and issues related to construction and operation activities.
- Required actions by Manitoba Transportation and Infrastructure and Contractors to protect agricultural biosecurity.
- Identification of specific biosecurity risk areas and CAPs.
- A guide for Manitoba Transportation and 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 orientation, communication, monitoring, and implementation schedule.

An overview of the location of the Project is provided in Figure 1-1 (Appendix 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 is characterized in the Project EIS. A summary of pertinent information is presented below.

Farming in the area surrounding 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, and 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 kilometre (km) buffer of the PDA of these components, was predominantly hay, pasture and grasses (43 percent [%] of the LAA) used to support livestock production, based on 2018 land use data (Manitoba Transportation and Infrastructure, 2020). 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 2018 ortho-imagery for LMOC) and a road-side agricultural land use survey in August 2020, there are eight cattle feedlots within the LMOC and PR 239 realignment portions of the PDA or in proximity of CA 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 portion of the PDA; however, this operation is beyond the LAA and is not expected to directly interact with the Project.

The area traversed by the LSMOC is predominantly characterized as natural vegetation and wetlands, and there is no agricultural land use within or adjacent to the LSMOC portion of the PDA.

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

2.2 Regulatory Requirements and Industry Guidelines

2.2.1 Federal Environmental Requirements and Guidelines

There are currently no federal legislative requirements specifically pertaining to agricultural biosecurity issues related to infrastructure developments. Updates to this plan may be made based on any pertinent conditions in the Project's federal Decision Statement as part of the approvals under the *Canadian Environmental Assessment Act, 2012*.

The Canadian Food Inspection Agency (CFIA) provides some guidelines for agricultural biosecurity; however, these are generally focused on activities 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 Provincial Regulatory Context and Guidelines

There are currently no provincial requirements under regulations associated with *The Environment Act* specifically pertaining to agricultural biosecurity issues related to infrastructure developments. Updates may be made to this plan based on any pertinent conditions in the Project's provincial licence as part of the approvals under *The Environment Act*.

With the exception of noxious weeds (Section 2.2.2.1), there is no other 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 2.2.2.2.

2.2.2.1 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 currently 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, although 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.

2.2.2.2 Provincial Guidelines

Cropland Biosecurity

Manitoba Agriculture has developed biosecurity guidelines and generalized protocols for crop production (Manitoba Agriculture 2020a; Appendix 2.A). These include 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 can include:

- equipment cleaning between fields
- avoidance of 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 that 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., on 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>

2.2.2.3 Invasive Weeds (Unregulated)

Invasive weeds of agricultural concern are defined as plant species that are not native or indigenous to an agricultural region or field, and whose introduction can adversely affect crop or livestock health and/or productivity and lead to economic harm. While *The Noxious Weeds Act*, as described in Section 2.2.2, identifies noxious weeds and outlines responsibilities to control and destroy such weeds, there is potential for invasive species of agricultural concern which are not listed as noxious weeds. The Invasive Species Council of Manitoba (ICSM) provides information on invasive plant species in Manitoba, some of which are not listed as noxious weeds but are considered invasive weeds of concern for agricultural crop lands. Guidance on management and potential eradication of invasive weeds are provided by ICSM. This includes

the categorization of species into two Early Detection and Rapid Response (EDRR) categories, Category 1 and Category 2, with specific management guidance, and as ‘Other Terrestrial Plant Species’ for which specific management guidance is not provided.

2.3 Related Project Reports and Management Plans

There are other related Project reports that were used to inform the development of the AgBMP 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:

- Project EIS (Manitoba Transportation and Infrastructure 2020):
 - 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 EIS. Agricultural biosecurity issues in the area surrounding 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 Project EIS. A key commitment made in the Project 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 associated with cattle feedlot operations 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 Plan is one of the management plans included under the CEMP. Agricultural biosecurity requirements of Manitoba Transportation and 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 (RVMP), described in detail below, which provides for vegetation management within the PDA to minimize weed growth and the potential for noxious weeds or invasive plant transfer to agricultural land adjacent to the PDA.

- Lake Manitoba and Lake St. Martin Outlet Channels Project Access Management Plan (AMP) – 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 CAPs for the purposes of biosecurity management. Access to the LMOC will be restricted and controlled through a limited number of CAPs. Access to the LSMOC will be via Idylwild Road, which will have a security gate in place following construction.
- Lake Manitoba and Lake St. Martin Outlet Channels Project RVMP - this revegetation plan provides for managed revegetation within the LMOC and LSMOC portions of the PDA 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 and invasive agricultural plant spread into adjacent areas under agricultural land use. The AgBMP necessitates treatment of weed infestations prior to soil stockpiling, control of weeds on soil stockpiles, and timely and appropriate weed control response when noxious weeds and invasive plant species are identified following revegetation. The RVMP prescribes monitoring of vegetation establishment within the PDA for a three-year period, including assessment of noxious weeds and invasive plant species, and additional monitoring for weeds through the operation phase.
- Project Environmental Requirements (PERs) – the PERs form part of the CEMP and prescribe environmental management practices to be implemented during Project construction to reduce effects to the environment from construction activities.
- Project Construction Environmental Protection Plan (EPP) – the EPP includes a description of mitigation measures, including biosecurity management requirements pertinent to Contractor workers, such as restricted access zones (RAZs), and cleaning requirements. They include mapbooks, which will identify sites where specific types of mitigation are required, and support measures described in the PERs (Section 2.16).

3.0 BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

This section provides a summary of the biosecurity program elements as Project-specific context (Section 3.1 Biosecurity Risk Issues and Mechanisms) to 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 AgBMP.

3.1.1 Cropland Biosecurity

The CFIA (2020b) 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 and plant debris transport is an important mechanism for the potential spread of weeds and soil-borne diseases to and from the PDA, and to agricultural fields in proximity to the PDA. There are two primary pathways of this transport:

- Machinery (vehicles and equipment) incoming to the Project provides a pathway of potential disease and weed transmission to all portions of the PDA, and to agricultural lands adjacent to the LMOC and PR 239 realignment portions of the PDA, from agricultural areas outside of the region surrounding the Project. Incoming machinery that was not properly cleaned following previous work in other agricultural areas provides a mechanism of potential transfer.
- Movement of equipment and workers on and off the LMOC and PR 239 realignment portions of the PDA during construction in cropland areas provides another potential pathway for disease and weed transmission to previously non-affected agricultural soils, compromising biosecurity for affected lands. There is potential for soil and plant debris to be transferred from the LMOC and PR 239 realignment portions of 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 agricultural 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 and PR 239 areas, and cattle feedlots are present within the LMOC portion of 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. The following weeds were observed within, and in the vicinity of, the PDA during a reconnaissance field survey in August 2019 (RVMP):

- Noxious weeds (i.e., *Noxious Weeds Act* listed species), including Tier 1 (orange hawkweed [*Hieracium aurantiacum*], Tier 2 (ox-eye daisy [*Leucanthemum vulgare*] and nodding thistle [*Carduus nutans*]) and Tier 3 (absinth [*Artemisia absinthium*], common burdock [*Arctium minus*], perennial sow thistle [*Sonchus arvensis*] and Canada thistle [*Cirsium arvense*]).
- No ISCM EDRR Category 1 listed species were identified. Nodding thistle and ox-eyed daisy (noted as Tier 2 noxious weeds, above) are considered EDRR Category 2 listed terrestrial species by ISCM. Prickly lettuce (*Lactuca serriola*) and scotch thistle (*Onopordum acanthium*) are listed as 'Other Terrestrial Invasive Plants' by ICSM and don't have specific management guidance as do the EDRR species.

Weed growth, noxious weed and invasive agricultural plant 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 or other invasive agricultural plants to agricultural land.

A potential land use within the PDA is haying suitable revegetated areas or cutting and baling vegetation for use as feed for livestock at farming operations in proximity of the PDA. Manitoba Transportation and Infrastructure has indicated that haying of the LMOC and LSMOC by private producers is a potential activity which would be considered during periods of drought, when producers may have limited hay supply for their livestock. Haying would be conducted by private landowners/producers under agreement with Manitoba Transportation and 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. While haying of the PDA is considered of benefit to local producers, and generally beneficial to areas of upland vegetation suitable for haying within the PDA,

this activity comes with some biosecurity concerns requiring consideration. Haying within the PDA provides potential mechanisms for weed seed transfer to and from the PDA:

- From the PDA onto adjacent, privately-owned farming operations in harvested bales, and
- To and from the PDA, by machinery which is not adequately cleaned prior to entry to and exit from the PDA.

This potential land use within the PDA will be confirmed by Manitoba Transportation and Infrastructure at a future date.

3.1.2 Livestock Biosecurity

The 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 area, measures need to be taken to avoid transferring manure to agricultural lands outside of the LMOC portion 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 transfer to the PDA from agricultural areas outside of the region of the Project, and from the LMOC and PR 239 realignment portions of the PDA to agricultural areas adjacent to these portions of the PDA.

BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

- For livestock biosecurity, measures include minimizing the potential for manure transfer from the LMOC and PR 239 realignment portions of the PDA to agricultural areas outside of these portions of the PDA and preventing direct worker contact with livestock.
- During the construction phase, managed revegetation will occur within all portions of the PDA to minimize the potential for weed growth and infestations. Revegetation plans for the PDA are presented in the RVMP. The RVMP necessitates treatment of weed infestations prior to soil stockpiling, control of weeds on soil stockpiles, and timely and appropriate weed control response when noxious weeds or invasive plant species are identified within the PDA following revegetation.

During the operation phase:

- The RVMP prescribes monitoring of vegetation establishment within the PDA for a three-year period following revegetation, including assessment of noxious weeds and invasive plant species. Long-term monitoring of vegetation for weeds within the PDA is planned to be completed once per year and may be adjusted depending on the long-term site-specific effectiveness of revegetation.
- 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 Transportation and 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	Relevant PDA Components
Construction	Cropland	Soil/manure/weed-containing plant debris material transfer to the PDA on machinery incoming to the Project. Incoming machinery, if not properly cleaned following previous work, may transfer harmful materials from other agricultural regions to the PDA.	LMOC PR 239 LSMOC
	Cropland	Soil/manure/weed-containing plant debris material transfer 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 adjacent areas of agricultural land use. This material can subsequently be transported into adjacent agricultural fields by wind or other traffic.	LMOC PR239

Project Phase	Risk Category	Risk Mechanism	Relevant PDA Components
Construction (cont'd)	Livestock	Direct contact between workers and livestock.	LMOC PR239
Operation	Cropland	Invasive agricultural plant/noxious weed transfer from the PDA to adjacent agricultural cropland. ¹	LMOC
	Cropland	Weed seed transfer to/from the PDA by privately-owned haying machinery and from the PDA to privately-owned agricultural operations on haying equipment and in harvested hay (if haying activity is permitted). ²	LMOC LSMOC

Notes:

1. Weed management within the PDA, including invasive agricultural plant/noxious weed control and prevention of invasive agricultural plant/noxious weed spread from the PDA onto adjacent agricultural areas, is addressed in the revegetation plans for the LMOC.
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 Transportation and 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 CAPs. The establishment of a single Project Area Entry Checkpoint provides a means to inspect vehicles and equipment incoming into the Project area to confirm they are clean prior to entering the Project area and PDA for work purposes. If vehicles and equipment are not considered to be adequately clean, they must be cleaned and disinfected prior to approval to proceed to Project work areas. This provides an important prevention and avoidance measure for the Project. Prevention and avoidance are largely the result of Project planning, involving defining risk management zones and implementing access management (Section 3.2.1).

BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

- 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. Vehicles, equipment, and pedestrian footwear must be clean prior to exiting the LMOC and PR 239 realignment portions of the PDA following work, as these are the portions of the PDA with adjacent agricultural land use. As land use within and adjacent to the LSMOC is predominantly natural vegetation and wetlands with no agricultural land uses, cleaning of machinery and footwear is not required during construction for the purposes of agricultural biosecurity. Risk levels, as described in Section 3.2.2, are assessed to guide cleaning requirements. Cleaning techniques involve cleaning the surface of vehicles, equipment and footwear that have been in contact and/or accumulated agricultural soil, manure, or plant debris. This includes 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 CAPs prior to exiting the PDA. Cleaning practices are discussed in Section 3.2.3.
- Respond** – the last line of defense against biosecurity concerns is to respond to biosecurity issues through control measures when issues occur due to Project activities. Control measures may need to be implemented through the construction phase as a result of weed infestations or other unforeseen or unplanned events (i.e., accidents or malfunctions resulting in a biosecurity breach). Control measures are planned during the operation phase, involving weed control within the PDA should weed infestations occur and create a potential risk of invasive spread to adjacent agricultural lands.

The three key strategies are illustrated in Figure 1.

