

**Lake St. Martin Outlet Channel
Proposed All Season Access Road –
Vegetation Technical Report**

*Final Report
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Prepared for:

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&
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1.0 INTRODUCTION

Manitoba Infrastructure (MI) is currently developing options to address ongoing flood issues in the Assiniboine River and Lake Manitoba watershed basins. As part of this endeavour, MI initiated the Assiniboine River & Lake Manitoba Basins Flood Mitigation Study. This study, which was completed in 2011, included several components. In particular, the “Assiniboine River & Lake Manitoba Basins Flood Mitigation Study Lake Manitoba & Lake St. Martin Outlet Channels Conceptual Design - Stage 1 - Deliverable No: LMB-01” (KGS Group 2014) and the “Assiniboine River & Lake Manitoba Basins - Flood Mitigation Study LMB & LSM Outlet Channels Conceptual Design - Stage 2” (KGS Group 2016) were key to identifying future flood protection initiatives for the Assiniboine River and Lake Manitoba watershed basins.

The Stage 1 and Stage 2 Conceptual Designs prepared by KGS and MI included the three following components:

- further development of the Lake St. Martin Outlet Channel (LSMOC), which involves development of a channel in the area referred to as Reach 2 and completion of the channel referred to as Reach 3;
- construction and operation of a new channel from Lake Manitoba (LM) to Lake St. Martin (LSM) to increase flow capacity and expedite movement of flood waters between these waterbodies; and
- construction and operation of an All Season Road (ASR) in the area of the Lake St. Martin Outlet Channels to facilitate year-round vehicle, crew and equipment access to the Lake St. Martin Outlet Channels.

These three main components formed the overall MI Lake Manitoba and Lake St. Martin Access Road and Outlet Channels Project (the Project) at the time of this writing.

MI later engaged M. Forster Enterprises (MFE) and a team of professional consultants to conduct desktop and field investigations at varying spatial scales near the Project to provide information on the existing environmental conditions for each of the three Project components listed above. The intent of these investigations was to describe the baseline conditions in vicinity of the Project to support a future Environmental Impact Assessment (EIA). While the overall Project will require approval and licensing under the federal Canadian Environmental Assessment Act (CEAA) and the Manitoba Environment Act, the realignment and construction of an ASR for construction access will require regulatory approval and licensing from the Province of Manitoba.

This report provides a summary of the existing environmental conditions for the vegetation component of the proposed ASR component of the Project, as identified through desktop, field studies and associated analysis, to provide the required baseline data for the environmental assessment and support the preparation of the provincial EIS for the ASR component of the Project.

1.1 Background

As noted above, further development of a Lake St. Martin Outlet Channel (LSMOC) includes the requirement for an All Season Road (ASR) in the area of the LSMOC to facilitate year-round vehicle, crew and equipment access. During previous construction and operation of the LSMOC, access to the area was restricted to winter roads extending from the end of Idylwild Road. The Idylwild road is an existing forestry road that runs north from Birch Lake Drive, which is a municipal road located east of the communities of Grahamdale and Spearhill and connects to Dewald Road. In an effort to improve area access, MI plans to construct an ASR on the existing municipal, resource and winter road alignments. The provision of an ASR to access the LSMOC will also require the upgrading and expansion of sections of the municipal road and the Idylwild forestry road. As such, the ASR component of the Project (ASR Project) was defined as the works associated with the upgrading, construction and operation of the affected areas of the municipal road, the Idylwild forestry road, the LSMOC Reach 3 Winter Road Access and the LSMOC Reach 1 Access Road Alignment, to an ASR.

1.2 Study Area

Given that the information collected for the baseline studies will be used in the environmental assessment for the Project, the study design for the vegetation baseline studies included the establishment of appropriate study area spatial boundaries. For the purposes of environmental assessment, the spatial boundaries of a project are typically described at three spatial scales: a Project Footprint (PF), a Local Study Area (LSA) and a Regional Study Area (RSA). PF is the physical space or directly affected area on which the Project components or activities are located; the LSA is the area beyond the Project footprint in which potential Project effects are measurable; and the RSA is the area beyond the LSA within which most potential indirect and cumulative effects will occur (CEAA 2015).

The PF for the vegetation assessment for the proposed ASR was defined as the Right of Way (RoW) for the municipal, forestry and winter roads (the ASR), which has a width of 20 m (Figure 1). The LSA for the vegetation assessment for the ASR works included a 1 km buffer on either side of the ASR RoW (Figure 1). For vegetation, the LSA was designated as the total length of the ASR with a width of 1 km from either side of the centreline of the ASR to reflect the mostly sessile nature of plants, but include areas of potential seed dispersal, new growth or colonization.

For the vegetation assessment, the RSA was designated as the total length of the ASR with a width of 5 km from either side of the centreline of the ASR to allow for the assessment of vegetation at a community level, if required (Figure 1).

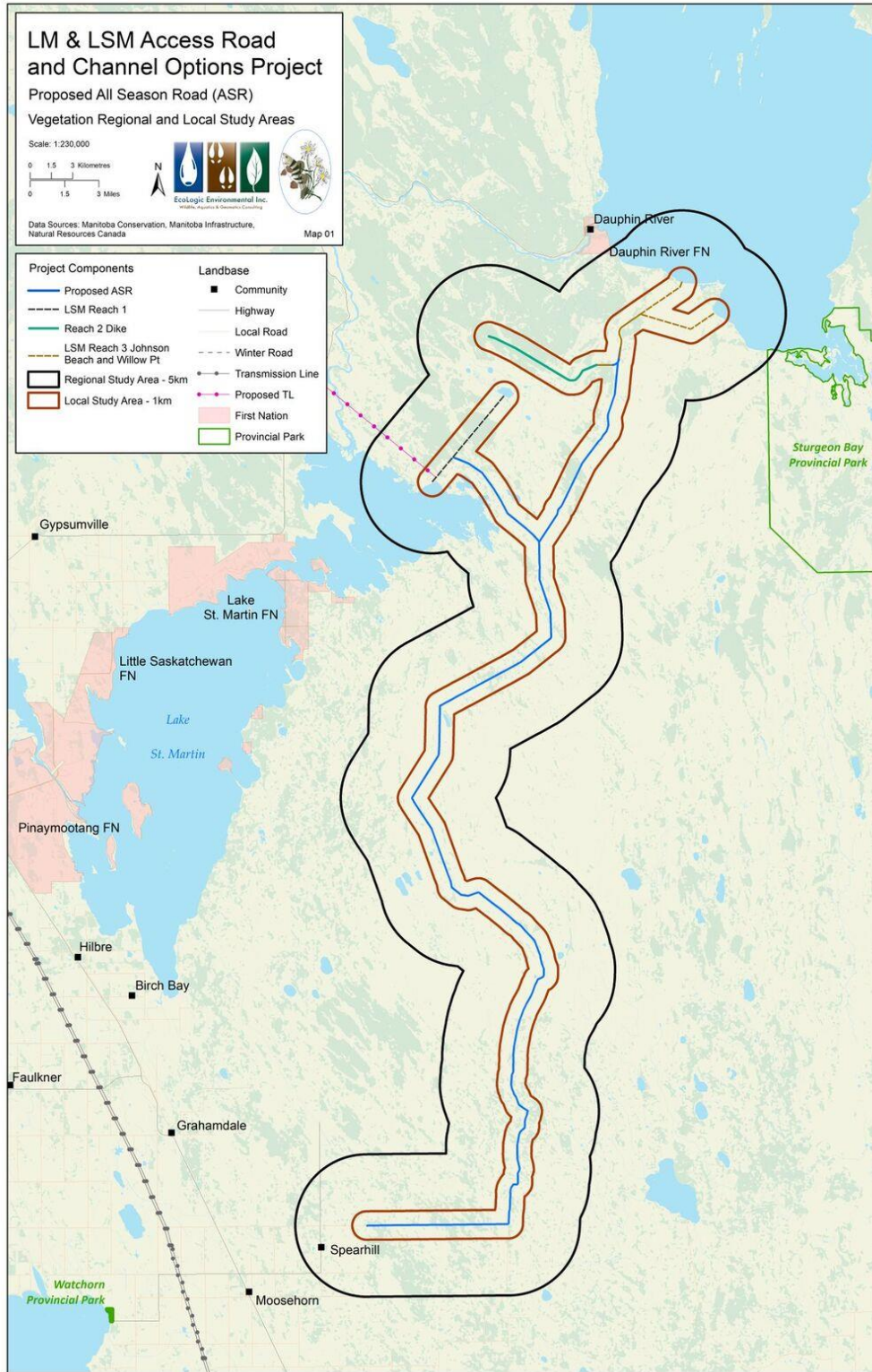


Figure 1: LSMOC Proposed All Season Access Road Vegetation Study Areas

1.3 Study Objectives

The objectives of the ASR vegetation studies and technical report included:

- determination of the existing baseline vegetation within the LSA of the ASR;
- delineation of habitat types in the LSA and RSA, including sensitive habitat (i.e. rare ecosystems, habitats that support rare or endangered species, and areas that are easily disturbed or degraded by human activities and developments);
- identification of any species at risk or species of conservation concern in the LSA;
- documentation of any plant species of significance to First Nations in the LSA and RSA; and
- identification of species that are exotic (i.e., non-native but not invasive) or invasive (non-native and threaten the diversity or abundance of native species or their habitats).

1.3.1 Plant Species of Conservation Concern

For the purpose of this assessment, a Species At Risk (SAR) is defined as any species protected under the federal *Species at Risk Act* (SARA) (Minister of Justice 2002) and/or the *Manitoba Endangered Species and Ecosystems Act* (MESEA) (MC 2012). Under these acts, it is considered a provincial and/or federal offence to kill, injure, harass, capture, possess, sell, or export an individual belonging to an extirpated, endangered, or threatened species and/or damager, or destroy its habitat. The identification and assessment of SAR is conducted federally by Committee of the Status of Endangered Wildlife in Canada (COSEWIC) and provincially by the Manitoba Conservation Data Centre (MBCDC).

In addition to species designated as extirpated, endangered, and threatened, species may also be identified federally as species of special concern. These species do not receive immediate protection under SARA, but require a management plan and assessment by COSEWIC, and may be eligible for further protection under provincial regulatory bodies (Minister of Justice 2002). Similarly, the MBCDC maintains a list of tracked species considered to be rare or uncommon within Manitoba (MBCDC 2013).

Species listed by the MBCDC that are of conservation concern, meaning they are rare, disjunct, or at risk throughout their range, as well as species listed under MESEA, SARA, and species that have a special designation from COSEWIC, were focused on during the desktop analysis and field surveys.

The MBCDC lists "species of conservation concern", which are species that are ranked on their abundance throughout Manitoba as per the following chart:

Table 1: Ranking of Species of Concern

Rank	Definition
S1	Very rare throughout its range or in the province (5 or fewer occurrences, or very few remaining individuals). May be especially vulnerable to extirpation.
S2	Rare throughout its range or in the province (6 to 20 occurrences). May be vulnerable to extirpation.
S3	Uncommon throughout its range or in the province (21 to 100 occurrences).
S4	Widespread, abundant, and apparently secure throughout its range or in the province, with many occurrences, but the element is of long-term concern (>100 occurrences).
S5	Demonstrably widespread, abundant, and secure throughout its range or in the province, and essentially impossible to eradicate under present conditions.

Source: Manitoba Conservation Data Centre, 2013

1.3.2 Plant Species of Significance to First Nations

MI and First Nations consultations were ongoing at the time of this writing, and a list of species important to the local First Nation communities had yet to be compiled. It is recognized that there are many plant species of significance to many First Nations peoples, and that the plant species of significance will vary by the practices of each First Nation, and their gathering locations. It is recognized that First Nations people have a special relationship with the earth and all living things in it. This relationship is based on a profound spiritual connection to the environment that guided indigenous peoples to practice reverence, humility and reciprocity. First Nations people have been sustainably harvesting plants based on subsistence needs and values extending back thousands of years.

Sweetgrass (*Hierochloe odorata*) is one of the four main plants (tobacco, sage, cedar and sweetgrass) considered as sacred to First Nations, Inuit and Métis Peoples (WEAP 2013a). It is known for its sweet scent, due to the presence of coumarins (Marles et al. 2000). Sweetgrass is usually associated with the prairies but is found in many different growing conditions from low meadows, forest openings, and along lakeshores. The best time to harvest sweetgrass is late June to early July. Sweetgrass is often picked, dried, and braided; the three sections representing mind, body and soul. One end of the braid is lit and the smoke is used for smudges, healings or talking circles because of its purification effects (WEAP 2013a).

Pasture sage (*Artemisia frigida*) and prairie sage (*Artemisia ludoviciana*) are broadly used for many purposes by First Nations. Pasture and prairie sages are common in meadows and pastures throughout the prairies and parklands. Like sweetgrass, sage may be burned for meditation, smudging, and cleansing of spirit and dwelling. In some beliefs, sage smoke is believed to provide a barrier that prevents negative spirits from entering the room in which the ceremony is being held (WEAP 2013b). Sage is also high in

protein and its leaves have proven to have insect-repellent properties. The boiled leaves have also been used to make a tea as a diuretic, and to treat kidney pain and headaches (Marles et al. 2000).

Seneca root (*Polygala senega*) is another plant that is widely used by First Nations and is expected to occur within the RSA. It is fairly common in prairies and dry open woodlands across southern Canada, from New Brunswick to Alberta (Marles et al. 2000). The common name for the plant 'Seneca snakeroot' is from the Seneca First Nations' use of the plant as a treatment for snakebites (CHIN 2005). The root is often used to treat sore throats, respiratory problems, headaches, and stomachaches (CHIN 2005).

1.3.3 Invasive Species

Invasive species are those that are not native to the area and tend to reproduce rapidly, displace native plants, and are difficult to control or eradicate. They can threaten the native biodiversity and pose a threat to natural habitats. Most alien species are adapted to habitats that have been disturbed in some way. This disturbance for a wetland could be in the form of changes in the regime of water level fluctuations and for an upland forest it could be encroaching clearing of adjacent lands that increase the likelihood of the introduction or spread of invasive species into an area.

Environment Canada categorizes species into three levels of invasiveness: principal, moderate, and minor (EC 1999). Principal Invasives contains species that are considered to pose the greatest threat to natural areas (e.g. Upland habitat - leafy spurge *Euphorbia esula*], common buckthorn [*Rhamnus cathartica*]; Wetland habitat - flowering-rush (*Butomus umbellatus*), reed canary grass (*Phalaris arundinacea*), purple loosestrife [*Lythrum salicaria*]). Moderate Invasives includes several species that are considered to be moderately invasive such as Canada thistle (*Cirsium arvense*), yellow and white sweet clover (*Melilotus spp.*), smooth brome grass (*Bromus inermis*), great manna grass (*Glyceria maxima*), and marsh cress (*Rorippa ainphibia*). Minor Invasives includes the species that are considered to be only minor problems (e.g. nodding thistle [*Carduus nutans*], absinthe [*Artemisia absinthium*], Kentucky blue grass [*Poa pratensis*]) (EC 1999). Although no principal invasive species are known or expected to occur within the RSA, several moderate and minor invasives such as Canada thistle, sweet clover, brome grass, and Kentucky blue grass are likely to occur within disturbed areas and roadside ditches.

The Invasive Species Council of Manitoba (ISCM) has created an Early Detection and Rapid Response (EDRR) list and placed invasive species into two categories: Category 1 and Category 2 (ISCM 2016). Category 1 species are those that are not yet known to be present in Manitoba or if so, only in cultivation, are listed as a Manitoba Noxious Weed and has the capability of establishing in Manitoba with a pathway of introduction (e.g. spotted knapweed [*Centaurea stoebe*]). Category 2 species are those that are already known to occur in Manitoba and capable of further spread (e.g. scentless chamomile [*Tripleurospermum inodorum*]). Eradication is the first management option if a Category 1 or 2 species is detected and if feasible. Otherwise, containment and control programs are recommended. If a Category 1 species is found, the ISCM should be contacted and a management committee will be formed to develop an eradication strategy (ISCM 2016).

The Noxious Weeds Act (NWA) of Manitoba lists 79 species and has placed them into three categories:

Tier 1, Tier 2 and Tier 3. Many of the invasive species listed by EC and the ISCM are also considered as a noxious weed under the NWA. A noxious weed as defined by the act is a plant that is likely to negatively affect any aspect of Manitoba's economy, the environment, or the well-being of residents if allowed to spread or not destroyed. As with the EDRR Category 1 species, the Tier 1 species are those species that are most threatening and may not yet be present in Manitoba. Under the NWA, it is required to destroy or eradicate these species before they establish. (e.g. spotted knapweed). Tier 2 species are already present in Manitoba and are easily spread (e.g. scentless chamomile, leafy spurge). The control for Tier 2 species depends on the size of infestation. An infected area under five acres is required to have all individuals destroyed; whereas, infected areas over five acres require the noxious weed to be controlled from spreading. Tier 3 species are all other species that are designated as noxious weeds but do not pose an immediate threat. These species still require control of spread if pose a threat to the economy, the environment, or the well-being of residents. These species include common dandelion (*Taraxacum officinale*), Canada thistle and perennial sow thistle (*Sonchus arvensis*) (Minister of Justice 2017).

2.0 STUDY METHODS

2.1 Desktop Studies

Prior to field work, a review of the current and historical vegetation data, specifically rare plants, was conducted as a key component to planning field strategies and assessing the effects of the Project on local and regional vegetation communities.

2.2 Data Sources

The desktop review of existing information was completed using available data sources such as:

- The Earth Observation for Sustainable Development of Forests (EOSD) Land Cover Classification (LCC) spatial database;
- aerial photographs provided by M.Forster Enterprises;
- previous studies completed in the study area;
- information and reports provided by MI,
- published and online reports for the study area;
- wetland classifications from the Ducks Unlimited Canada's *Enhanced Wetland Classification: Boreal Wetland Classes in the Boreal Plains Ecozone of Canada*;
- plant species and ecosystems listed by the Manitoba Conservation Data Centre (MBCDC);
- plant species and ecosystems listed under the MESEA; the COSEWIC database and the SARA registry; and
- through a review and research on local species and habitat of interest.

2.3 Field Studies

2.3.1 Aerial Surveys

On October 9, 2015, biologists from M. Forster Enterprises and AAE Tech Services Inc. conducted a helicopter flyover of the LSMOC and proposed ASR project area. Georeferenced photographs and observational notes on the existing vegetation cover were collected during these surveys. These photographs and observations, in conjunction with the LCC data and previous studies in the RSA, were used to describe the existing habitat types and dominant vegetative cover along the LSA in preparation of the planned 2016 field surveys.

2.3.2 Ground Surveys

To determine the existing baseline vegetation and habitat types within the proposed ASR LSA, qualitative vegetation surveys were conducted in spring (June 7, 2016 to June 10, 2016) and summer (August 3, 2016 to August 5, 2016) to capture species with different emergence periods. A qualitative sampling method involves the recording of all species identified within a survey plot and is the most effective way to capture the species composition and distribution within a study area. As the total sampled area is larger than that of

a more quantitative approach, it also provides a better opportunity to identify any rare species that may be present.