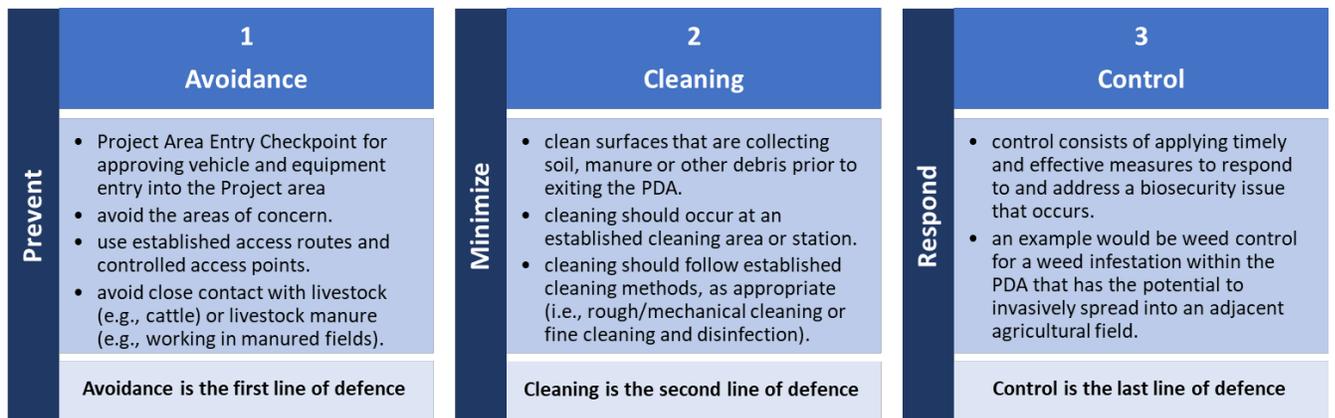


Figure 1: Three Key Strategies for Effective Biosecurity Management

3.2.1 Biosecurity Management Zones and Access Management

The identification of Biosecurity Management Zones (risk zones, restricted areas) and access management features are critical to effective agricultural biosecurity management for the Project. Access management features include a controlled checkpoint into the Project area, CAPs onto the LMOC and PR 239 realignment portions of the PDA, routes of access to the PDA access points, and a single access point and security gate for the LSMOC portion of the PDA. These access management features and zones are summarized below:

- Project Area Entry Checkpoint – a single, established location at which incoming construction machinery must be checked for adequate cleanliness prior to entry into the Project area to access any portions of the PDA. Information on the Project Area Entry Checkpoint is described in Section 7.1 of the AMP. All incoming machinery must be checked-in and receive approval for entry prior to accessing the LMOC and PR 239 realignment portions of the PDA through a CAP (see below) or the LSMOC portion of the PDA through the security gate (see below).
- PDA access management features:
 - LMOC and PR 239:
 - Controlled Access Point– established locations at the edge of the PDA at which construction workers, vehicles and equipment can enter and exit the PDA. CAPs are located at various locations along the LMOC and PR 239 realignment portions of the PDA. Cleaning areas or stations will be established at CAPs 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 the PDA and the nature of the CA from the PDA, as described in Section 3.2.2.
 - Construction access – approved routes to access CAPs along the edge of the PDA where CAPs are not located along major transportation routes (provincial highways/roads or municipal grid roads). In other words, where access to the PDA is directly from major transportation routes (provincial highways/roads or municipal grid roads) CA are not applicable or identified.
 - Point of Access (POA) – the starting POA to a CA route from a major transportation route (provincial highways/roads or municipal grid roads). Where access to the PDA is directly from major transportation routes (provincial highways/roads or municipal grid roads) POA are not applicable or identified.
 - LSMOC:
 - Security Gate – a security gate will be established at the beginning of the LSMOC access road located at the end of Idylwild Road (Figure 1-1, Appendix 1) following the completion of construction. This will provide access control to all vehicles and equipment entering and exiting the LSMOC portion of the PDA through the operation phase of the Project. As discussed above, all construction machinery incoming to the LSMOC portion of the PDA will have to be approved as adequately clean at the Project Area Entry Checkpoint prior to accessing the LSMOC portion of the PDA for construction. During operation, if haying of the LSMOC portion of the PDA is a permitted activity, the security gate may act as a CAP for private agricultural producers where haying machinery will be checked for cleanliness prior to entering the LSMOC portion of the PDA.

BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

- **Manure impacted site** - these areas have manure impacted soils and/or manure stockpiles as a result of the presence of cattle feedlots/operations. Two manure impacted site RAZs are identified within the LMOC PDA (Figures 2-1 to 2-10, Appendix 2). These are comprised of cattle feedlots/operations areas with potentially manure impacted soils and manure stockpiles. The following requirements pertain to these RAZs:
 - Workers should not access RAZs within the PDA without explicit permission from Manitoba Transportation and Infrastructure, and workers should not access the PDA through RAZs identified outside of the PDA.
 - Construction activities should not occur within manure impacted site RAZs located within the PDA until these areas are properly evaluated and adequately cleaned-up (i.e., manure stockpiles removed, and manure impacted soils evaluated and remediated).
 - Cleanup of these areas are described as a commitment in the PERs (Section 2.6.6), with mitigations described in the EPP and associated LMOC mapbooks.
 - Equipment, vehicles and workers are required to utilize fine cleaning and disinfection when exiting these RAZs prior to these sites being cleaned-up and deemed remediated.
 - Soils from these areas should not be excavated, moved or stockpiled in general soil stockpiles prior to the implementation of a site-specific management plan.
 - Once remediated and following approval by Manitoba Transportation and Infrastructure, these areas will no longer be considered RAZs and general biosecurity management measures will apply.
- **Weed infestations** – areas of known weed infestations (i.e., noxious weeds or invasive agricultural plant species) identified within the PDA through monitoring under the RVMP are considered a RAZ until they are effectively treated as outlined in the RVMP and no longer considered an area of weed infestation. There are currently no weed infestation RAZ identified within the PDA; however, these RAZs may be identified during construction and operation through the monitoring prescribed under the RVMP or other environmental monitoring activities. The following requirements pertain to these RAZs:
 - Workers should not access weed infestation RAZs within the PDA without explicit permission from Manitoba Transportation and Infrastructure.
 - Construction activities should not occur within weed infestation RAZs located within the PDA until weeds in these areas are adequately controlled or destroyed as described in the RVMP.
 - A site-specific management and monitoring plan should be developed and implemented to treat the weed infestation. Management measures should be appropriate to treat the site-specific weed infestation as outlined in the RVMP (i.e., destroy, control or prevent spread) according to the type of noxious weed and/or invasive species present. Management measures should also address specific requirements for work to be conducted within the RAZ (e.g., mowing, special construction activities, soil excavation, etc.). Monitoring should be implemented to confirm management measures have effectively treated the area such that it is no longer considered a weed infestation, at which point additional monitoring is not required.

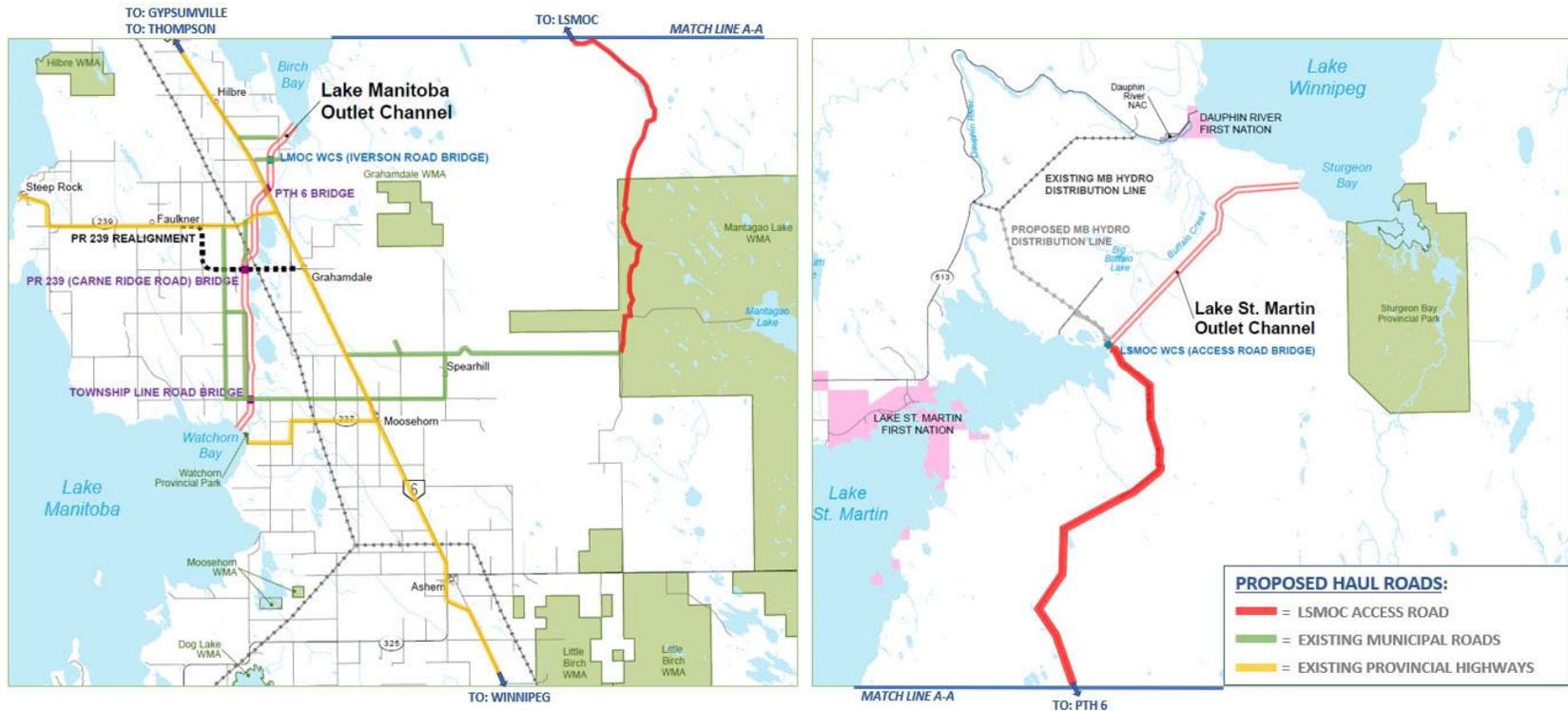
BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

- Until response measures effectively treat (i.e., control or destroy) the weed infestation, vehicles, equipment and workers conducting approved work within the RAZ (e.g., weed treatment, mowing) are required to utilize fine cleaning (disinfection not required) when exiting the RAZ.
- Soils from within these RAZs should not be excavated, moved or stockpiled prior to implementation of a site-specific management and monitoring plan.
- Mowing of these areas should not be conducted prior to implementation of a site-specific management and monitoring plan, described above, and if mowing is required, approved mowing of RAZ should only occur after mowing of areas not deemed a RAZ or having known weed concerns.
- Once the weed infestation is effectively treated, the weed infestation RAZ designation may be removed on approval by Manitoba Transportation and Infrastructure, following which time general construction activities may be undertaken in these areas and general biosecurity management measures under the will apply.

Biosecurity Management Zones, including BRZs and RAZs, are presented in the agricultural biosecurity map book in Figures 2-1 to 2-10 (Appendix 1). While manure impacted site RAZs are identified in Figure 1-1, weed infestation RAZs are to be identified through construction and operations phase monitoring activities to be completed under the RVMP.

Also presented in Figures 2-1 to 2-10 (Appendix 1) are preliminary locations for access management features including CAPs, CAs, and POAs. These locations have been informed by the proposed site access roads provided by Manitoba Transportation and Infrastructure and provided in Figure 3. As noted in Figure 3, access to LMOC is anticipated to be limited to existing municipal roads and existing provincial highways. Final locations of these features will be determined by the Contractor and will be approved by Manitoba Transportation and Infrastructure.

Lake Manitoba & Lake St. Martin Outlet Channels – Proposed Site Access Roads



**LAKE MANITOBA
LAKE ST. MARTIN**
OUTLET CHANNELS PROJECT



Figure 3: Proposed Site Access Roads for LMOC and LSMOC

The Project Construction Environmental Protection Plan (CEnvPP) will incorporate RAZs, CAPs, CAs and POAs, as these are important agricultural biosecurity management plan elements with associated management measures pertaining to construction activities.

3.2.2 Biosecurity Risk Levels

The identification of risk levels allows for management effort to be targeted appropriately to construction activities and areas of concern. Biosecurity risk levels are defined for the LMOC and PR 239 realignment portions of the PDA as these areas are within agricultural areas and have agricultural land use adjacent to the PDA. Two Risk Categories are defined to determine potential risk levels associated with a given CAP:

- Level 1 Risk Category – where CA on exit from the PDA is on established provincial highway/road or municipal grid road.
- Level 2 Risk Category – where CA 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. Risk levels include Low risk, Moderate risk and High risk, which are described in Table 2. Required cleaning actions associated with each risk level are also presented in Table 2. As summarized in the table, 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.

A decision flow process for determining the Risk Categories and levels is provided in Figure 4.

Based on the potential locations of CAPs, CAs and POAs presented in the map book in Figures 2-1 to 2-10 (Appendix 1), the assessed Risk Category at all potential CAPs is Level 1, resulting in the potential for risk levels of Low risk or Moderate risk. This assessment will be reviewed following the determination of final access routes and access points by the Contractor. However, at this time, POAs, CAs and CAPs are not anticipated to be established within areas of primary agricultural production (i.e., farmyards, livestock operations, cropping fields). As such, it is not anticipated that CAPs will be identified that will result in a Level 2 Risk Category determination, and, therefore, a risk level determination of High risk is not expected to occur on the Project.