Qualitative vegetation surveys were conducted along the existing municipal road, forestry road and winter road sections of the proposed ASR. Sample sites were pre-selected and stratified based on habitat-type encountered along the proposed ASR using the LCC data, Ducks Unlimited wetland classification system, and information gathered during the 2015 aerial survey. A handheld Garmin Oregon 450 GPS pre-loaded with the tracks of the proposed ASR and each sample site were used to navigate to the survey locations. Sample sites along the municipal and forestry road portions of the proposed ASR were accessed by 4x4 pick-up truck. Due to wetland habitats posing constraints to ground access, the sample sites along the winter roads were accessed by helicopter.

A total of 18 sample plots were selected to provide a sufficient number of plots within different habitat types, and each site was surveyed during both the spring and summer surveys. At each plot site, two 100 m transects were placed perpendicular on either side of the centre line of ASR. Transects were walked and all vascular plants and mosses observed (within a 5 m visual radius) were recorded and identified to species. Immature plants or plants missing structures (e.g., fruiting bodies, etc.) that could not be identified to species were identified to genus or family.

Additional data collected at each sample site included: soil type, site location and description of the vegetation community. No voucher specimens were collected. Photographs of the plant and identifying characteristics were taken of any species not identifiable in the field. The relative location of each sample site, as with any observations of invasive species, plants of interest to Aboriginal peoples, and/or species of conservation concern (S1, S2, S3) were recorded with a handheld Garmin Oregon 450 GPS and incorporated into the data collected for the ASR component of the Project. Incidental observations of plant species along the proposed ASR that occurred outside of the sample sites, were also documented.

3.0 ENVIRONMENTAL SETTING

3.1 Ecological Land Classification

The RSA is located within the Boreal Plains Ecozone. In Manitoba, the ecozone extends from the central portion of the Manitoba-Saskatchewan border east to Lake Winnipeg, and then south in a narrow band along the Red River (Smith et al. 1998). White spruce (*Picea glauca*), black spruce (*Picea mariana*), jack pine (*Pinus banksiana*), tamarack (*Larix laricina*), white birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*), and balsam poplar (*Populus balsamifera*) are the most common tree species in the ecozone (Smith et al. 1998). Within the Boreal Plains Ecozone, the RSA is situated in the Gypsumville and Ashern Ecodistricts of the Interlake Plain Ecoregion and the southwest portion of the Sturgeon Bay Ecodistrict within the Mid-Boreal Lowland Ecoregion, which straddles the west side of Lake Winnipeg (Smith et al. 1998).

The Ashern Ecodistrict occupies a major portion of the area generally referred to as the “Interlake”. Trembling aspen dominates the forest stands in the ecodistrict, while balsam poplar and white spruce occur

to a lesser extent (Smith et al. 1998). Poorly drained areas have willow (*Salix* spp.), sedge (*Carex* spp.) and meadow grass (e.g. *Poa* spp.) vegetation. Black spruce and tamarack dominate the vegetative cover in the bogs in association with swamp birch (*Betula pumila*), ericaceous shrubs (e.g. Labrador tea [*Rhododendron groenlandicum*]) and sphagnum (*Sphagnum* spp.) and other mosses. Willows and sedges, and to a lesser extent tamarack, and various herbs and forbs, are dominant in fen peatlands (Smith et al. 1998).

The Gypsumville Ecodistrict occupies a small area in the north-central part of the Interlake Plain Ecoregion and encompasses Lake St. Martin (Smith et al. 1998). Nearly all of the soils are imperfectly drained, and the vegetation varies based on moisture content of the soils (Smith et al. 1998). The forest stands in the ecodistrict are a mixture of trembling aspen, balsam poplar and white spruce in varying quantities. Jack pine is prevalent on drier sites (Smith et al. 1998).

The Sturgeon Bay ecodistrict has poor drainage due to surface topography (Smith et al. 1998). Peatlands are extensive in the area; most being flat bogs and peat plateau bogs, but also consisting of horizontal and water track fens (Smith et al. 1998). Due to the extensive amounts of peatlands and poorly drained mineral soils, the majority of the Sturgeon Bay Ecodistrict consists of black spruce dominant bogs, transitional bogs and areas of poorly drained mineral soils. The associated vegetation in these stands varies from sphagnum and feather (e.g., *Ptilium crista-castrensis*) mosses, swamp birch and ericaceous shrubs such as Labrador tea, leatherleaf (*Chamaedaphne calyculata*) and bog rosemary (*Andromeda polifolia*) on bogs, to sedges, mosses, tamarack and willow on transitional bogs (Smith et al. 1998). Fens have vegetation dominated by tamarack, sedges, brown mosses, willow and swamp birch shrub, and occasionally some black spruce (Smith et al. 1998). The uplands have varied vegetation dependent on drainage, soil texture and fire history. Stands are generally mixed with black spruce, jack pine, trembling aspen and white spruce (Smith et al. 1998). Shrubs include willow and red-osier dogwood (*Cornus sericea*) on wetter sites and ericaceous shrubs on dry sites. Feather mosses are common as groundcover in coniferous stands, whereas deciduous stands have a forb dominant ground cover, with a hazel (*Corylus* spp.) shrub layer (Smith et al. 1998).

3.2 Vegetation Cover Classification

Vegetative cover classes used to represent the communities and habitats within the RSA and LSA were obtained from the LCC. The LCC is a national database map layer that has been harmonized across the major federal departments involved in land management and land change detection that includes Agriculture and Agri-Foods Canada (AAFC), the Canadian Forest Service (CFS), and the Canadian Centre for Remote Sensing (CCRS). The LCC provides vegetated and non-vegetated land cover classes that identify the primary ecological and vegetation/habitat conditions of an area. The LCC for the RSA and LSA are provided in Figure 2 and a summary of the LCC information for the RSA and LSA is provided in Table 2. The primary land cover types in the RSA and within the LSA are shrub and herb dominant wetlands, with small areas of upland coniferous and mixedwood forests (Figure 2).

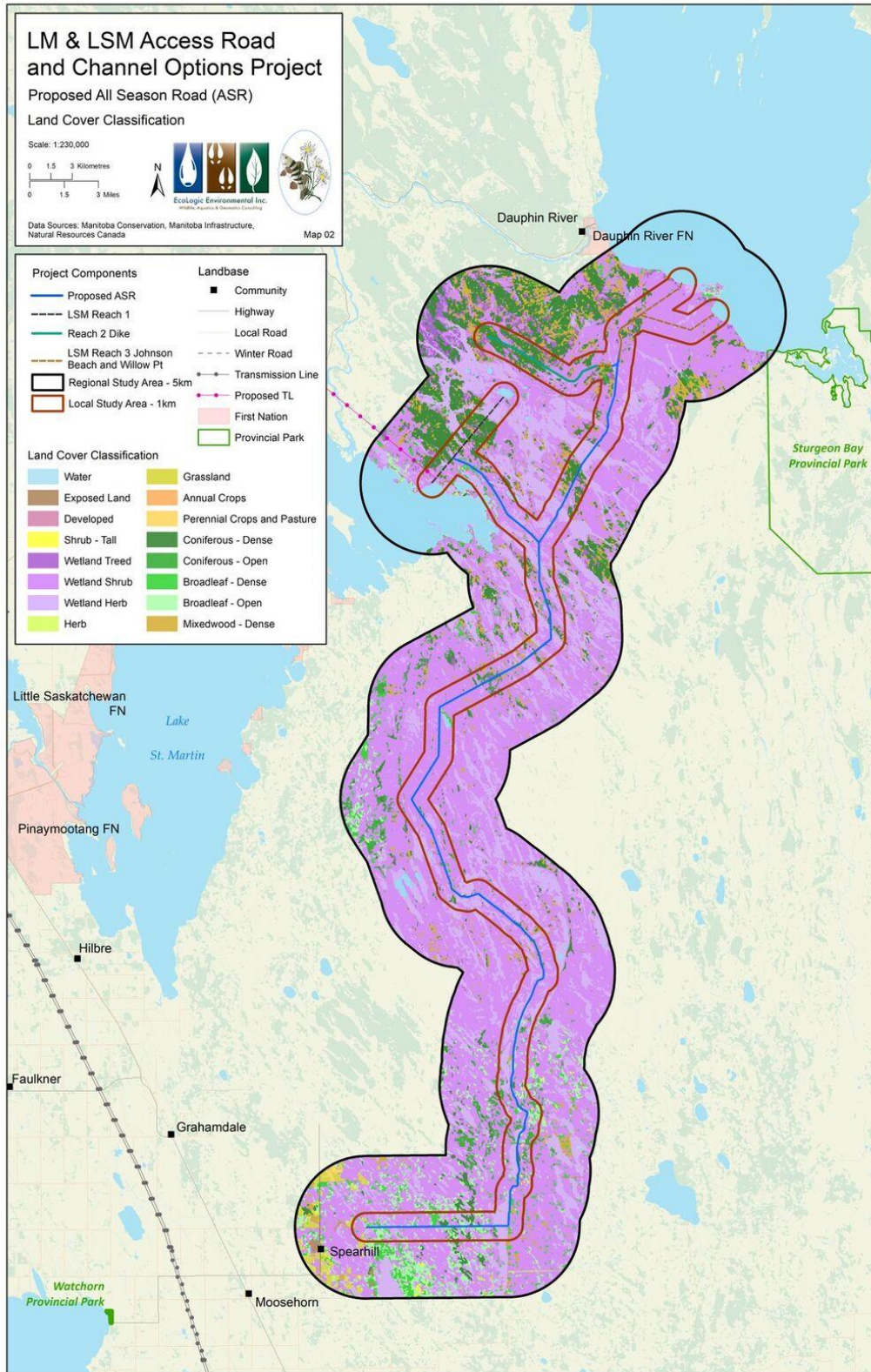


Figure 2: Proposed ASR Study Area Land Cover Classification (LCC)

Table 2: Land Cover Classification for the Regional Study Area and Local Study Area