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.

BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

Risk Level	Description of Risk Level	Required Action
<p>Moderate risk</p>	<p>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.</p> <p>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 agricultural land use, including farmyards, livestock operations, and cropping fields.</p>	<p>Rough/mechanical cleaning must 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 must be conducted until these accumulations are removed.</p> <p>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).</p>
<p>High risk</p>	<p>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.</p> <p>The access management route from the PDA is through other areas of primary agricultural land use, including farmyards, livestock operations, cropping fields.</p>	<p>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.</p> <p>Note: transit between the PDA and agricultural operations outside of the PDA is not planned or anticipated.</p>

BIOSECURITY RISK ISSUES AND MECHANISMS, AND RISK MANAGEMENT

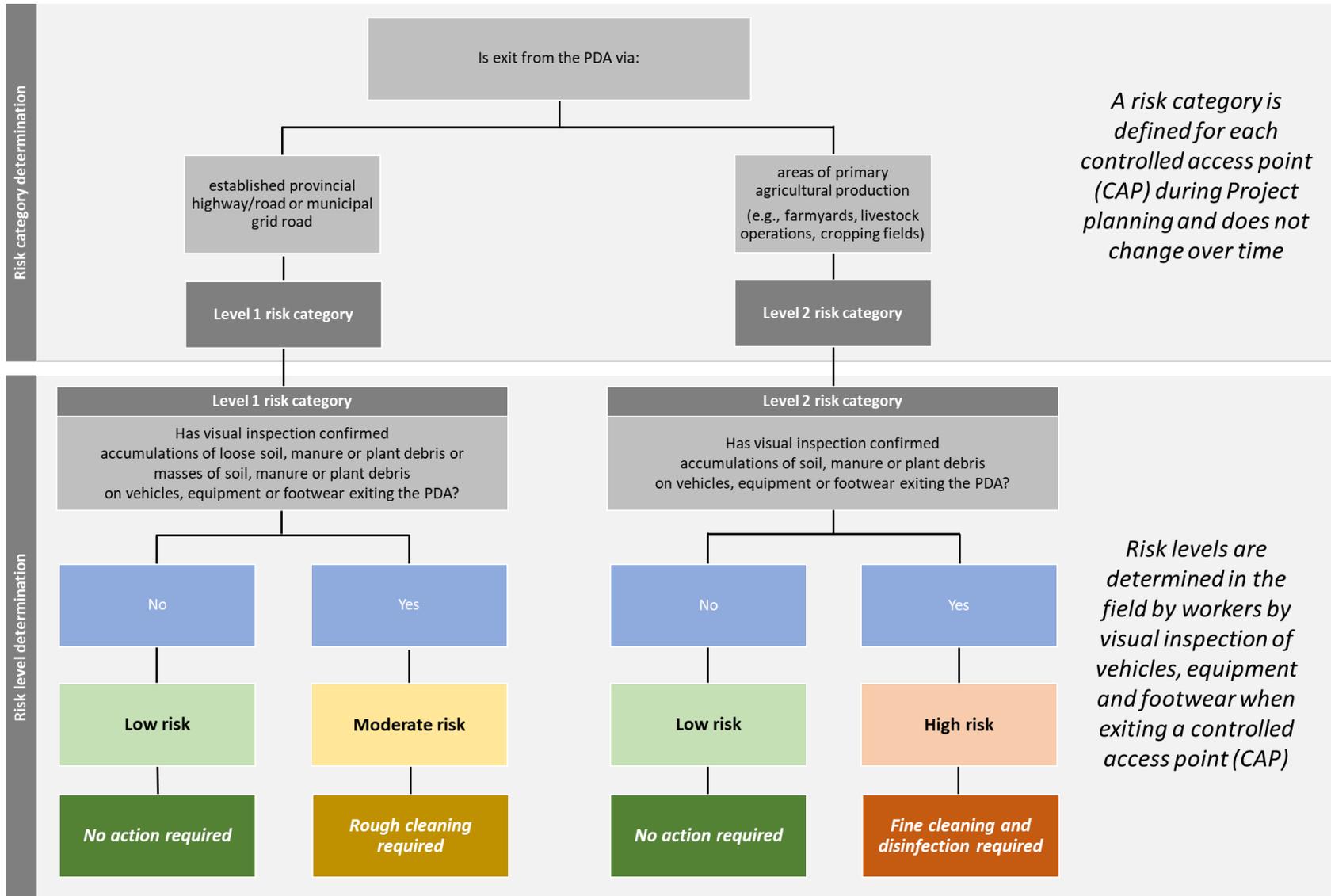


Figure 4: Determination of Agricultural Biosecurity Risk Categories and Risk Levels

3.2.3 Cleaning Practices

Cleaning practices are discussed below, including different types of cleaning methods for vehicles, equipment and footwear, and cleaning station and cleaning area requirements for the Project.

3.2.3.1 Cleaning Methods

There are two types of cleaning methods described below that provide different degrees of cleaning of vehicles, equipment and footwear – rough/mechanical cleaning and fine cleaning and disinfection. These are prescribed according to defined risk levels on the Project, as discussed below.

Rough/Mechanical Cleaning

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.

Rough/mechanical cleaning is required in the following instances:

- Construction phase:
 - Exiting the LMOC and PR 239 realignment portions of the PDA - 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 CAP 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.
- Operation phase
 - Haying of the PDA – if haying of the PDA by private landowners/producers is a permitted activity within the LMOC or LSMOC portions of the PDA, haying equipment must undergo a rough/mechanical cleaning prior to entry onto the PDA and prior to exit from the PDA. This will minimize the potential for weed transfer to and from the PDA and to and from private agricultural land as a result of this activity.
 - Accessing the LMOC and PR 239 realignment portions of the PDA for maintenance purposes – vehicles accessing the PDA for routine maintenance purposes must undergo inspection prior to exiting the PDA, and if soil or plant debris is collecting on vehicles, they must undergo a rough/mechanical cleaning prior to exit from the PDA to reduce the potential for transfer of soil or plant debris from the PDA to agricultural areas outside of the PDA.

Fine Cleaning and Disinfection

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 a Manitoba Transportation and Infrastructure-approved disinfection solution (e.g., regulated, commercial disinfectant such as Virkon® or Prevail™) on surfaces that have already undergone fine cleaning. Disinfectants must be used according to industry and/or manufacturers guidelines; disposal is discussed in Section 3.2.3.2. 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.

Fine cleaning and disinfection are required in the following instances:

- Construction phase:
 - Vehicles and equipment incoming into the Project area - incoming construction machinery must be checked for adequate cleanliness prior to entry into the Project area to access any portions of the PDA. All incoming machinery must be checked-in at the Project Area Entry Checkpoint and receive approval for entry into the Project area. Vehicles or equipment that are deemed to not be adequately clean on arrival at the Project Area Entry Checkpoint must undergo a fine cleaning and disinfection prior to entering the Project area and accessing the PDA.
 - Exiting the LMOC and PR 239 realignment portions of the PDA - 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 CAP 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.
 - Exiting a RAZ – if completing approved activities within a RAZ, vehicles, equipment and footwear must undergo a fine cleaning prior to exiting a RAZ to access other areas of the PDA or to exit the PDA. Disinfection following fine cleaning is required at manure impacted soils RAZs, while disinfection is not required at weed infestation RAZs.

3.2.3.2 Cleaning Areas and Stations

Cleaning areas and/or stations will 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 will be established as appropriate relative to the biosecurity risk level, as follows:

- Rough/mechanical 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 will be temporarily managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff), and should be periodically (i.e., in the fall prior to freeze-up or more frequently if deemed necessary)

spread and incorporated within the PDA, added to existing soil spoil piles, or buried within the PDA with a minimum soil cover of 0.5 metres (m). Rough/mechanical cleaning areas will be established at CAPs where there is the potential for a Moderate risk (i.e., Level 1 Risk Category – CA from the PDA directly onto major transportation routes [provincial highways/roads, municipal grid roads]).

- Fine cleaning station – will accommodate fine cleaning and disinfection requirements, including an established zone with appropriate matting (i.e., wood or wood and steel “rig mats” or mats of other rigid materials sufficient to keep vehicles and equipment separated from the surficial soils) for vehicle and equipment cleaning, and a collection system for wash water. Soil, manure, and plant debris cleanings will be temporarily managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff). Cleanings and sediment from wash water collection systems should be periodically buried within the PDA at a minimum soil cover of 0.5 m. Fine cleaning stations will be established at CAPs where there is the potential for a High risk (i.e., Level 2 Risk Category – CA from the PDA through areas of primary agricultural production [farmyards, livestock operations, cropping fields]). In addition, fine cleaning stations will be established at RAZs, including those associated with manure impacted sites and weed infestations, for use when workers, vehicles and equipment are accessing these areas during approved activities (e.g., undertaking of soil clean-up and remediation or weed control activities).

Figure 5 provides a conceptual diagram of the potential layout and components for a rough/mechanical cleaning station and a fine cleaning station. At this time, it is anticipated that all CAPs will be assigned a Level 1 Risk Category, as access routes and points (i.e., POAs, CAs and CAPs) are not anticipated to be established in areas of primary agricultural production (i.e., farmyards, livestock operations, cropping fields). As such, it is not anticipated that CAPs will be identified that will result in a Level 2 Risk Category determination, and, therefore, a risk level determination of High risk is not expected to occur on the Project. Subject to confirmation of final access route and access points determined by the Contractor, fine cleaning and disinfection and fine cleaning stations are not anticipated to be required at CAPs as there is not anticipated to be a high-risk level assessed on the Project. However, fine cleaning stations will be required to be established at RAZs prior to the completion of manure and soil clean-up activities at manure impacted site RAZ and weed control and/or elimination activities at weed infestation RAZ.

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 (Figure 6). 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.

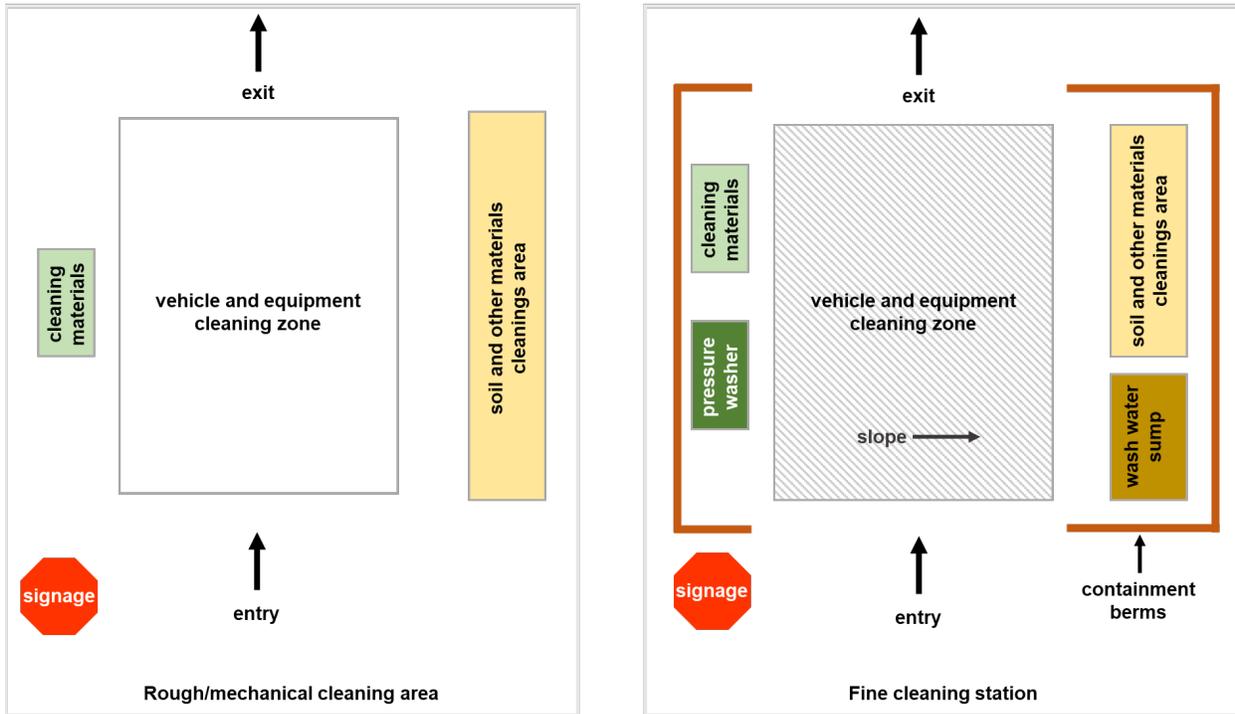


Figure 5: Conceptual Diagram of Rough/Mechanical Cleaning Area and Fine Cleaning Station

Cleaning area and station locations are displayed in Figures 2-1 to 2-10 (Appendix 1). Preliminary cleaning areas and station locations are included in Figures 2-1 to 2-10 but may be updated once access management features are confirmed in the AMP or by Contractors prior to construction, as discussed in Section 3.2.1. It is anticipated that rough/mechanical cleaning areas will be required at all CAPs into the LMOC and PR 239 realignment portions of the PDA as they are currently all anticipated to be considered Level 1 Risk Category with a potential moderate risk level. Fine cleaning stations will be required at identified RAZs, once access into these areas is determined.