LCC Habitat Code	Habitat Class	RSA		LSA	
		Area km ²	% Total	Area km ²	% Total
20	Water	23.68	2.43%	1.10	0.59%
33	Exposed Land	2.21	0.23%	0.66	0.35%
34	Developed	1.52	0.16%	0.75	0.40%
51	Shrub - Tall	0.91	0.09%	0.25	0.13%
81	Wetland Treed	203.83	20.88%	42.45	22.60%
82	Wetland Shrub	565.24	57.90%	110.70	58.93%
83	Wetland Herb	10.00	1.02%	1.57	0.84%
100	Herb	1.97	0.20%	0.09	0.05%
110	Grassland	6.05	0.62%	0.25	0.13%
121	Annual Crops	0.06	0.01%	0.00	0.00%
122	Perennial Crops and Pasture	0.56	0.06%	0.00	0.00%
211	Coniferous - Dense	54.62	5.60%	9.81	5.22%
212	Coniferous - Open	18.88	1.93%	4.04	2.15%
221	Broadleaf - Dense	20.49	2.10%	4.02	2.14%
222	Broadleaf - Open	32.78	3.36%	5.82	3.10%
231	Mixedwood - Dense	33.37	3.42%	6.34	3.37%
Total		976.17	100.00%	187.83	100.00%

3.3 Wetland Classification

The wetland classifications used to identify the wetland habitats within the PF and LSA were obtained from the Ducks Unlimited Canada's *Enhanced Wetland Classification* and conform to the Canadian Wetland Classification System (Ducks Unlimited Canada 2014). This classification system identifies five major wetland classes (Bog, Fen, Swamp, Marsh, and Shallow Open Water) and 19 minor wetland classes.

Bogs are organic peatlands that are stagnant, non-flowing systems and receive water only through precipitation. They have a thick sphagnum moss layer and have a low diversity of plants due to the low nutrient availability. Fens are peatlands that receive water from a combination of precipitation, surface runoff and groundwater. Fens have a complex hydrology and can transport large volumes of water and nutrients across the landscape, often connecting wetland systems over large distances. Fens are more nutrient-rich than bogs and have greater plant diversity. Swamps are mineral wetlands that receive water from runoff, precipitation and groundwater. Swamps have fluctuating water tables and are seasonally flooded.

Marshes are often a transition between open water and shoreline. They can be heavily influenced by stream inflow and fluctuate seasonally. Shallow Open Water wetlands have a water depth of less than two meters, yet are deep enough to prevent the establishment of emergent plants such as cattails and rushes. They look like shallow lakes with pond lily and other floating leaf, free-floating and submergent aquatic vegetation present and are generally permanently flooded (Ducks Unlimited Canada 2014).

This wetland classification system was used in combination with the LCC data to identify and classify the wetland areas in the PF and LSA, as well as identify potential habitat for rare species.

3.4 Plant Species of Conservation Concern

Based on the desktop review, there are seven vascular plant species at risk that occur in the Interlake Plain Ecoregion and none in the Mid-Boreal Lowland Ecoregion. However, no plant listed under MESEA, SARA, or that having a special designation by COSEWIC are known or expected to occur in the RSA (GC 2015; MC 2012). The small white lady's-slipper (*Cypripedium candidum*) and the rough agalinis (*Agalinis aspera*), are both Federally and Provincially Endangered, and have known distributions 100 km south of the RSA, close to St. Laurent, MB (MC 2015; EC 2015). Based on the known distribution and specialized habitat requirements of these species, there is an extremely low probability of these species' occurrence in the RSA (MC 2015; EC 2015).

The MBCDC lists 108 vascular plant species of conservation concern within the Interlake Plain Ecoregion (**Appendix A**) and 55 species within the Mid-Boreal Lowland Ecoregion (**Appendix B**) that have a provincial status of S1, S2 or S3. A search of the MBCDC database for recorded occurrences of rare species in the RSA and LSA found occurrences of one species of conservation concern in both the RSA and LSA, the ram's-head lady's-slipper (*Cypripedium arietinum*), which has a S2S3 designation (Friesen 2015, pers. comm.). The ram's-head lady's-slipper can be found in black spruce and tamarack sphagnum bogs and less so in drier upland coniferous forests (Foster and Reimer 2007).

A vegetation survey conducted by KGS in 2011, in the RSA, found two species listed by MBCDC to be of conservation concern (S2), which were identified during the field survey (KGS 2013). Three occurrences of green adder's mouth orchid (*Malaxis unifolia*) (S2) were encountered within damp black spruce sphagnum bogs. Two occurrences were located approximately 1.5 km and 2 km north of the Reach 1 Outlet Channel inlet, while one was encountered near the confluence of Buffalo Creek and the Dauphin River (KGS 2013). Habitat for this species was cited as common throughout the study (KGS 2013). The second species of conservation concern identified during the KGS field survey was eelgrass (*Zostera marina*) (S2), which was encountered at one location along Buffalo Creek beside a fen habitat (KGS 2013).

Black spruce and tamarack sphagnum bogs are common throughout the RSA and LSA and there is a high potential to encounter green adder's mouth orchid, ram's-head lady's-slipper, or other species of conservation concern that have similar habitat preferences (Foster and Reimer 2007). Eelgrass is an aquatic plant native to marine environments growing in the intertidal and subtidal zones of shallow bays, coves and estuaries (Hanson 2004). The known distribution of eelgrass in Manitoba is restricted to the Hudson Bay coastline and it is unlikely that this species is present within the RSA. It is possible that the eelgrass

encountered during the KGS survey was misidentified as *Zostera marina* and is actually *Vallisneria americana*, the freshwater eelgrass, which is not a listed species.

3.5 Plant Species of Significance to First Nations

MI and First Nations consultations were ongoing at the time of this writing, and a list of species important to the local First Nation communities had yet to be compiled. It is recognized that there are many plant species of significance to many First Nations peoples, and that the plant species of significance will vary by the practices of each First Nation, and their gathering locations. It is recognized that First Nations people have a special relationship with the earth and all living things in it. This relationship is based on a profound spiritual connection to the environment that guided indigenous peoples to practice reverence, humility and reciprocity. It is known that Seneca root is gathered in the area and is an important plant used for medicinal and ceremonial purposes (NLHS 2015). The First Nations also used to gather various species of edible berries such as gooseberries, as well as medicinal plants such as sweet flag (*Acorus calamus*), which is chewed for sore throats and to prevent colds, and found along riverbanks and wetland habitats (Traverse 1999).

3.6 Invasive Plant Species

There is no historical information on invasive species within the LSA or RSA. However, due to the level of human disturbance and activity along the ASR, it is expected that invasives have been introduced and are present within the LSA. Invasive phragmites (*Phragmites australis* sub. *australis*) is a wetland invader that spreads quickly and outcompetes native species for water and nutrients. Invasive phragmites is commonly found in disturbed wet roadside ditches and can quickly crowd out native wetland vegetation, resulting in decreased plant species diversity. There have been no known occurrences of invasive phragmites within the RSA, though it may pose a threat in the future, as much of the RSA is located in low-lying wet habitats that could be vulnerable to invasive phragmites establishment. Other invasive species that are expected to occur within the LSA are common dandelion, perennial sow thistle and Canada thistle, as they commonly occur along disturbed roadsides and heavy traffic areas.

4.0 VEGETATION SURVEY RESULTS

A total of 142 plant species were identified during the spring and summer field surveys, including: four non-vascular species, 25 graminoids (sedges, grass, rushes), 31 shrubs, seven trees and 75 herbaceous species. Complete species lists are provided in **Appendix C**. Plant communities were classified by 'V-type' based on the Forest Ecosystem Classification (FEC) system for Manitoba developed by the CFS (Zoladeski et al. 1995) (Table 3).

Much of the RSA lies within a wet depression zone that is dominated by vast interconnecting areas of treeless graminoid poor fens with scattered treed and shrubby sphagnum bogs and tamarack dominant transitional bog peatlands. Scattered glacial moraine ridges in the area have created strips of upland habitat

dominated by coniferous jack pine stands and mixedwood forests comprised of tamarack, trembling aspen, balsam poplar and white spruce.

As noted above, the proposed ASR consists of four sections: the municipal road section; the forestry road section (Idylwild Road); and two winter road sections, one to LSMOC Reach 1 and one to LSMOC Reach 3 (Figure 1). The proposed ASR starts off passing by some tame hay pasture fields and trembling aspen stands (Plot 1 and 2) (Photo 1). The timothy (*Phleum pratense*) and smooth brome (*Bromus inermis*) dominant pastures contained several invasive species such as common dandelion, scentless chamomile and yellow sweet clover (*Melilotus officinalis*), all of which were also found along the roadside. The understory within the aspen stand was dominated by shrubs such as willows and red osier dogwood, and herbaceous species adapted to damp woodlands, such as wild lily-of-the-valley (*Maianthemum canadense*), star flowered false Solomon's seal (*Maianthemum stellatum*) and yellow lady slipper (*Cypripedium parviflorum*). Seneca root was found within drier areas along the roadside and edge of the pasture within Plot 2.

As the municipal road transitions into the forestry road, the proposed ASR crosses several marshes and large graminoid rich fens dominated by sedges, common reed grass (*Phragmites australis*), bulrush (*Scirpus* spp.) and horsetail (*Equisetum* spp.), as well as species such as marsh marigold (*Caltha palustris*) and buck bean (*Menyanthes trifoliata*). Shrub species such as willows, red osier and bog birch (*Betula glandulosa*) were present along the edge of the wetland (Plot 3).

As the forestry road travels north, it follows a moraine ridge of upland white spruce, and aspen dominates the mixedwood forest habitat (Plot 4) (Photo 2). A beaked hazel (*Corylus cornuta*) and green alder (*Alnus viridis*) shrub layer dominates the understory with moist woodland herbaceous species such as woodland strawberry (*Fragaria vesca*), wild sarsaparilla (*Aralia nudicaulis*) and black snakeroot (*Sanicula marilandica*) common throughout. Several invasive plant species were found along the roadside, including Canada thistle, common dandelion and bird's foot trefoil (*Lotus corniculatus*). As the proposed ASR continue north along the moraine ridge, it crossed a creek with associated marsh and fen habitat dominated by graminoids and aquatic plant species (Photo 3).