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

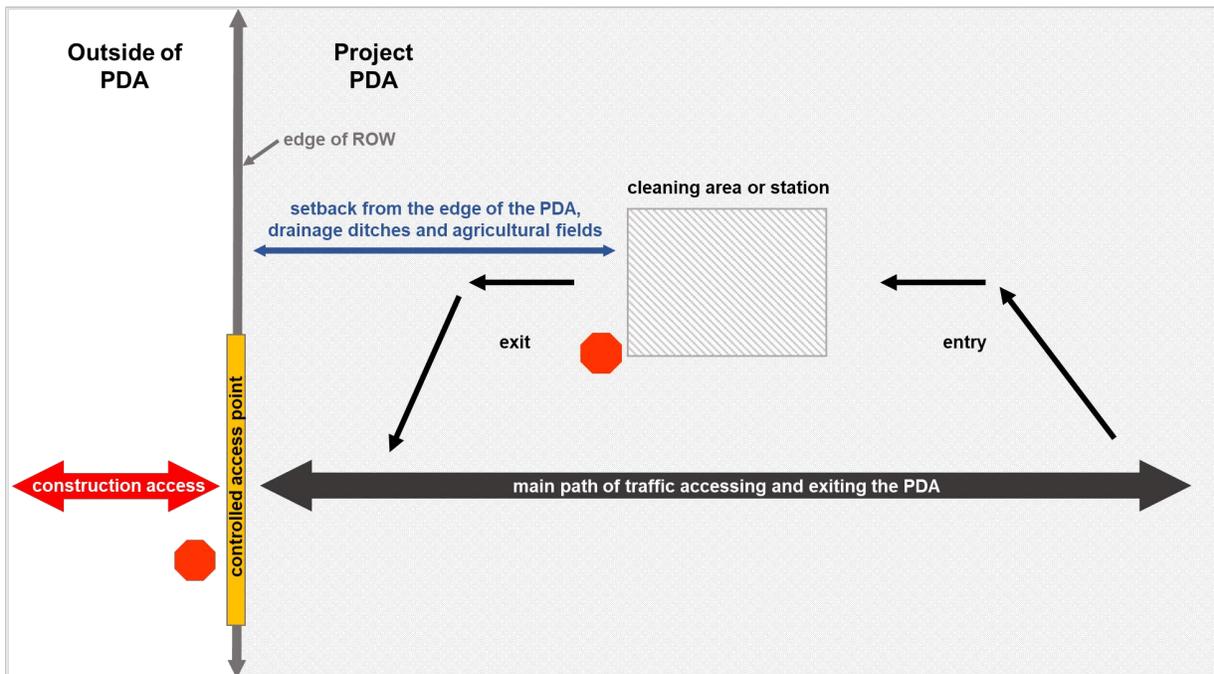


Figure 6: Conceptual Diagram of Location of Cleaning Area or Station on PDA

3.2.3.3 Frozen Ground Conditions

Ground conditions are variable throughout the year, but the ground is frozen through much of the year and during these conditions 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/hydro-vacing), or are otherwise accumulating soil, manure or plant debris, frozen ground conditions are not applicable. In these instances, regular cleaning requirements apply for those vehicles, equipment and footwear accumulating soil, manure or plant debris when exiting the LMOC and PR 239 realignment portions of the PDA, even though the ground surface is considered frozen.

4.0 IMPLEMENTATION PLAN

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

4.1 Roles, Responsibilities and Communication

4.1.1 Roles and Responsibilities

Roles and responsibilities for Manitoba Transportation and Infrastructure, Contractors and biosecurity monitors are summarized in Table 3.

Table 3: Roles and Responsibilities

Organization	Role	Responsibility
Manitoba Transportation and Infrastructure (or its representative)	The Owner or Contract Administrator, or designate	<ul style="list-style-type: none"> ● Confirm 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) ● Approve final locations of CAPs (anticipated to be determined by Contractors) and confirm 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 orientation (internal staff) ● Confirm appropriate implementation of facilities (i.e., signage and cleaning areas and/or stations) and equipment (i.e., cleaning equipment) ● Implement vegetation management and weed monitoring within the PDA through Project construction and operation phases (i.e., per requirements of the RVMP)

Organization	Role	Responsibility
Contractor(s)	Contractor	<ul style="list-style-type: none"> • Deliver requirements of the biosecurity management plan through the Project construction phase • Confirm staff working on the Project are adequately trained to follow the requirements of the biosecurity management plan, including determining biosecurity Risk Category at CAPs, 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 orientation to construction field workers such that they understand and are able to conduct biosecurity management requirements, including weed awareness and reporting requirements should weed infestations be encountered in work areas • Provide adequate equipment (i.e., cleaning equipment) to allow for workers to adhere to the AgBMP requirements • Provide field guidance (i.e., PERs and associated EPP map book; additional guidance, as required) to construction field workers • Document biosecurity management activities and issues and report to Manitoba Transportation and Infrastructure, as required • Implement improvements as identified in conjunction with Manitoba Transportation and Infrastructure through adaptive management • Development and submission of RAZ plan to Owner or Contract Administrator for review and approval

Organization	Role	Responsibility
Contractor(s) (cont'd)	Contractor (cont'd)	<ul style="list-style-type: none"> • Confirm and approve site-specific management and monitoring plans for RAZs (i.e., manure impacted sites, weed infestations), including specific requirements associated with these zones. In addition, approve activities within RAZ prior to completion of clean-up of manure impacted sites and control and/or elimination of weeds at weed infestation sites, and confirm fine cleaning and disinfection is completed prior to exit of vehicles, equipment and workers from RAZs. Following completion of adequate clean-up of manure impacted site RAZs and control or elimination of weeds from weed infestation RAZs, approve the removal of the RAZ designation for these areas, following which time general biosecurity requirements will apply.
Manitoba Transportation and Infrastructure or Contract administrator or designated third-party consultant	Inspector or Monitor	<ul style="list-style-type: none"> • 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 CAPs, 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 CAP, 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 AgBMP) and improvement actions (i.e., adaptive management)

4.1.2 Project Communication

Timely and effective communication among 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 Transportation and Infrastructure, the Contract Administrator, the Contractor, and Inspector(s) on a regular and ongoing basis during the Project planning, as well as with Environmental Monitor 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 7.

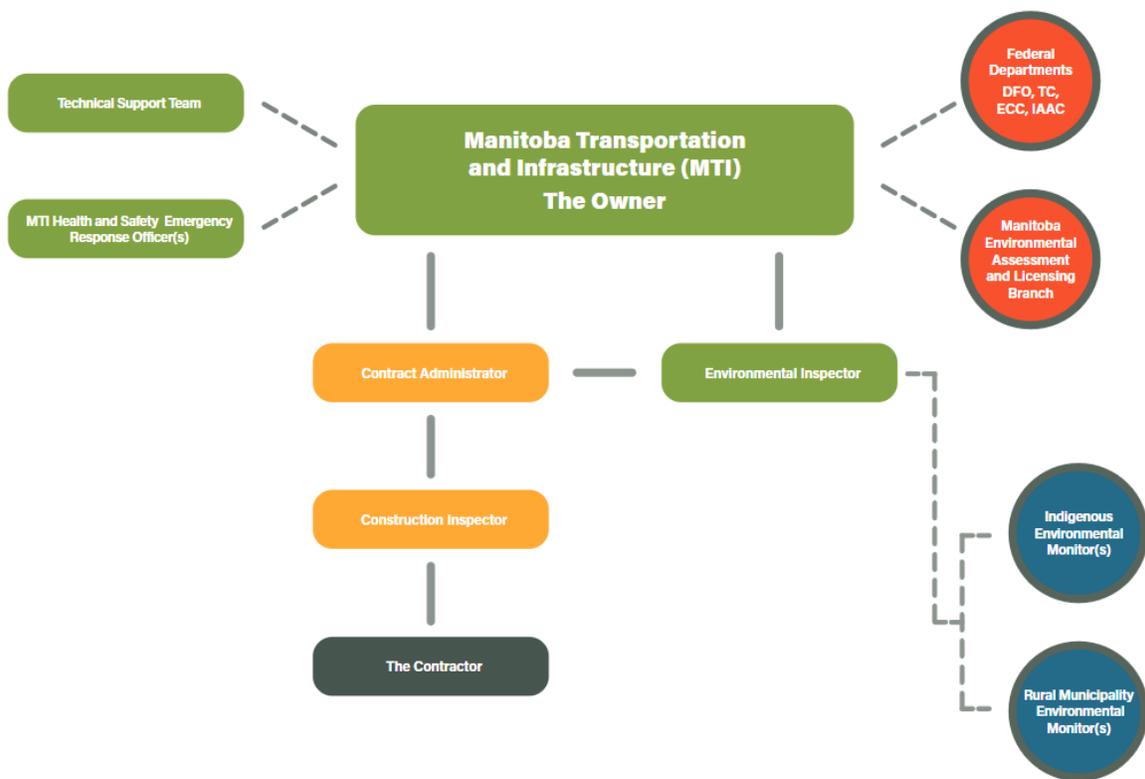


Figure 7: Project Organization Structure

4.2 Planning and Preparation

4.2.1 Contract/Contractor Specifications

Biosecurity management requirements for 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 – orientation, 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 Transportation and Infrastructure has been in communication with the rural municipality (RM) of Grahamdale, rights-holders, 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 Transportation and Infrastructure on Project plans, including biosecurity management.

Manitoba Transportation and 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 Transportation and Infrastructure will work with landowners to address any related concerns in a timely manner. A Project Complaint Resolution Process has been established as a mechanism to formally document and address concerns.

4.2.3 Work Timing and Scheduling

Timing and scheduling of required tasks will be confirmed by Manitoba Transportation and Infrastructure and Contractors prior to the commencement of construction. A summary of implementation tasks is presented in relation to Project phases in Table 4 (Section 4.7). Tasks will be implemented as appropriate relative to sequencing of construction and construction contracts over the anticipated three-year construction period.

4.2 Facilities and Equipment

4.2.1 Project Area Entry Checkpoint

A single checkpoint will be established to allow for equipment inspections prior to entering into the Project area. The checkpoint will be staffed during Contractor mobilization periods when machinery is arriving to the Project. Vehicles and equipment are expected to arrive at the Project Area Entry Checkpoint in a clean condition, consistent with fine cleaning and disinfection as described in Section 3.2.3 and recommended by Manitoba Agriculture (2020c). Vehicles and equipment arriving in an unclean condition will not be permitted access into the Project area until they have been fine cleaned and disinfected.

4.2.2 Controlled Access Point Signage

Access to the LMOC portion of the PDA will be restricted and controlled through a limited number of CAPs on the west side of the PDA. Signage at CAPs 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 are 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.

4.2.3 Cleaning Areas and Stations

There are two types of cleaning areas or stations to be established at CAPs along the LMOC portion of the PDA:

1. Rough/mechanical cleaning area – will accommodate rough cleaning requirements at CAPs with a potential for up to a Moderate risk level only (i.e., CAPs defined as Level 1 Risk Category).
Rough/mechanical cleaning areas will:
 - 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. Soil, manure, and plant debris cleanings will be temporarily managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff), and should be periodically (i.e., in the fall prior to freeze-up or more frequently if deemed necessary) spread and incorporated within the PDA, added to existing soil spoil piles, or buried within the PDA.
 - Be established on relative high ground with good drainage, in an area not prone to flooding or inundation.
 - Be set back from the primary line of traffic through the CAP to avoid cross-contamination.
 - Be set back from drainage ditches and 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 – will accommodate fine cleaning and disinfection requirements at CAPs with a potential for up to a high-risk level (i.e., CAPs defined as Level 2 Risk Category) and at RAZs. Fine cleaning stations will:
- 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. Soil, manure, and plant debris cleanings will be temporarily managed on-site in a manner such that they are not prone to losses from the PDA (e.g., through erosion or runoff). Cleanings should be periodically buried within the PDA at a minimum soil cover of 0.5 m.
 - Include a collection and disposal system for wash water. As discussed in Section 3.2.3.2, wash water will be collected and disposed of in accordance with disinfectant manufacturer’s directions, local by-laws and provincial regulations. Subject to approval by local authorities and provincial regulators, the use of an on-site sump for collection would allow for wash water to be collected and remain on-site, as well as for *in-situ* treatment. If this is a permitted collection and treatment option, the on-site collection will be managed such that collected wash water is not prone to running off the PDA (e.g., collected in *in-situ* sump and allowed to infiltrate into the soil without ponding or potential for overflow of the sump) or interception by shallow groundwater (e.g., high water table). Sediment from wash water collection systems should be periodically buried within the PDA at a minimum soil cover of 0.5 m.
 - Be established on relative high ground with good drainage, in an area not prone to flooding or inundation.
 - Be set back from the primary line of traffic through the CAP to avoid cross-contamination.
 - Be set back from drainage ditches and 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 will 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, wash water will be collected and disposed of in accordance with disinfectant manufacturer's directions, local by-laws and provincial regulations. Subject to approval by local authorities and provincial regulators, the use of an on-site sump for collection may be used to allow for on-site collection and treatment of waste wash water.