Dry sandier soils become more prevalent further north as the aspen dominant mixedwood forest transitions to a jackpine dominating coniferous forest with some aspen remnants (Plot 5) (Photo 4). This upland habitat is characterized by dry, open woodlands with a sparse low shrub layer dominated by creeping juniper (*Juniperus horizontalis*) and bearberry (*Arctostaphylos uva-ursi*). Invasive species such as absinthe, field chickweed (*Cerastium arvense*), and bird's foot trefoil were found within disturbed areas along the roadside.

Table 3: Summary of Habitats Encountered Within the PF During the Vegetation Surveys

Plot	LCC Data	Habitat Type (FEC V-Type)	Wetland Classification (DU system)
Plot 1	Broadleaf - Open (222)/Wetland Herb (83)	Tame Pasture/Aspen Hardwood (V5)	N/A
Plot 2	Broadleaf - Open (222)	Tame Pasture/Aspen Hardwood (V5)	N/A
Plot 3	Wetland Herb (83)	Wetland	Graminoid Poor Fen
Plot 4	Wetland Herb (83)/Coniferous Dense (211)	Trembling Aspen Mixedwood/ Tall Shrub (V8)	N/A
Plot 5	Wetland Herb (83)/Wetland Shrub (82)	Jack Pine Mixedwood/Shrub Rich (V15)	N/A
Plot 6	Wetland Herb (83)/Wetland Shrub (82)	Jack Pine Mixedwood/Shrub Rich (V15)	N/A
Plot 7	Wetland Shrub (82)	Jack Pine - Black Spruce/Feathermoss (V28)	Shrubby Bog
Plot 8	Wetland Shrub (82)/Coniferous Dense (211)	Jack Pine/ Feathermoss (V25)	N/A
Plot 9	Wetland Shrub (82)	Jack Pine Mixedwood/Feathermoss (V16)	N/A
Plot 10	Wetland Shrub (82)/Broadleaf - Dense (221)	Trembling Aspen Mixedwood/ Low Shrub (V9)	Shrub Swamp
Plot 11	Wetland Shrub (82)/Coniferous Dense (211)	Wetland	Shrubby Poor Fen
Plot 12	Wetland Shrub (82)/Coniferous Dense (211)	Black Spruce / Labrador Tea / Feather Moss (Sphagnum) (V30)	Shrubby Bog/Treed Bog
Plot 13	Wetland Herb (83)	Black Spruce / Labrador Tea / Feather Moss (Sphagnum) (V30)	Shrubby Bog
Plot 14	Wetland Herb (83)/Wetland Shrub (82)	Trembling Aspen Mixedwood/ Low Shrub (V9)	N/A
Plot 15	Wetland Herb (83)	Wetland	Graminoid Poor Fen
Plot 16	Wetland Shrub (82)	Trembling Aspen Mixedwood/ Low Shrub (V9)	Shrubby Bog/Treed Bog
Plot 17	Wetland Shrub (82)	Trembling Aspen Mixedwood/ Tall Shrub (V8)	N/A
Plot 18	Coniferous Dense (211)	Trembling Aspen Mixedwood/ Tall Shrub (V8)/Wetland	N/A

As the ASR continues north, it follows a sandy upland ridge surrounded by large fen and bog wetlands. Jackpine continues to dominate the surrounding coniferous forest (Plot 6 to 10) (Photo 5). Seneca root was quite prevalent in this area, occurring frequently along the roadside and within dry open areas along the road. The ASR in this area also starts encountering some shrubby and treed bog habitats (Plot 7) (Photo 6).

Where the forestry road ends and the winter road begins, the upland dry habitat gives way to low-lying wetland habitats characterized by a large expansive graminoid poor fen, with scattered 'islands' of black spruce and tamarack dominant sphagnum bogs (Photo 7). The large interconnection network of fen habitats consisted mainly of floating sedge and buckbean mats with areas of common reed grass, bog birch, willow, coltsfoots (*Petasites* spp.) and marsh marigold. (Plot 11 and 15) (Photo 8).

The 'islands' of treed and shrubby sphagnum bog habitats consisted of typical bog vegetation such as Labrador tea, pitcher plant (*Sarracenia purpurea*), bog laurel (*Kalmia polifolia*), bog rosemary, bog cranberry (*Vaccinium oxycoccos*), and three-leaved false Solomon's seal (*Maianthemum trifolium*) (Plot 13) (Photo 9). A community of six dragon's mouth orchids (*Arethusa bulbosa*) was found within a shrubby bog growing in a bed of sphagnum moss.

As the ASR continues towards the LSMOC Reach 3 access point, transitional upland mixedwood forests of tamarack, white spruce, aspen and jackpine are still present along the ASR in between the large areas of fen and bog wetlands. These transitional upland forests contain a mixture of shrub species such as willow, hazel, sweet bayberry (*Myrica gale*) and speckled alder (*Alnus incana*); and herbaceous cover consisting of green bog-orchid (*Platanthera aquilonis*), fringed milkwort (*Polygala paucifolia*), bedstraw (*Galium* spp.) and fringed gentian (*Gentiana crinita*). (Plot 14 and 16).

The LSMOC Reach 1 winter road branches off the main winter access road and heads northwest, passing through large areas of shrubby and graminoid poor fen habitat, before following a mainly dry ridge of mixedwood upland habitat dominated by trembling aspen, balsam poplar and white spruce as it approaches the LSMOC (Photo 10). This mixedwood forest contained a mixture of shrub species such as willow, speckled alder, and low-bush cranberry (*Viburnum edule*); and herbaceous cover consisting of common fireweed (*Chamaenerion angustifolium*), bedstraw (*Galium* spp.) and bunchberry (*Cornus canadensis*) (Plot 17 and 18) (Photo 11).

Photo 1: View of the municipal road looking west at Plot 2 (taken on June 8, 2016)



Photo 2: Northern view of the forestry road passing through Trembling Aspen Mixedwood (V9) forest at Plot 4 (taken on June 8, 2016)



Photo 3: Aerial view of the forestry road passing through flooded marsh land (taken on October 9, 2015)



Photo 4: Aerial view of the forestry road within upland jackpine dominated forest (taken on October 9, 2015)



Photo 5: Northern view of the forestry road passing through upland jackpine dominated forest at Plot 9 (taken on June 9, 2016)



Photo 6: View from the forestry road looking east at a shrubby bog at Plot 7 (taken on June 8, 2016)



Photo 7: View of a graminoid poor fen habitat along the LSMOC Reach 3 winter road (taken on October 9, 2015)



Photo 8: View of the LSMOC Reach 3 winter road passing through a graminoid poor fen habitat at Plot 15 (taken on June 10, 2016)



Photo 9: View of a small shrubby bog located south of the LSMOC Reach 1 winter road at Plot 13 (taken on August 3, 2016)



Photo 10: View of aspen dominant mixedwood habitat along the LSMOC Reach 1 winter road (taken on October 9, 2015)



Photo 11: Southeast view of the LSMOC Reach 1 winter road passing through an aspen dominant mixedwood habitat at Plot 18 (taken on August 3, 2016)



4.1 Plant Species of Conservation Concern

No federally or provincially listed species were observed during the vegetation surveys. One species listed by the MBCDC having conservation concern was identified (Table 4). Dragon’s mouth orchid (*Arethusa bulbosa*) (S2) is considered rare throughout its range or in the province (6 to 20 occurrences) and may be vulnerable to extirpation. A community of six individuals was observed within a small shrubby sphagnum bog surrounded by a large expansive gramanoid fen. The orchids were growing on a raised mound of sphagnum moss surrounded by bog birch, Labrador tea, bog rosemary, bog laurel, and young tamarack (Photo 12).

Table 4: Plant Species of Conservation Concern

Scientific Name	Common Name	Provincial Conservation Status	SARA Status	COSEWIC Status
<i>Arethusa bulbosa</i>	dragon's mouth orchid	S2	n/a	n/a

Photo 12: Dragon's mouth orchid (*Arethusa bulbosa*) observed within shrubby bog habitat at Plot 13 (taken on August 10, 2016)



4.2 Plant Species of Significance to First Nations

Seneca root was found along the municipal road and along the edge of the pasture located within Plot 2. It was also found in abundance at multiple locations along the proposed ASR within the jackpine dominating forests (Plots 6, 7, 9, and 10). The species was mainly found within the dry open areas adjacent to the road.

4.3 Invasive Plant Species

There were 12 species that are invasive to Manitoba that were identified within the LSA during the spring and summer surveys (Table 5). Scentless chamomile, a tier 2 NWA noxious weed and an EDRR category 2 listed species by the ISCM, was identified along the roadside and in the pasture north of the road located within Plot 2. Scentless chamomile is well adapted to wet, moist soils and periodic flooding, as well as drier areas and perennial forage fields. The area of infection is less than five acres and all individuals of this species will need to be destroyed during construction. No Category 1 listed species were identified during the field surveys.

Canada thistle and yellow sweet clover are identified as moderate invasives by Environment Canada (EC 1999) and were found at several locations within the LSA. Other minor invasives plant species and tier 3 noxious weeds such as Kentucky bluegrass, absinthe, and common dandelion were also observed within the LSA. These minor and moderate invasives were found predominantly along the roadside and previously disturbed areas along the ASR. These species vary in aggressiveness and are well adapted to a variety of habitats. They can quickly establish in disturbed areas and propagate by seed, and therefore can be easily spread. Preventing seed production and spreading using an integrated approach of combining herbicide and/or mechanical treatment with competition from desirable native plants is an effective way of controlling these species. Another important method to prevent the spread of invasive species is the use of clean native seeds in seeding rights-of-way (Parks 2010).