4.2.4 Cleaning Equipment

The Contractor will provide 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 will 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 Worker Requirements

The following section summarizes construction worker responsibilities and requirements under the biosecurity management plan, including orientation, required actions while working on the Project and record-keeping. This applies to any and all workers conducting work within the LMOC or PR239 realignment portions of the Project, including contractors, contract administrators, inspectors and monitors.

4.4.1 Worker Orientation

All workers working within the LMOC or PR239 realignment portions of the PDA require biosecurity management orientation prior to working on the Project. Biosecurity program orientation 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 AgBMP. Orientation needs to develop an

adequate understanding of biosecurity management requirements of all workers working on the LMOC and PR 239 realignment portions of the Project. Biosecurity orientation will be the responsibility of the Contractor(s) and it is assumed it will form part of overall Project-specific orientation.

Orientation will include the following components:

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

In addition, Manitoba Transportation and Infrastructure Inspectors and Environmental Monitors (RM and Indigenous) working on the LMOC or PR 239 realignment portions for the Project will receive orientation on agricultural weed awareness. This orientation should include basic identification of weed infestations and awareness of noxious weeds and invasive weeds anticipated to be a concern on the Project. In addition, weed awareness orientation should include responsibilities to inform supervisors prior to undertaking work in an area if noxious weed or invasive agricultural plant infestations are encountered. It is anticipated that this orientation will add value to the identification of potential weed concerns on the Project.

4.4.2 Worker Actions

Actions by workers while accessing and exiting the LMOC or PR239 realignment portions of the PDA will ultimately determine the level of effectiveness of the biosecurity management plan, while inspection and monitoring will confirm worker conformance and effectiveness of the implemented plan. Biosecurity is a concern for worker activities in croplands and livestock areas during both construction and operation phases of the Project. Typical procedures for reducing soil transport, and disease and weed transmission, include the following for construction and operation phases of the Project.

Construction Phase

During the construction phase of the Project, any workers conducting work within the LMOC and PR239 realignment portions of the Project must:

- Proceed to the Project Area Entry Checkpoint when mobilizing machinery (vehicles or equipment) that will be used within the PDA. Workers must not bring machinery into the PDA without first having checked-in at the Project Areas Entry Checkpoint and received approval for entry into the PDA through a CAP
- Not work within the PDA without having completed the biosecurity orientation module of the required Project-specific orientation
- Avoid any designated RAZs unless explicit permission is received by Manitoba Transportation and Infrastructure

- 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 CAs and CAPs
- Confirm 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 are 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 confirm 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.
- Confirm cleaning areas and stations and cleaning equipment are in good condition (i.e., organized, orderly, clean, functioning equipment in good repair, etc.). 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 and control and/or eliminate noxious weeds and invasive agricultural plants within the LMOC portion of the PDA, as indicated in the RVMP for the LMOC PDA, and within the PR 239 realignment portion of the PDA according to Manitoba Transportation and Infrastructure standard operating procedures.

Operation Phase

During operation phase of the Project, any workers conducting work within the LMOC and PR239 realignment portions of the Project will:

- Notify supervisors if weed infestations or occurrences of noxious weeds or invasive agricultural plants are identified within the PDA

Vegetation monitoring within the LMOC portion of the PDA will be conducted for a period of three years following the completion of construction and annually during operations as per the RVMP. This monitoring will include assessing the PDA for noxious weeds and invasive agricultural plants.

4.4.3 Record Keeping

Record keeping is a critical component of the AgBMP and will be used to document completion of required activities by workers. Record-keeping is to be completed daily by Contractors working at the Project Area Entry Checkpoint and within the PDA to document biosecurity management activities completed when entering and exiting through CAPs

Record keeping at the Project Area Entry Checkpoint includes:

- Machinery (vehicles and equipment) identification, date, and time of arrival to the PDA
- Outcomes of inspection of machinery for adequate cleanliness prior to entering the Project area (i.e., approval for entry into Project area for equipment that is deemed adequately clean)

Daily record keeping by construction workers 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 will be documented on the Project-specific forms. Form templates are provided in Appendix 3 (i.e., Project Area Entry Checkpoint Log – Appendix 3.A, Weekly Vehicle and Equipment Cleaning Record – Appendix 3.B), or similar Contractor provided forms (paper or electronic) may be used subject to approval by Manitoba Transportation and Infrastructure. Daily records will be maintained for all vehicles and equipment arriving in the Project area, and those entering and exiting the PDA, and these records will be included in Contractor reporting (Section 4.5) and will be maintained for auditing purposes.

4.5 Contractor Reporting

Reporting will be conducted monthly by the Contractor to Manitoba Transportation and Infrastructure. Reporting will be conducted using a standardized reporting format to be developed or approved by Manitoba Transportation and 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 Transportation and Infrastructure).

4.6 Monitoring Program

Third-party monitoring will be conducted on behalf of Manitoba Transportation and 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 CAPs 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 Transportation and Infrastructure. Monitoring reporting will include findings of monitoring events, including a summary of compliance and deficiencies, and will identify recommendations for improvement actions for consideration by Manitoba Transportation and Infrastructure as part of the follow-up and adaptive management process.

4.7 Implementation Tasks by Project Phase

A summary of implementation tasks by Project phase is provided in Table 4 to help facilitate planning for implementation of the biosecurity management plan for Manitoba Transportation and Infrastructure, including tasks required prior to the commencement of construction of the LMOC and the PR 239 realignment. Construction of the LMOC and PR239 realignment portions of the Project is anticipated to be completed over a three-year period. Tasks will be implemented as appropriate relative to construction and construction contract sequencing through the construction period.

Table 4: Implementation Tasks by Project Phase

Task	Description	Responsibility	Project Phase
Preliminary identification of access routes, CAPs, and cleaning area and station locations (these may be refined during the contract tendering process)	Project Area Entry Checkpoint, access routes and CAPs will be confirmed to allow for finalization of Risk Category identification and cleaning area and station requirements at each CAP.	Manitoba Transportation and Infrastructure (with input from the RM of Grahamdale and others identified by Manitoba Transportation and Infrastructure)	Prior to commencement of construction
Contract specifications for tender package	Develop specifications for Contractor requirements under the biosecurity management plan (e.g., Project Area Entry Checkpoint, cleaning areas and stations, cleaning equipment, worker orientation, record-keeping, reporting) and/or include reference to this Plan as part of contract specifications.	Manitoba Transportation and Infrastructure	Prior to commencement of construction
Determination of final locations of access routes, CAPs, and cleaning station locations	Designated haul/access roads identified by Manitoba Transportation and Infrastructure with input from the RM of Grahamdale.	Manitoba Transportation and Infrastructure	Prior to commencement of construction phase
	Final locations for CA routes and CAPs will be confirmed by the Contractor(s) to allow for finalization of Risk Category identification, risk level determination, and cleaning area and station requirements at each CAP.	Contractor(s)	

Task	Description	Responsibility	Project Phase
Record-keeping and reporting templates	Develop standardized entry checkpoint and vehicle and equipment cleaning record-keeping templates for use by Contractors (Appendix 3).	Manitoba Transportation and Infrastructure	Prior to commencement of construction phase
	Develop monthly reporting templates for reporting summary of activities, compliance checks (e.g., signage and cleaning station adequacy), daily checkpoint and cleaning records, and recommended and/or implemented improvement actions.	Contractors	Prior to commencement of construction phase
Monitoring program development	Develop monitoring program to monitor Contractor adherence to biosecurity management plan requirements.	Manitoba Transportation and Infrastructure	Prior to commencement of construction phase
Orientation program development	A biosecurity management program orientation module will be developed to be delivered to all workers prior to working on the LMOC and PR 239 realignment portions of the PDA.	Manitoba Transportation and Infrastructure	Prior to commencement of construction phase

Task	Description	Responsibility	Project Phase
Worker orientation	Worker orientation on the biosecurity management plan requirements will be conducted for all workers prior to working on the LMOC and PR 239 realignment portions of the PDA. Orientation will be delivered by Manitoba Transportation and Infrastructure. Records of contractor worker completion of training will be maintained by the Contractor(s).	Manitoba Transportation and Infrastructure and Contractor(s)	Construction phase (ongoing, as required)
Construction phase biosecurity management, record-keeping, reporting and monitoring	Biosecurity management, record-keeping, reporting, and monitoring through the construction phase.	Contractor(s)	Construction phase
Construction phase biosecurity monitoring	Monitor construction worker adherence to biosecurity management requirements.	Manitoba Transportation and Infrastructure and Environmental Monitors	Construction phase
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 Transportation and Infrastructure	Operations phase

5.0 ADAPTIVE MANAGEMENT

Adaptive management is part of the follow-up process that provides a mechanism for continual improvement of the AgBMP as new information becomes available through the biosecurity monitoring program or vegetation monitoring under the RVMP. An operational policy statement provides guidance on the use of adaptive management under the *Canadian Environmental Assessment Act* (<https://www.canada.ca/content/dam/iaac-acei/documents/ops/ops-follow-up-programs-2011.pdf>). As presented in this statement:

“...adaptive management is a planned and systematic process for continuously improving environmental management practices by learning about their outcomes. Adaptive management provides flexibility to identify and implement new mitigation measures or to modify existing ones during the life of a project.”

Adaptive management under the AgBMP recognizes that Project conditions (e.g., access management) and environmental conditions (e.g., extreme weather, vegetation conditions within the PDA) are subject to change. These changes may necessitate modifications to the AgBMP if through monitoring and evaluation it is determined that mitigation needs to be modified or if new mitigation is required for effective mitigation of biosecurity concerns. Specific aspects of the adaptive management program for the AgBMP include:

- Identify and delineate RAZ if weed infestations (i.e., noxious weeds non-compliant with the *Noxious Weeds Act* or other agricultural invasive plant species deemed a concern, as described in the RVMP) are identified during construction or operations through vegetation and weed monitoring under the RVMP or other environmental monitoring activities. As documented in Section 3.2.1, RAZs require specific management and monitoring plans and will require biosecurity management measures tailored to the nature of the specific concern.
- Assign and/or update biosecurity Risk Categories at CAPs if Project access management changes relative to the assumptions within this Plan or if new Project access points are identified that are not addressed within the Biosecurity Management Plan mapbook provided in Figures 2-1 to 2-10.
- Use learnings from the agricultural biosecurity monitoring program to modify or change measures within the AgBMP for improved effectiveness, as appropriate.

6.0 REFERENCES

CFIA. 2020a. National Farm-Level Biosecurity Planning Guide - Proactive Management of Plant Resources. Canadian Food Inspection Agency. Available at: <https://www.inspection.gc.ca/plant-health/plant-pests-invasive-species/biosecurity/guide/eng/1323477130171/1323477259986> [accessed May 2020].

CFIA. 2020b. Crop Biosecurity. Canadian Food Inspection Agency. Available at: <https://www.inspection.gc.ca/plant-health/plant-pests-invasive-species/biosecurity/eng/1323475203667/1323475279124> [accessed May 2020].

CFIA. 2020c. Canadian Beef Cattle On-Farm Biosecurity Standard. Canadian Food Inspection Agency. Available at: <https://www.inspection.gc.ca/animal-health/terrestrial-animals/biosecurity/standards-and-principles/beef-cattle/eng/1378825897354/1378825940112?chap=1> [accessed May 2020].

Invasive Species Council of Manitoba (ISCM), 2022. Alien plant and animal species that threaten Manitoba's ecological balance. Available at: <http://invasivespeciesmanitoba.com/site/index.php?page=terrestrial-species>. [accessed March 2022].

Manitoba Agriculture. 2020a. Biosecurity in crop production. Available at: <https://www.manitoba.ca/agriculture/crops/biosecurity.html> [accessed May 2020].

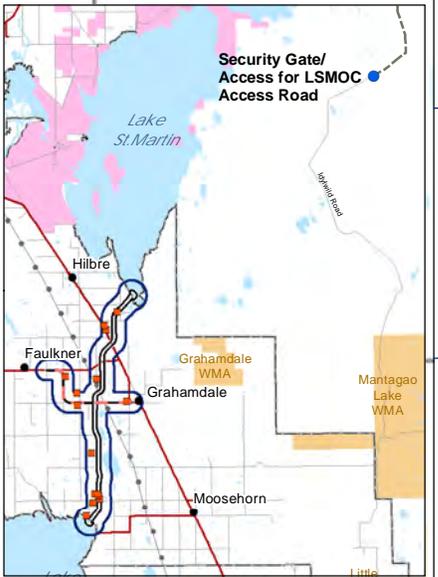
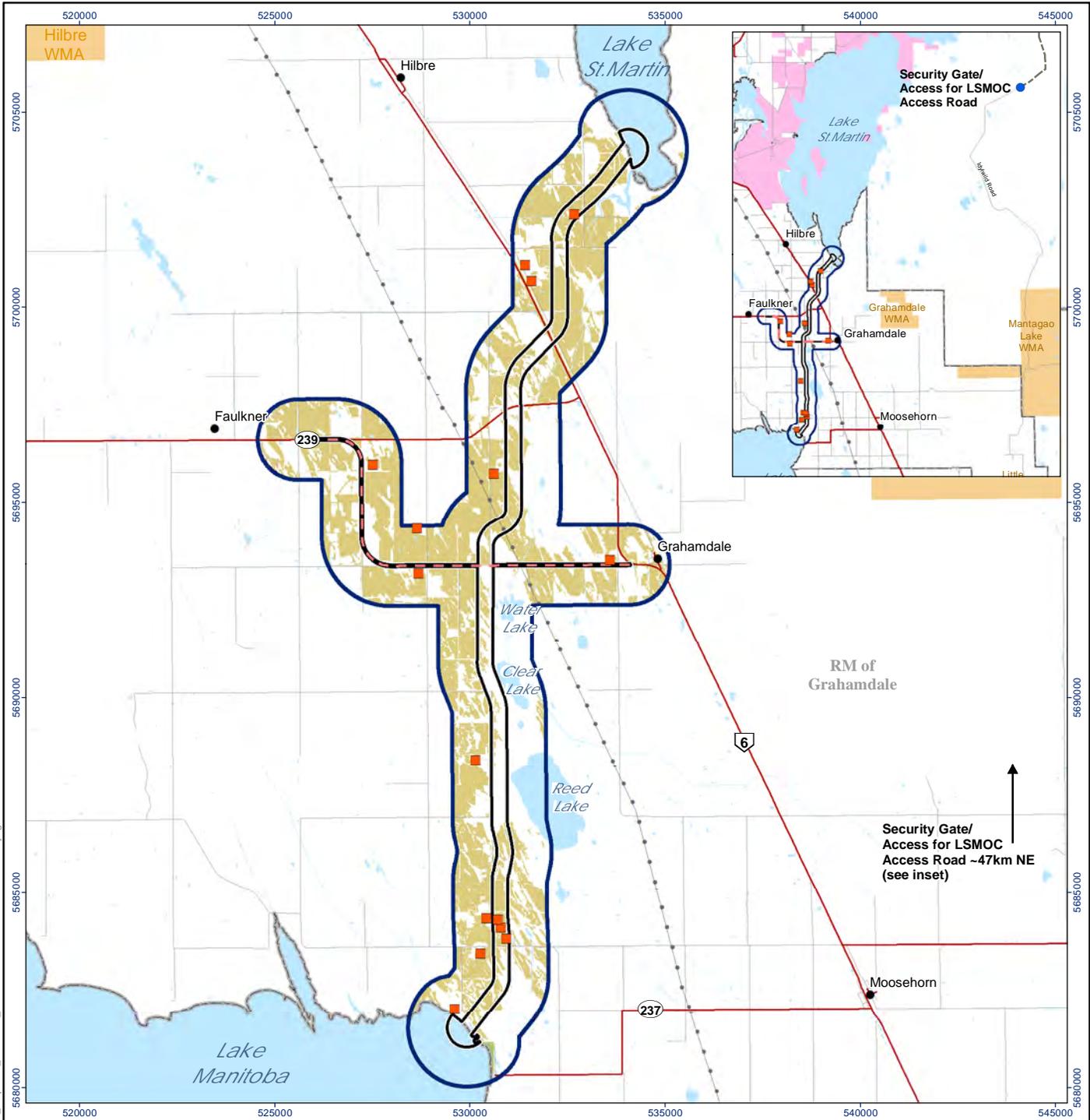
Manitoba Agriculture. 2020b. Biosecurity in Livestock Production. Available at: <https://www.gov.mb.ca/agriculture/animal-health-and-welfare/animal-health/biosecurity-in-livestock-production.html> [accessed May 2020].

Manitoba Agriculture. 2020c. Biosecurity Management on Agricultural Land for the Energy and Transportation Industries. Available at: <https://www.manitoba.ca/agriculture/crops/biosecurity-energy-and-transportation.html> [accessed May 2020].

Manitoba Agriculture. 2020d. Plant diseases. Accessed at: <https://www.gov.mb.ca/agriculture/crops/plant-diseases/index.html> [accessed May 2020].

APPENDIX 1

Maps



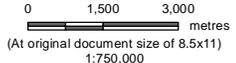
RM of
Grahamdale

Security Gate/
Access for LSMOC
Access Road ~47km NE
(see inset)



Legend

- Lake Manitoba Outlet Channel (LMOC)/ PR 239 Realignment Project Development Area (PDA)
- Proposed PR 239 Realignment
- LMOC/PR239 PDA 1km Buffer
- Livestock Operations
- Project Area Entry Checkpoint (Location to be Identified)
- Agricultural Land Class
- Agricultural Cropping
- Existing Transmission Line
- Provincial Highway (PTH/PR)
- Municipal Road
- Wildlife Management
- Provincial Park
- Rural Municipality



Project Location: Lake Manitoba/Lake St. Martin, Manitoba
 Prepared by GM on 2022-06-24, TR by DW on 2022-06-24

Client/Project: 111475120 REVH

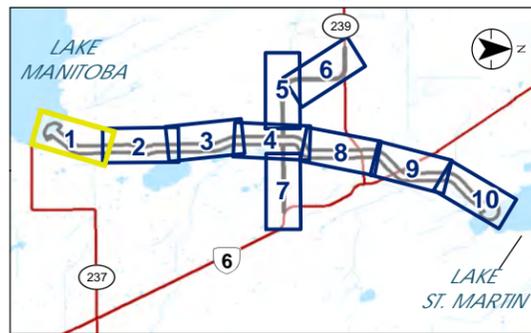
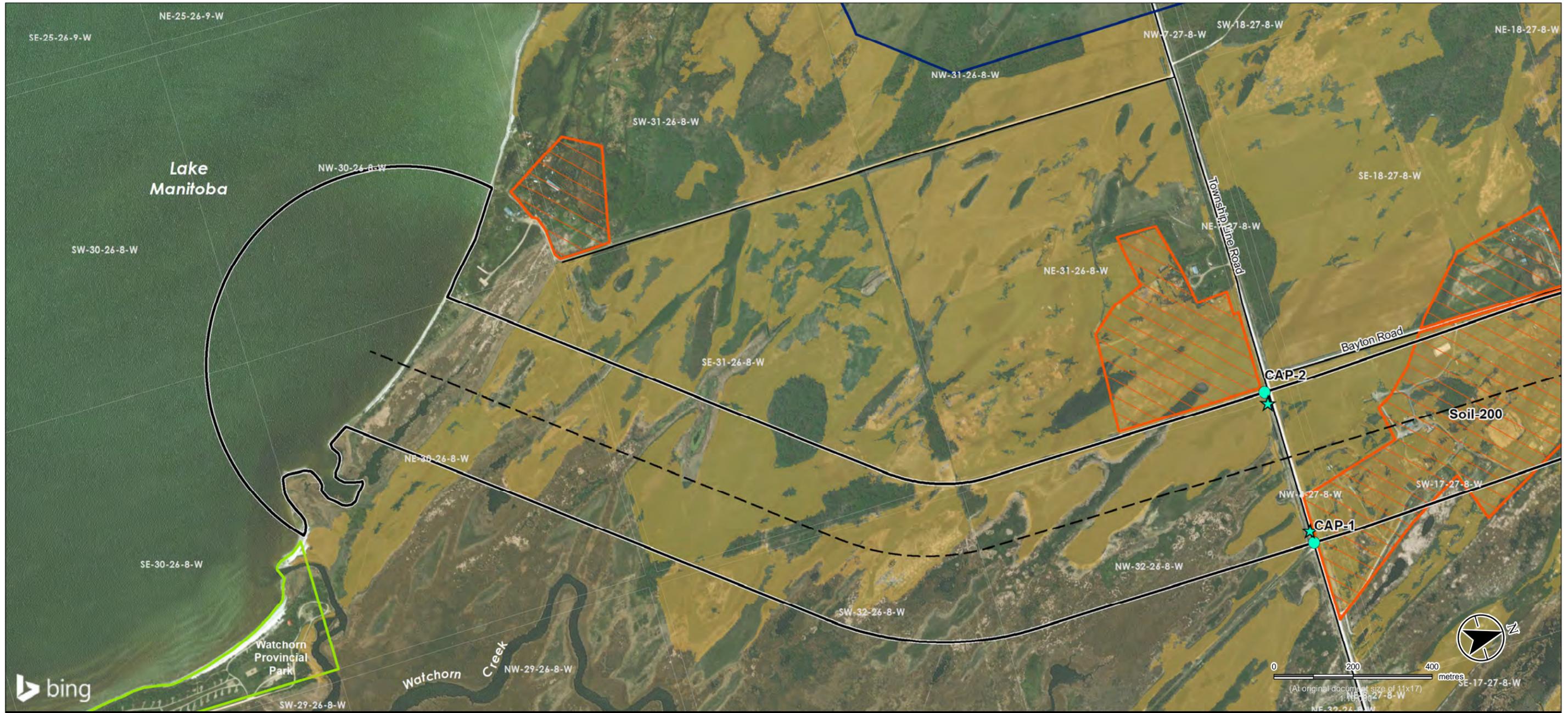
Agricultural Biosecurity Management Plan - Lake Manitoba and Lake St. Martin Outlet Channels

Figure No. 1 - 1
 Title

Overview Map

G:_GIS_Project_Folder\111475120\biosecurity\figures\MI_LMOC_BioSEC_Mapbook_Overview_REV1.mxd Revised: 2022-06-24 By: gamiller

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

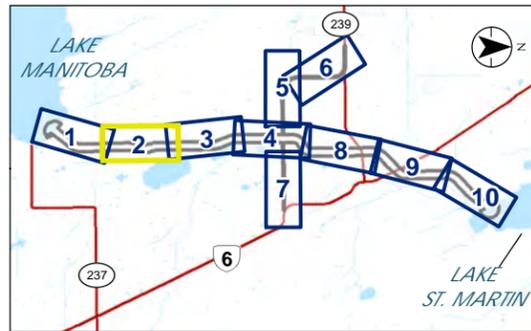
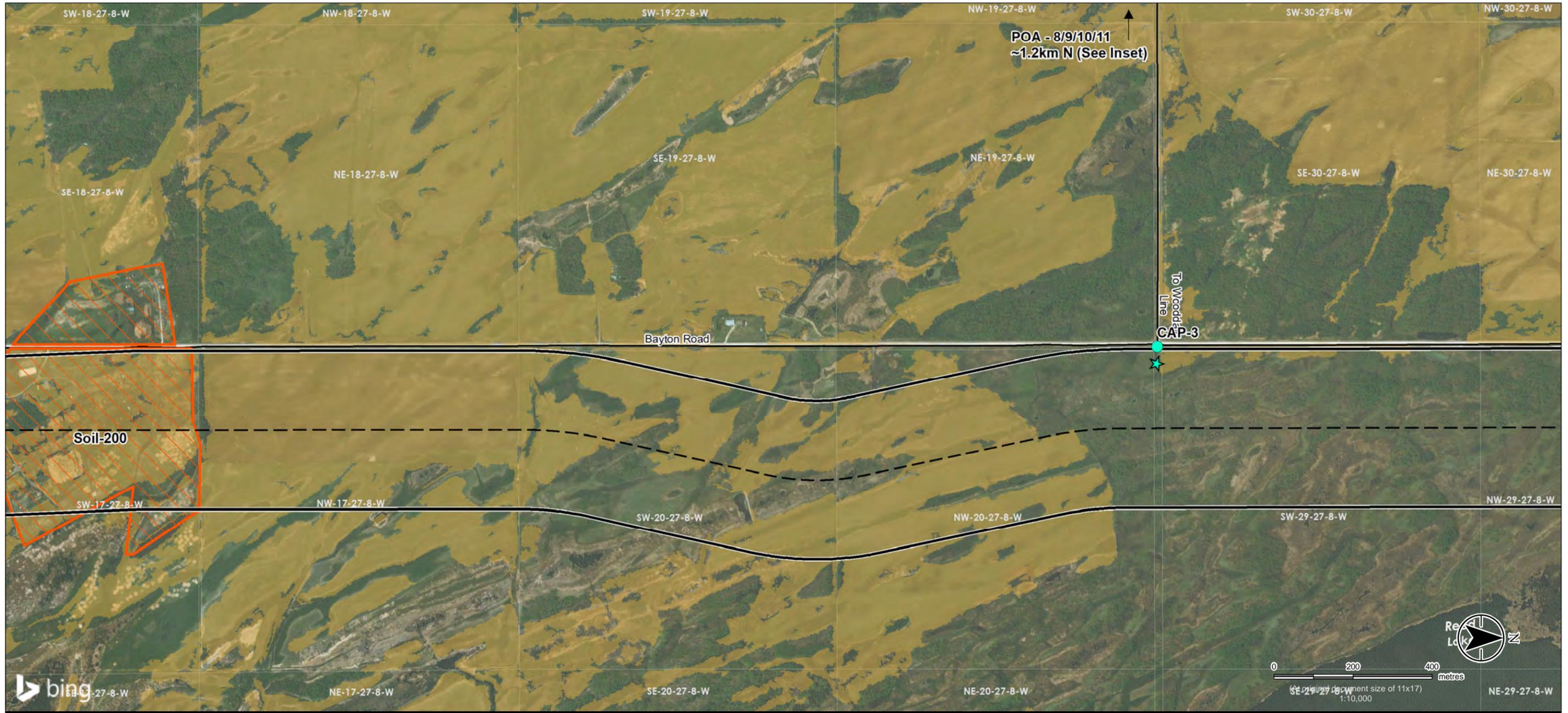
Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