Table 5: Summary of Invasive Plant Species Found within the LSA during the Vegetation Surveys

Scientific Name	Common Name	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10	Plot 11	Plot 12	Plot 13	Plot 14	Plot 15	Plot 16	Plot 17	Plot 18
Vascular Plant Species																			
Graminoids																			
<i>Poa pratensis</i>	Kentucky blue grass	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Herbaceous Species																			
<i>Artemisia absinthium</i>	absinthe	-	-	-	-	X	-	-	-	X	-	-	-	-	-	-	-	-	-
<i>Cerastium arvense</i>	field chickweed	-	X	-	-	X	X	-	X	-	-	-	-	-	-	-	-	-	-
<i>Cirsium arvense</i>	Canada thistle	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	X	-	X
<i>Hieracium umbellatum</i>	narrow-leaved hawkweed			-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
<i>Lotus corniculatus</i>	bird's foot trefoil	-	X	-	X	X	X	X	-	X	X	-	-	-	-	-	-	-	-
<i>Melilotus officinalis</i>	yellow sweet clover	X	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
<i>Pastinaca sativa</i>	wild parsnip	X	X	-	-	-	-	X	-	X	X	-	-	-	-	-	-	-	-
<i>Plantago major</i>	common plantain	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ranunculus acris</i>	meadow buttercup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
<i>Taraxacum officinale</i>	common dandelion	X	X	-	X	-	X	-	-	-	-	-	-	-	X	-	-	-	-
<i>Tripleurospermum perforata</i>	scentless chamomile	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

5.0 SUMMARY

This study was conducted to determine the existing vegetation and delineate the vegetation habitat types within the proposed ASR project area. The 5 km RSA for the proposed ASR lies within a large depression area that is widely covered by an expansive graminoid dominant rich fen characterized by floating sedge and buckbean mats with patches of common reed grass, bog birch and willows. Scattered throughout the large fen network are 'islands' of treed and shrubby sphagnum bogs dominated by Labrador tea, pitcher plant, bog laurel, bog cranberry, bog cranberry, and three-leaved false Solomon's seal. Some scattered upland mixedwood and coniferous forests are present on sandy moraine ridges. The majority of the existing access road follows the upland moraine ridge, which ranges from moist aspen and white spruce dominating mixedwood forests with a heavy willow and hazel shrub layer, to dry, open jackpine stands with creeping juniper and herbaceous dominant understory.

An additional focus of the study was the identification of any species at risk or species of conservation concern, species important to First Nations, and/or invasive species within the study area. One species of conservation concern listed by the MBCDC was identified during the vegetation surveys, dragon's mouth orchid (S2). This species was found within a shrubby sphagnum bog, which is a common habitat type throughout the study area. Although not encountered during the 2016 field surveys, there is a potential to encounter green adder's mouth orchid, ram's-head lady's-slipper, and/or other species of conservation concern that have similar habitat preferences. Seneca root was the only species of significance to First Nations found during the field surveys. This species was mainly found along the proposed ASR within dry upland jackpine dominating forest and along the edge of open pastures. Twelve invasive species were identified during the field surveys. One species identified as a NWA tier 2 noxious weed and a category 2 species by the ISCM, scentless chamomile, was observed in a fairly isolated location along the municipal road and within the tame pasture to the north of the road.

Information collected during this baseline assessment will be used for future environmental assessment initiatives and to help establish subsequent mitigation strategies.

Respectfully submitted,

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Appendix A
Potential Plant Species of Conservation
Concern for the Interlake Plain Ecoregion

Appendix A: Potential Plant Species of Conservation Concern for the Interlake Plain Ecoregion

Scientific Name	Common Name	Provincial Conservation Status
<i>Achnatherum richardsonii</i>	Richardson Needle Grass	S1S2
<i>Agalinis aspera</i>	Rough Purple False-foxglove	S1S2
<i>Agalinis tenuifolia</i>	Narrow-leaved Gerardia	S2S3
<i>Agrimonia gryposepala</i>	Common Agrimony	S1S2
<i>Alisma gramineum</i>	Narrow-leaved Water-plantain	S1
<i>Amorpha fruticosa</i>	False Indigo	S1S2
<i>Arabis lyrata</i>	Lyre-leaved Rock Cress	S2?
<i>Aralia racemosa</i>	Spikenard	S2
<i>Arethusa bulbosa</i>	Dragon's Mouth Orchid	S2
<i>Asarum canadense</i>	Wild Ginger	S3S4
<i>Asclepias verticillata</i>	Whorled Milkweed	S3
<i>Astragalus australis</i>	Indian milkvetch	S1?
<i>Astragalus neglectus</i>	Milkvetch	S1
<i>Astragalus pectinatus</i>	Narrow-leaved Milkvetch	S2S3
<i>Boltonia asteroides var. recognita</i>	White Boltonia	S2S3
<i>Botrychium campestre</i>	Prairie Moonwort	S1
<i>Botrychium lunaria</i>	Common Moonwort	S3S4
<i>Botrychium matricariifolium</i>	Daisy-leaf Moonwort	S1?
<i>Botrychium multifidum</i>	Leathery Grape-fern	S3
<i>Bouteloua curtipendula</i>	Side-oats Grama	S2S3
<i>Bromus porteri</i>	Porter's Chess	S3?
<i>Bromus pubescens</i>	Canada Brome Grass	SNA
<i>Calopogon tuberosus</i>	Swamp-pink	S2
<i>Canadanthus modestus</i>	Large Northern Aster	S2
<i>Cardamine bulbosa</i>	Spring Cress	SH
<i>Carex conoidea</i>	Field Sedge	S1
<i>Carex douglasii</i>	Douglas Sedge	S3?
<i>Carex flava</i>	Yellow Sedge	S2S3
<i>Carex hystericina</i>	Porcupine Sedge	S3?
<i>Carex livida</i>	Livid Sedge	S3
<i>Carex parryana</i>	Parry's Sedge	S3?
<i>Carex pedunculata</i>	Stalked Sedge	S3?
<i>Carex sterilis</i>	Dioecious Sedge	S2
<i>Carex supina var. spaniocarpa</i>	Weak Sedge	S2?
<i>Carex tetanica</i>	Rigid Sedge	S2
<i>Carex vulpinoidea</i>	Fox Sedge	S3?
<i>Caulophyllum thalictroides</i>	Papoose-root	S2
<i>Ceanothus herbaceus</i>	New Jersey Tea	S3
<i>Chrysosplenium iowense</i>	Iowa Golden-saxifrage	S1?
<i>Cladium mariscoides</i>	Twig Rush	S2

Appendix A: Potential Plant Species of Conservation Concern for the Interlake Plain Ecoregion

Scientific Name	Common Name	Provincial Conservation Status
<i>Clematis ligusticifolia</i>	Western Virgin's-bower	S1
<i>Clematis virginiana</i>	Virgin's-bower	S2
<i>Corallorhiza striata</i>	Striped Coralroot	S3S4
<i>Corispermum villosum</i>	Hairy Bugseed	S1S2
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S3
<i>Cyperus erythrorhizos</i>	Red-root Flatsedge	S1
<i>Cyperus houghtonii</i>	Houghton's Umbrella-sedge	S2
<i>Cypripedium arietinum</i>	Ram's Head Lady's-slipper	S2S3
<i>Cypripedium candidum</i>	Small White Lady's-slipper	S2
<i>Desmodium canadense</i>	Beggar's-lice	S2
<i>Drosera anglica</i>	Oblong-leaved Sundew	S3
<i>Festuca hallii</i>	Plains Rough Fescue	S3
<i>Fraxinus nigra</i>	Black Ash	S3
<i>Gentiana rubricaulis</i>	Closed Gentian	S2S3
<i>Geranium maculatum</i>	Wild Crane's-bill	S1
<i>Helianthus pauciflorus ssp. pauciflorus</i>	Stiff Sunflower	SU
<i>Hudsonia tomentosa</i>	False Heather	S3
<i>Hypoxis hirsuta</i>	Yellow Stargrass	S4
<i>Krigia biflora</i>	Cynthia	S2
<i>Lactuca floridana</i>	Woodland Lettuce	SH
<i>Lechea intermedia</i>	Pinweed	S1
<i>Leucophysalis grandiflora</i>	Large White-flowered Ground-cherry	S3
<i>Linum sulcatum</i>	Grooved Yellow Flax	S3
<i>Liparis loeselii</i>	Yellow Twayblade	S3S4
<i>Lomatium foeniculaceum</i>	Hairy-fruited Parsley	S3
<i>Lomatium macrocarpum</i>	Long-fruited Parsley	S3
<i>Lysimachia quadriflora</i>	Whorled Loosestrife	S2
<i>Malaxis monophyllos</i>	White Adder's-mouth	S2?
<i>Malaxis paludosa</i>	Bog Adder's-mouth	S1
<i>Malaxis unifolia</i>	Green Adder's-mouth	S2?
<i>Muhlenbergia andina</i>	Foxtail Muhly	S1
<i>Nassella viridula</i>	Green Needle Grass	S3
<i>Oenothera perennis</i>	Sundrops	S1S2
<i>Onoclea sensibilis</i>	Sensitive Fern	S3S4
<i>Ophioglossum pusillum</i>	Northern Adder's-tongue	S1
<i>Orobanche ludoviciana</i>	Louisiana Broom-rape	S2
<i>Osmunda claytoniana</i>	Interrupted Fern	S3
<i>Oxytropis lambertii</i>	Purple Locoweed	S3S4
<i>Parnassia palustris var. parviflora</i>	Small Grass-of-parnassus	S1

Appendix A: Potential Plant Species of Conservation Concern for the Interlake Plain Ecoregion