Client/Project
 111475120 REVI
 Agricultural Biosecurity Management Plan -
 Lake Manitoba and Lake St. Martin Outlet Channels Project

Figure No.
 2 - 1

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

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMOCCBioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: gcamiller



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

Manitoba

Stantec **agriearth** consulting ltd

Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Client/Project
Agricultural Biosecurity Management Plan -
Lake Manitoba and Lake St.Martin Outlet Channels Project

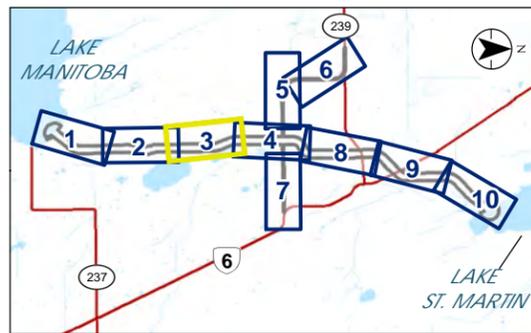
Figure No.
2 - 2

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

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

111475120 REV1

G:\GIS\Project_Folder\11475120\biosecurity\figures\ML LMOCC BioSec 10k Mapbook REV1.mxd Revised: 2022-06-24 By: ggamiller



Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar © CNES (2022) Distribution Airbus DS

LEGEND

- Lake Manitoba Outlet Channel (LMO) / PR 239 Realignment Project Development Area (PDA)
- LMO Approximate
- LMO/PR239 PDA 1km Buffer
- Municipal Road
- Quarter Sections

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)



Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

Client/Project
 111475120 REVI

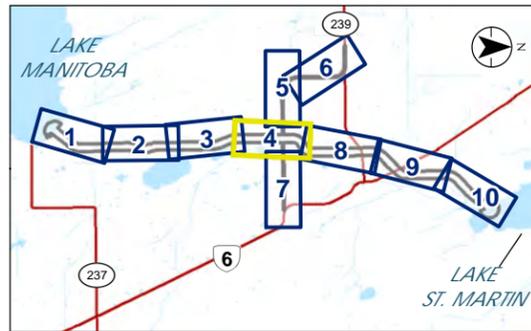
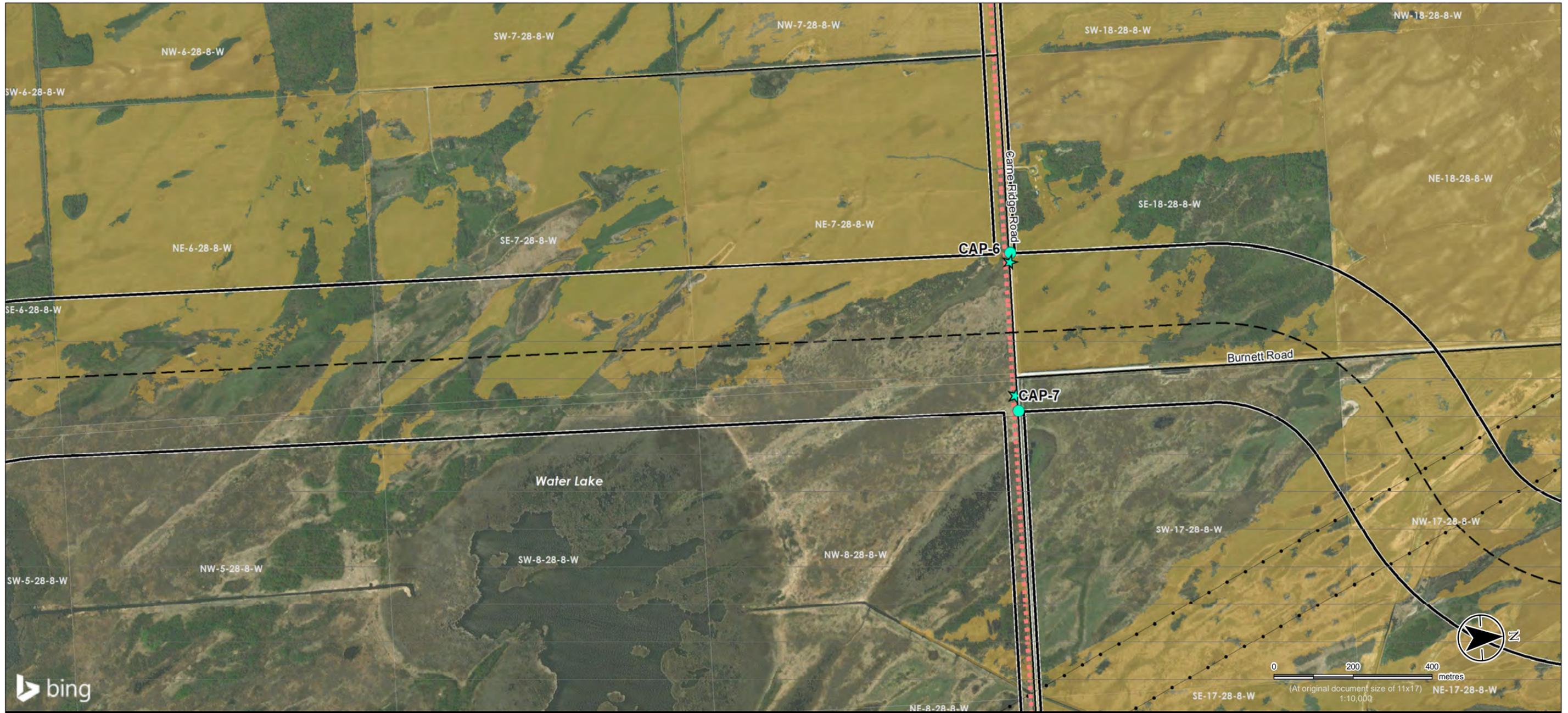
Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

Agricultural Biosecurity Management Plan - Lake Manitoba and Lake St. Martin Outlet Channels Project

Figure No.
2 - 3

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

G:\GIS\Project_Folder\11475120\biosecurity\figures\ML LMO BioSec 10k Mapbook REV1.mxd Revised: 2022-06-24 By: gmillar



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).



Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

Client/Project
 111475120 REVI

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

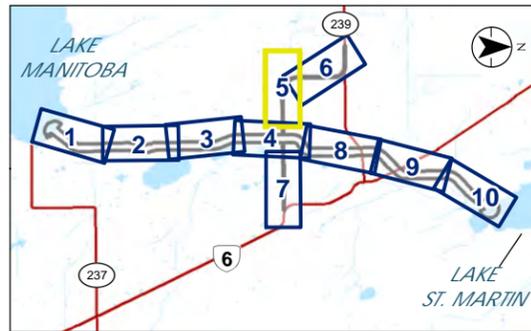
Agriculture Biosecurity Management Plan - Lake Manitoba and Lake St. Martin Outlet Channels Project

Figure No.
2 - 4

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

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMOC_BioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: gamiller

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

Manitoba

Stantec **agriearth** consulting ltd

Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Client/Project
Agricultural Biosecurity Management Plan -
Lake Manitoba and Lake St.Martin Outlet Channels Project

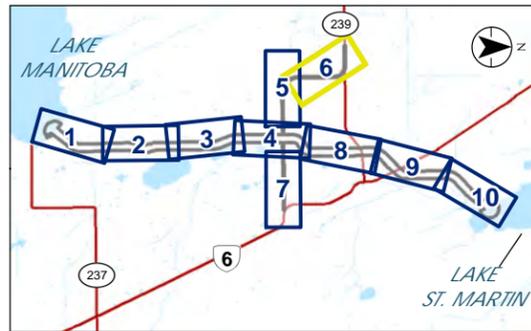
Figure No.
2 - 5

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

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

111475120 REV1

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMO_C BioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: gcamiller



- 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*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).



Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

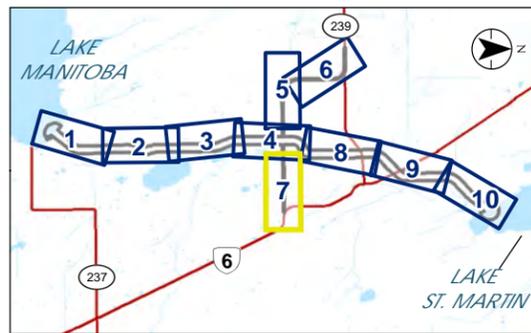
Client/Project 111475120 REVI

Agricultural Biosecurity Management Plan - Lake Manitoba and Lake St.Martin Outlet Channels Project

Figure No. 2 - 6

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

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMOC_BioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: ggamiller



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*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

Manitoba

Stantec **agriearth** consulting ltd

Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Client/Project
Agricultural Biosecurity Management Plan -
Lake Manitoba and Lake St.Martin Outlet Channels Project

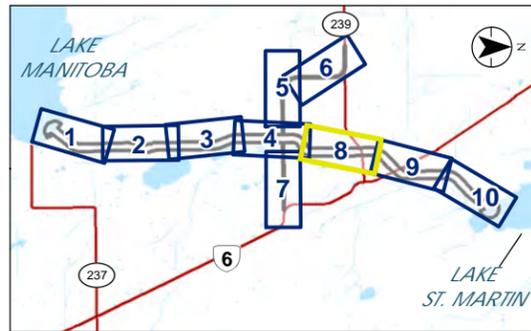
Figure No.
2 - 7

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

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

111475120 REV1

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMOC_BioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: gmillar



Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

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

- ACCESS MANAGEMENT FEATURES***
- Construction Access (CA)
 - Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
 - Level 2 Risk Category - Low/High Risk Level CAP
- Cleaning Areas and Stations**
- Rough/Mechanical Cleaning Area
 - Fine Cleaning Area

- BIOSECURITY MANAGEMENT ZONES***
- Biosecurity Risk Zone (BRZ)
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)
- Manure Impacted Site
 - Weed Infestations (to be identified through vegetation monitoring)

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

Manitoba

Stantec **agriearth** consulting ltd

Project Location
Near Lake Manitoba & Lake St.Martin
Manitoba

Client/Project
Agricultural Biosecurity Management Plan -
Lake Manitoba and Lake St.Martin Outlet Channels Project

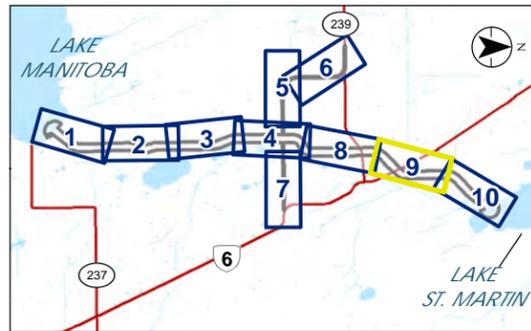
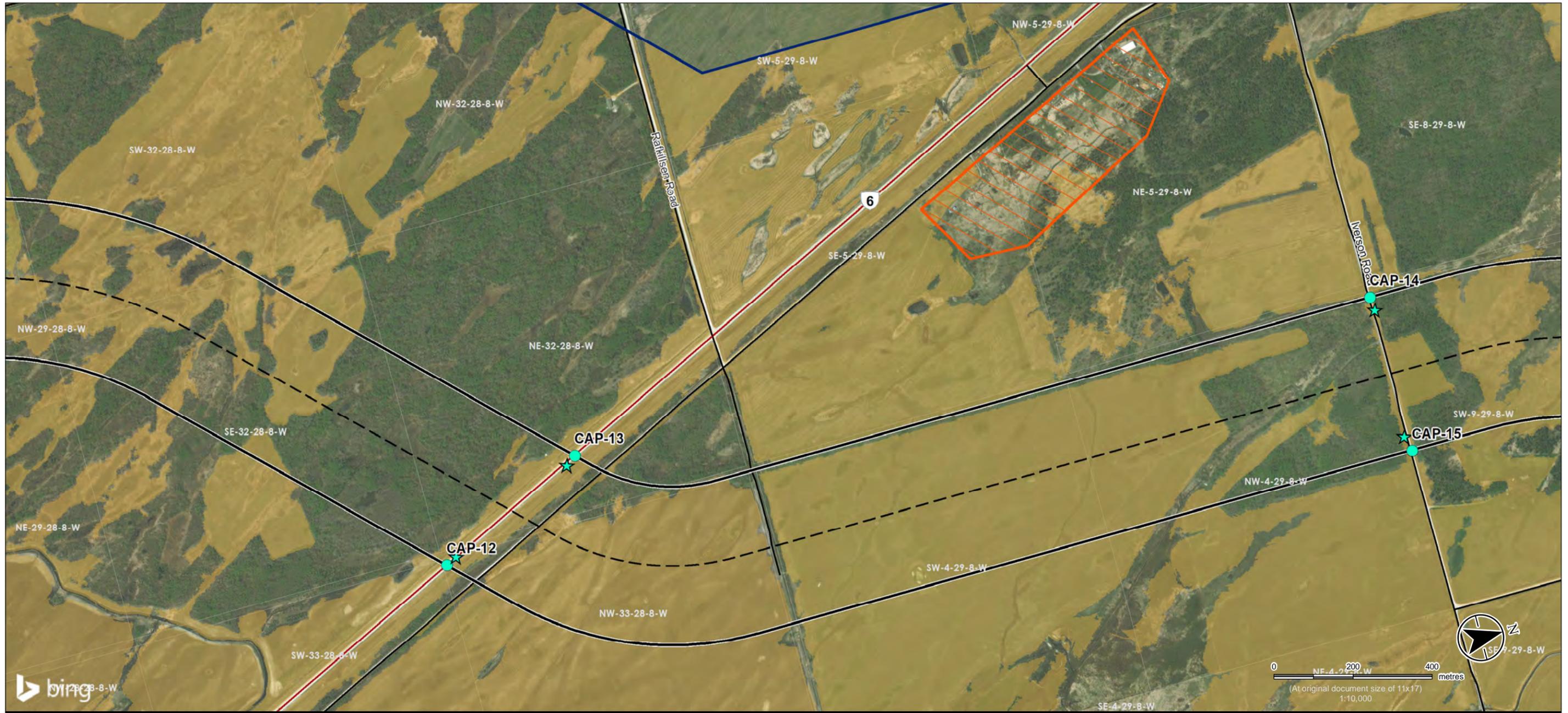
Figure No.
2 - 8

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

Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

111475120 REV1

G:\GIS\Project_Folder\11475120\biosecurity\figures\ML LMO BioSec 10k Mapbook REV1.mxd Revised: 2022-06-24 By: gmillar



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar ©CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).

Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

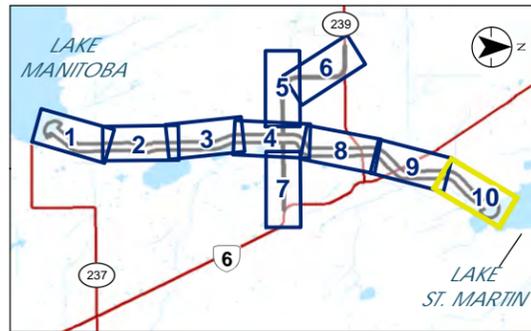
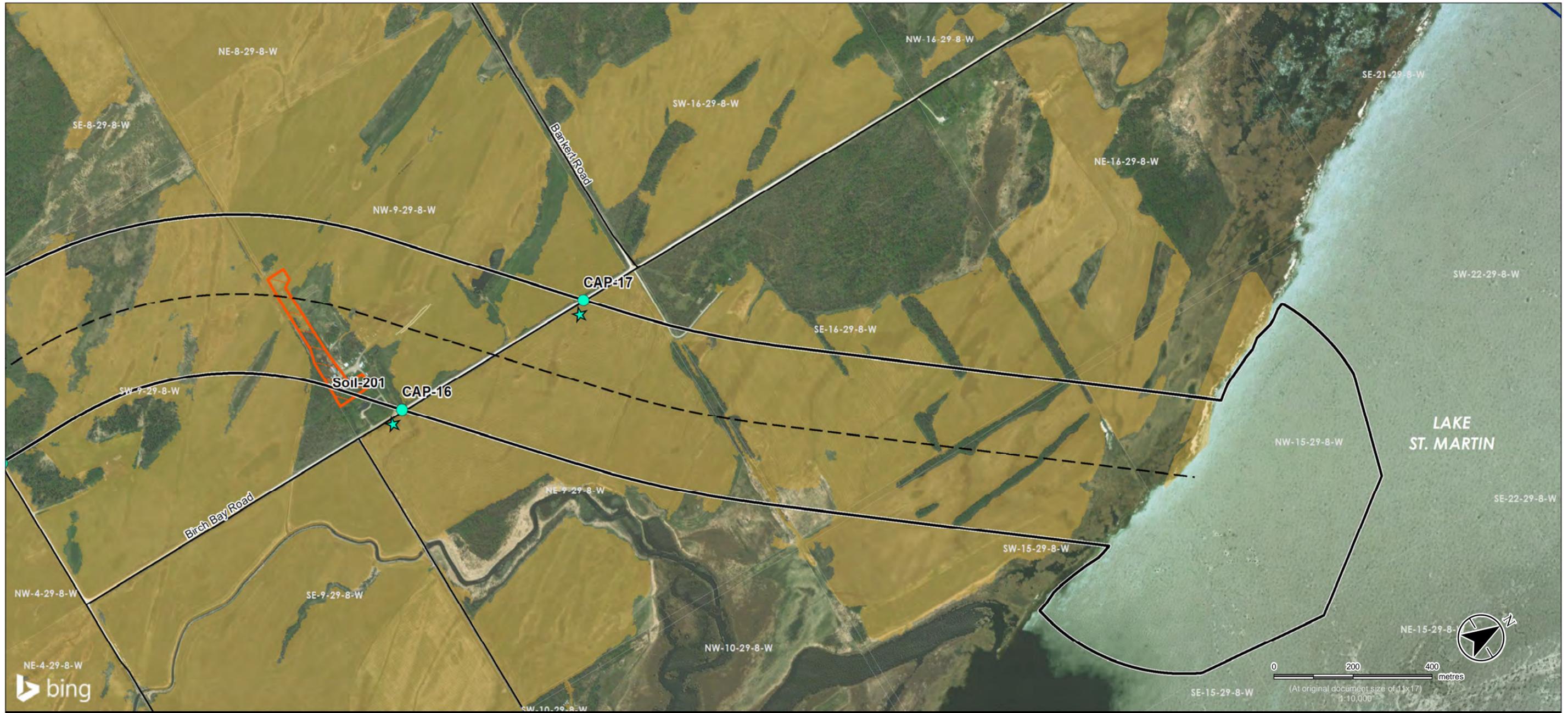
Prepared by GM on 2022-06-24
TR by DW on 2022-06-24

Client/Project 111475120 REVI

Agricultural Biosecurity Management Plan -
 Lake Manitoba and Lake St. Martin Outlet Channels Project

Figure No.
2 - 9

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



LEGEND

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

ACCESS MANAGEMENT FEATURES*

- Construction Access (CA)
- Point of Access (POA)
- Controlled Access Point**
- Level 1 Risk Category - Low/Moderate Risk Level CAP
- Level 2 Risk Category - Low/High Risk Level CAP

Cleaning Areas and Stations

- Rough/Mechanical Cleaning Area
- Fine Cleaning Area

BIOSECURITY MANAGEMENT ZONES*

- Biosecurity Risk Zone (BRZ)**
- Agricultural Cropping (Annual Cropping, Hayland & Pasture)
- Restricted Access Zone (RAZ)**
- Manure Impacted Site
- Weed Infestations (to be identified through vegetation monitoring)

Notes
 1. Coordinate System: NAD 1983 UTM Zone 14N
 2. Data Sources: Government of Manitoba, Government of Canada, Stantec Consulting, AgriEarth Consulting, Manitoba Infrastructure
 3. Background Imagery: Service Layer Credits: © 2022 Microsoft Corporation © 2022 Maxar © CNES (2022) Distribution Airbus DS

*The information presented for Access Management Features and Biosecurity Management Zones is considered preliminary in nature and subject to change as a result of ongoing Project access management planning and following determination of final locations of access routes and access points by the construction contractor(s).



Project Location
 Near Lake Manitoba & Lake St. Martin
 Manitoba

Client/Project
 111475120 REVI

Prepared by GM on 2022-06-24
 TR by DW on 2022-06-24

**Agricultural Biosecurity Management Plan -
 Lake Manitoba and Lake St. Martin Outlet Channels Project**

Figure No.
 2 - 10

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

G:\GIS\Project_Folder\11475120\biosecurity\figures\MLMOC_BioSec_10k_Mapbook_REV1.mxd Revised: 2022-06-24 By: gamilier

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

APPENDIX 2

Provincial Resources



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.



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>

Table 2-1: 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	<i>Amaranthus palmeri</i>	Whole province
Bartsia, red	<i>Odontites vernus</i>	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	<i>Crupina vulgaris</i>	Whole province
Cupgrass, wooly	<i>Eriochloa villosa</i>	Whole province
Goatgrass, jointed	<i>Aegilops cylindrica</i>	Whole province
Hawkweed, orange	<i>Hieracium aurantiacum</i>	Whole province
Hogweed, giant	<i>Heracleum mantegazzianum</i>	Whole province
Hound's-tongue	<i>Cynoglossum officinale</i>	Whole province
Knapweed, diffuse	<i>Centaurea diffusa</i>	Whole province
Knapweed, Russian	<i>Acrotilon repens</i>	Whole province
Knapweed, spotted	<i>Centaurea stoebe</i>	Whole province

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

Common Name	Scientific Name	Area for which Designation Applies
Common reed, invasive	<i>Phragmites australis</i>	Whole province
Daisy, ox-eye	<i>Leucanthemum vulgare</i>	Whole province
Nutsedge, yellow	<i>Cyperus esculentus</i>	Whole province
Scabious, field	<i>Knautia arvensis</i>	Whole province
Spurge, Cypress	<i>Euphorbia cyparissias</i>	Whole province
Spurge, leafy	<i>Euphorbia esula</i>	Whole province
St. John's-wort	<i>Hypericum perforatum</i>	Whole province
Tansy, common	<i>Tanacetum vulgare</i>	Whole province
Thistle, nodding	<i>Carduus nutans</i>	Whole province
Toadflax, Dalmatian	<i>Linaria dalmatica</i>	Whole province
Designated Tier 3 Noxious Weeds		
Absinth	<i>Artemisia absinthium</i>	Whole province
Barberry	<i>Berberis vulgaris</i>	Whole province
Barley, foxtail	<i>Hordeum jubatum</i>	Whole province
Bellflower, creeping	<i>Campanula rapunculoides</i>	Whole province
Buckthorn, European	<i>Rhamnus cathartica</i>	Whole province
Burdock, common	<i>Arctium minus</i>	Whole province
Burdock, greater	<i>Arctium lappa</i>	Whole province
Burdock, woolly	<i>Arctium tomentosum</i>	Whole province
Campion, biennial	<i>Silene dioica</i>	Whole province
Catchfly, night-flowering	<i>Silene noctiflora</i>	Whole province

Common Name	Scientific Name	Area for which Designation Applies
Cleavers	<i>Gallium aparine</i>	Whole province
Cleavers, false	<i>Gallium spurium</i>	Whole province
Cockle, white	<i>Silene alba</i>	Whole province
Dandelion	<i>Taraxacum officinale</i>	Whole province
Dodder	genus <i>Cuscuta</i>	Whole province
Fleabane, Canada	<i>Conyza canadensis</i>	Whole province
Flixweed	<i>Descurainia sophia</i>	Whole province
Hawk's-beard, narrow-leaved	<i>Crepis tectorum</i>	Whole province
Hemlock, poison	<i>Conium maculatum</i>	Whole province
Hemp-nettle	<i>Galeopsis tetrahit</i>	Whole province
Hoary-cress	<i>Cardaria draba</i>	Whole province
Jimsonweed	<i>Datura stromonium</i>	Whole province
Kochia	<i>Kochia scoparia</i>	Whole province
Lamb's quarters	<i>Chenopodium album</i>	Whole province
Lettuce, prickly	<i>Lactuca serriola</i>	Whole province
Milkweed, common	<i>Asclepias syriaca</i>	Whole province
Milkweed, showy	<i>Asclepias speciosa</i>	Whole province
Mustard, wild	<i>Sinapis arvensis</i>	Whole province
Nightshade, American black	<i>Solanum americanum</i>	Whole province
Nightshade, cutleaf	<i>Solanum triflorum</i>	Whole province
Nightshade, hairy	<i>Solanum sarachoides</i>	Whole province

Common Name	Scientific Name	Area for which Designation Applies
Parsnip, wild	<i>Pastinaca sativa</i>	Whole province
Ragweed, common	<i>Ambrosia artemisiifolia</i>	Whole province
Ragweed, false	<i>Iva xanthifolia</i>	Whole province
Ragweed, giant	<i>Ambrosia trifida</i>	Whole province
Sow-thistle, annual	<i>Sonchus oleraceus</i>	Whole province
Sow-thistle, perennial	<i>Sonchus arvensis</i>	Whole province
Sow-thistle, spiny annual	<i>Sonchus asper</i>	Whole province
Stinkweed	<i>Thlaspi arvense</i>	Whole province
Stork's bill	<i>Erodium cicutarium</i>	Whole province
Thistle, bull	<i>Cirsium vulgare</i>	Whole province
Thistle, Canada	<i>Cirsium arvense</i>	Whole province
Thistle, Russian	<i>Salsola pestifer</i>	Whole province
Toadflax, yellow	<i>Linaria vulgaris</i>	Whole province
Water hemlock, bulb-bearing	<i>Cicuta bulbifera</i>	Whole province
Water hemlock, northern	<i>Cicuta virosa</i>	Whole province
Water hemlock, spotted	<i>Cicuta maculata</i>	Whole province
Water hemlock, western	<i>Cicuta douglasii</i>	Whole province
Whitetop, hairy	<i>Cardaria pubescens</i>	Whole province
Whitetop, lenspod	<i>Cardaria chalepensis</i>	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 Project Area Entry Checkpoint Log

3.B Weekly Vehicle and Equipment Cleaning Record