Scientific Name	Common Name	Provincial Conservation Status
<i>Pellaea gastonyi</i>	Gastony's Cliffbrake	S1
<i>Pellaea glabella ssp. occidentalis</i>	Cliff-brake	S2
<i>Penthorum sedoides</i>	Ditch-stonecrop	S1S2
<i>Physostegia virginiana</i>	False Dragonhead	SU
<i>Platanthera hookeri</i>	Hooker's Orchid	S2
<i>Platanthera orbiculata</i>	Round-leaved Bog Orchid	S3
<i>Platanthera praecleara</i>	Western Prairie Fringed Orchid	S1
<i>Polygala verticillata</i>	Whorled Milkwort	S2
<i>Pyrola americana</i>	Round-leaved Pyrola	S2
<i>Ranunculus hispidus var. caricetorum</i>	Bristly Buttercup	S2
<i>Rhynchospora alba</i>	White Beakrush	S3?
<i>Rhynchospora capillacea</i>	Horned Beakrush	S2
<i>Selaginella densa</i>	Prairie Spike-moss	S3
<i>Selaginella selaginoides</i>	Northern Spike-moss	S4
<i>Sisyrinchium campestre</i>	White-eyed Grass	SU
<i>Solidago juncea</i>	Sharp-toothed Goldenrod	S2
<i>Solidago riddellii</i>	Riddell's Goldenrod	S2
<i>Spiranthes magnicamporum</i>	Great Plains Ladies'-tresses	S1S2
<i>Symphyotrichum ericoides var. ericoides</i>	White heath aster	S3?
<i>Symphyotrichum sericeum</i>	Western Silvery Aster	S2S3
<i>Taxus canadensis</i>	Canada Yew	S3
<i>Teucrium canadense</i>	American Germander	S3S4
<i>Thalictrum revolutum</i>	Waxleaf Meadow-rue	S1
<i>Utricularia cornuta</i>	Horned Bladderwort	S3
<i>Utricularia minor</i>	Lesser Bladderwort	S3
<i>Vaccinium caespitosum</i>	Dwarf Bilberry	S3
<i>Veronicastrum virginicum</i>	Culver's-root	S1
<i>Viola conspersa</i>	Dog Violet	S3?
<i>Vitis riparia</i>	Riverbank Grape	S3S4

Source: MBCDC 2013

**Appendix B: Potential Plant Species of Conservation Concern for the Mid-Boreal Lowland
Ecoregion**

Appendix B
Potential Plant Species of Conservation
Concern for the Mid-Boreal Lowland
Ecoregion

**Appendix B: Potential Plant Species of Conservation Concern for the Mid-Boreal Lowland
Ecoregion**

Scientific Name	Common Name	Provincial Conservation Status
<i>Arethusa bulbosa</i>	Arethusa	S2
<i>Botrychium multifidum</i>	Leathery Grape-fern	S3
<i>Calopogon tuberosus</i>	Swamp-pink	S2
<i>Carex communis</i>	Fibrous-rooted Sedge	SNA
<i>Carex douglasii</i>	Douglas Sedge	S3?
<i>Carex flava</i>	Yellow Sedge	S2S3
<i>Carex garberi</i>	Elk Sedge	S1?
<i>Carex gracillima</i>	Slender Sedge	S3
<i>Carex hystericina</i>	Porcupine Sedge	S3?
<i>Carex pedunculata</i>	Stalked Sedge	S3?
<i>Carex projecta</i>	Necklace Sedge	S2?
<i>Carex vesicaria</i>	Blister Sedge	SU
<i>Carex vulpinoidea</i>	Fox Sedge	S3?
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	S3
<i>Cyperus houghtonii</i>	Houghton's Umbrella-sedge	S2
<i>Cypripedium arietinum</i>	Ram's Head Lady's-slipper	S2S3
<i>Drosera anglica</i>	Oblong-leaved Sundew	S3
<i>Drosera linearis</i>	Slender-leaved Sundew	S2
<i>Dulichium arundinaceum</i>	Three-way Sedge	S2
<i>Eleocharis engelmannii</i>	Engelmann's Spike-rush	S1
<i>Eriophorum callitrix</i>	Beautiful Cotton-grass	S2
<i>Galium aparine</i>	Cleavers	SU
<i>Goodyera tessellata</i>	Tesselated Rattlesnake Plantain	S2
<i>Gymnocarpium jessoense</i>	Northern Oak Fern	S3S4
<i>Gymnocarpium robertianum</i>	Limestone Oak Fern	S1
<i>Heteranthera dubia</i>	Water Star-grass	S2
<i>Hudsonia tomentosa</i>	False Heather	S3
<i>Leucophysalis grandiflora</i>	Large White-flowered Ground-cherry	S3
<i>Liparis loeselii</i>	Yellow Twayblade	S3S4
<i>Listera auriculata</i>	Auricled Twayblade	S1
<i>Malaxis monophyllos</i>	White Adder's-mouth	S2?
<i>Malaxis unifolia</i>	Green Adder's-mouth	S2?
<i>Nymphaea odorata</i>	Fragrant Water-lily	S2
<i>Onoclea sensibilis</i>	Sensitive Fern	S3S4
<i>Osmunda claytoniana</i>	Interrupted Fern	S3
<i>Parietaria pensylvanica</i>	American Pellitory	S4
<i>Pellaea gastonyi</i>	Gastony's Cliffbrake	S1
<i>Pellaea glabella</i> ssp. <i>occidentalis</i>	Cliff-brake	S2
<i>Pinus resinosa</i>	Red Pine	S2S3
<i>Plantago maritima</i>	Seaside Plantain	S2
<i>Platanthera hookeri</i>	Hooker's Orchid	S2

**Appendix B: Potential Plant Species of Conservation Concern for the Mid-Boreal Lowland
Ecoregion**

Scientific Name	Common Name	Provincial Conservation Status
<i>Platanthera lacera</i>	Fringed Orchid	S2
<i>Platanthera orbiculata</i>	Round-leaved Bog Orchid	S3
<i>Pogonia ophioglossoides</i>	Rose Pogonia	S1
<i>Potamogeton strictifolius</i>	Straightleaf Pondweed	S3
<i>Pyrola americana</i>	Round-leaved Pyrola	S2
<i>Rhynchospora alba</i>	White Beakrush	S3?
<i>Rhynchospora capillacea</i>	Horned Beakrush	S2
<i>Solidago juncea</i>	Sharp-toothed Goldenrod	S2
<i>Taxus canadensis</i>	Canada Yew	S3
<i>Thalictrum sparsiflorum</i>	Few-flowered Meadow-rue	S2S3
<i>Vaccinium caespitosum</i>	Dwarf Bilberry	S3
<i>Viola conspersa</i>	Dog Violet	S3?
<i>Viola selkirkii</i>	Long-spurred Violet	S2
<i>Woodsia glabella</i>	Smooth Woodsia	S2

Source: MBCDC 2013

Appendix C
List of Plant Species Observed During the 2016
Spring and Summer Field Surveys

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

Table i: Species List by Conservation Status

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
Non Vascular Species					
<i>Brachythecium spp.</i>	feather-moss	-	-	-	-
<i>Hylocomium splendens</i>	stair-step moss	S5	-	-	-
<i>Sphagnum spp.</i>	sphagnum moss	S5	-	-	-
Vascular Plant Species					
Ferns and fern allies					
<i>Athyrium spp.</i>	fern spp	-	-	-	-
<i>Equisetum arvense</i>	common horsetail	S5	-	-	-
<i>Equisetum fluviatile</i>	swamp horsetail	S5	-	-	-
<i>Equisetum hyemale</i>	scouring rush	S5	-	-	-
Graminoids					
<i>Acorus calamus</i>	sweet flag	S4	-	-	-
<i>Agrostis scabr</i>	rough bentgrass	S5	-	-	-
<i>Andropogon gerardii</i>	big bluestem	S5	-	-	-
<i>Bromus inermis</i>	fringed brome	S5	-	-	-
<i>Carex lacustris</i>	lake sedge	S5	-	-	-
<i>Carex lenticularis</i>	lakeshore sedge	S5	-	-	-
<i>Carex rostrata</i>	beaked sedge	S5	-	-	-
<i>Carex spp.</i>	sedge spp.	S4	-	-	-
<i>Carex viridula</i>	green sedge	-	-	-	-
<i>Eleocharis palustris</i>	common spike rush	S5	-	-	-
<i>Elymus trachycaulus</i>	slender wild rye	S5	-	-	-
<i>Eriophorum angustifolium</i>	tall cotton-grass	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Glyceria striata</i>	fowl mannagrass	S5	-	-	-
<i>Juncus balticus</i>	wirerush	S5	-	-	-
<i>Oryzopsis asperifolia</i>	rough-leaved rice grass	S5	-	-	-
<i>Phleum pratense</i>	timothy	S5	-	-	-
<i>Phragmites australis</i>	common reed grass	S5	-	-	-
<i>Poa palustris</i>	fowl blue grass	S5	-	-	-
<i>Poa pratensis</i>	Kentucky blue grass	S5	-	-	-
<i>Schoenoplectus acutus</i>	hardstem bulrush	S5		-	-
<i>Scirpus cyperinus</i>	woolgrass	S4	-	-	-
<i>Scirpus hudsonianus</i>	Hudson Bay bulrush	S5	-	-	-
Woody Species - Trees					
<i>Betula papyrifera</i>	white birch	S5	-	-	-
<i>Larix laricina</i>	tamarack	S5	-	-	-
<i>Picea glauca</i>	white spruce	S5	-	-	-
<i>Picea mariana</i>	black spruce	S5	-	-	-
<i>Pinus banksiana</i>	jackpine	S5		-	-
<i>Populus balsamifera</i>	balsam poplar	S5	-	-	-
<i>Populus tremuloides</i>	trembling aspen	S5	-	-	-
Woody Species - Shrubs					
<i>Amelanchier alnifolia</i>	saskatoon serviceberry	S5	-	-	-
<i>Alnus incana</i>	speckled alder	S5	-	-	-
<i>Alnus viridis</i>	green alder	S5	-	-	-
<i>Arctostaphylos uva-ursi</i>	bearberry	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Betula glandulosa</i>	bog birch	S5	-	-	-
<i>Betula occidentalis</i>	water birch	S5	-	-	-
<i>Chamaedaphne calyculata</i>	leatherleaf	S5	-	-	-
<i>Cornus sericea</i>	red osier dogwood	S5	-	-	-
<i>Corylus cornuta</i>	beaked hazel	S5	-	-	-
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	S5	-	-	-
<i>Elaeagnus commutata</i>	wolf willow	S5	-	-	-
<i>Juniperus horizontalis</i>	creeping juniper	S5	-	-	-
<i>Kalmia polifolia</i>	bog laurel	S5	-	-	-
<i>Lonicera dioica</i>	twining honeysuckle	S5	-	-	-
<i>Lonicera involucrata</i>	bracted honeysuckle	S5	-	-	-
<i>Myrica gale</i>	sweet bayberry	S5	-	-	-
<i>Rhamnus alnifolia</i>	alder leaved buckthorn	S5	-	-	-
<i>Rhododendron groenlandicum</i>	Labrador tea	S5	-	-	-
<i>Rubus idaeus</i>	raspberry	S5	-	-	-
<i>Ribes lacustre</i>	black gooseberry	S5	-	-	-
<i>Ribes triste</i>	wild red currant	S5	-	-	-
<i>Rosa acicularis</i>	prickly rose	S5	-	-	-
<i>Salix exigua</i>	sandbar willow	S5	-	-	-
<i>Salix lutea</i>	yellow willow	S5	-	-	-
<i>Salix pedicellaris</i>	bog willow	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Salix spp.</i>	willow	S5	-	-	-
<i>Symphoricarpos albus</i>	common snowberry	S5	-	-	-
<i>Vaccinium oxycoccos</i>	small bog cranberry	S5	-	-	-
<i>Viburnum rafinesqueanum</i>	downy arrowwood	S5	-	-	-
<i>Viburnum edule</i>	low-bush cranberry	S5	-	-	-
Herbaceous Species					
<i>Actaea rubra</i>	red baneberry	S5	-	-	-
<i>Andromeda polifolia</i>	bog rosemary	S5	-	-	-
<i>Alisma plantago-aquatica</i>	water plantain	S5	-	-	-
<i>Allium schoenoprasum</i>	wild chive	S5	-	-	-
<i>Anemone canadensis</i>	Canada anemone	S5	-	-	-
<i>Anemone multifida</i>	cut-leaved anemone	S5	-	-	-
<i>Anemone parviflora</i>	small wood anemone	S5	-	-	-
<i>Antennaria neglecta</i>	field pussytoe	S5	-	-	-
<i>Aralia nudicaulis</i>	wild sarsaparilla	S5	-	-	-
<i>Arethusa bulbosa</i>	dragon's mouth orchid	S2	-	-	-
<i>Argentina anserina</i>	silverweed	S5	-	-	-
<i>Artemisia absinthium</i>	absinthe	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Symphyotrichum laeve</i>	smooth blue aster	S5	-	-	-
<i>Caltha palustris</i>	marsh marigold	S5	-	-	-
<i>Cerastium arvense</i>	field chickweed	S5	-	-	-
<i>Chamerion angustifolium</i>	common fireweed	S5	-	-	-
<i>Cicuta maculata</i>	water hemlock	S5	-	-	-
<i>Cirsium arvense</i>	Canada thistle	S5	-	-	-
<i>Comandra umbellata</i>	bastard toadflax	S5	-	-	-
<i>Comarum palustre</i>	marsh cinquefoil	S5	-	-	-
<i>Cornus canadensis</i>	bunchberry	S5	-	-	-
<i>Cypripedium parviflorum</i>	yellow lady slipper	S5	-	-	-
<i>Erigeron philadelphicus</i>	philadelphia fleabane	S5	-	-	-
<i>Fragaria vesca</i>	woodland strawberry	S5	-	-	-
<i>Fragaria virginiana</i>	common strawberry	S5	-	-	-
<i>Galium boreale</i>	northern bedstew	S5	-	-	-
<i>Galium trifidum</i>	small bedstraw	S5	-	-	-
<i>Galium triflorum</i>	sweet scented bedstraw	S5	-	-	-
<i>Gentiana crinita</i>	fringed gentian	S5	-	-	-
<i>Geocaulon lividum</i>	false toadflax	S5	-	-	-
<i>Geum aleppicum</i>	yellow avens	S5	-	-	-
<i>Halenia deflexa</i>	spurred gentian	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Hieracium umbellatum</i>	narrow-leaved hawkweed	S5	-	-	-
<i>Iris versicolor</i>	blue flag iris	S5	-	-	-
<i>Lathyrus ochroleucus</i>	creamy peavine	S5	-	-	-
<i>Lotus corniculatus</i>	bird's foot trefoil	S5	-	-	-
<i>Lysimachia thysiflora</i>	tufted loosestrife	S5	-	-	-
<i>Maianthemum canadense</i>	wild lily-of-the-valley	S5	-	-	-
<i>Maianthemum stellatum</i>	star flowered false Solomon's seal	S5	-	-	-
<i>Maianthemum trifolium</i>	three-leaved false Solomon's seal	S5	-	-	-
<i>Melilotus officinalis</i>	yellow sweet clover	S5	-	-	-
<i>Mentha arvensis</i>	wild mint	S5	-	-	-
<i>Menyanthes trifoliata</i>	buckbean	S5	-	-	-
<i>Mitella nuda</i>	common mitrewort	S5	-	-	-
<i>Oxytropis lambertii</i>	purple locoweed	S5	-	-	-
<i>Pastinaca sativa</i>	wild parsnip	S5	-	-	-
<i>Petasites frigidus</i> var. <i>palmatus</i>	palmate-leaved coltsfoot	S5	-	-	-
<i>Petasites frigidus</i> var. <i>sagittatus</i>	arrow-leaved coltsfoot	S5	-	-	-
<i>Physostegia virginiana</i>	false dragonhead	S5	-	-	-
<i>Plantago major</i>	common plantain	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Platanthera aquilonis</i>	northern green bog-orchid	S5	-	-	-
<i>Polygala paucifolia</i>	fringed milkwort	S5	-	-	-
<i>Polygala senega</i>	seneca root	S5	-	-	-
<i>Primula incana</i>	mealy primrose	S5	-	-	-
<i>Ranunculus acris</i>	meadow buttercup	S5	-	-	-
<i>Rubus acaulis</i>	dwarf raspberry	S5	-	-	-
<i>Rubus chamaemorus</i>	cloudberry	S5	-	-	-
<i>Rubus pubescens</i>	dew berry	S5	-	-	-
<i>Sanicula marilandica</i>	black snakeroot	S5	-	-	-
<i>Sarracenia purpurea</i>	pitcher plant	S5	-	-	-
<i>Sisyrinchium montanum</i>	common blue-eyed grass	S5	-	-	-
<i>Sium suave</i>	water parsnip	S5	-	-	-
<i>Solidago canadensis</i>	Canada goldenrod	S5	-	-	-
<i>Solidago graminifolia</i>	flat top goldenrod	S5	-	-	-
<i>Stellaria calycantha</i>	northern stitchwort	S5	-	-	-
<i>Taraxacum officinale</i>	common dandelion	S5	-	-	-
<i>Thalictrum dasycarpum</i>	tall meadow rue	S5	-	-	-
<i>Thalictrum venulosum</i>	veiny meadow rue	S5	-	-	-
<i>Trientalis borealis</i>	northern star flower	S5	-	-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

<i>Scientific Name</i>	Common Name	Provincial Conservation Status	SARA	COSEWIC	MESEA
<i>Tripleurospermum perforata</i>	scentless chamomile	S5	-	-	-
<i>Typha latifolia</i>	common cattail	S5	-	-	-
<i>Vicia americana</i>	American vetch	S5	-	-	-
<i>Viola adunca</i>	early blue violet	S5		-	-
<i>Viola palustris</i>	marsh violet	S5		-	-
<i>Viola pubescens</i>	yellow violet	S5		-	-
<i>Viola renifolia</i>	kidney violet	S5		-	-

Appendix C: List of Plant Species Observed During the 2016 Spring and Summer Field Surveys

Table ii: List of Plant Species Observed by Survey Plot

Scientific Name	Common Name	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Plot 7	Plot 8	Plot 9	Plot 10	Plot 11	Plot 12	Plot 13	Plot 14	Plot 15	Plot 16	Plot 17	Plot 18
Non Vascular Species																			
<i>Brachythecium</i> spp.	feather-moss	X	-	-	-	-	-	-	X	X	-	-	-	-	X	-	X		-
<i>Hylocomium splendens</i>	stair-step moss	-	-	-	-	-	-	X	-	X	-	-	-	-	X	-	X		-
<i>Sphagnum</i> spp.	sphagnum moss	-	-	-	-	-	-	X	-	-	-	X	X	X		X	-	-	-
Vascular Plant Species																			
Ferns and fern allies																			
<i>Athyrium</i> spp.	fern spp	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X
<i>Equisetum arvense</i>	common horsetail	X	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	X
<i>Equisetum fluviatile</i>	swamp horsetail	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	X	-	X
<i>Equisetum hyemale</i>	scouring rush	-	-	X	X	X	X	-	-	-	X	X	-	-	X	-	-	-	-
Graminoids																			
<i>Acorus calamus</i>	sweet flag	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
<i>Agrostis scabr</i>	rough bentgrass	X	X		-	X	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Andropogon gerardii</i>	big bluestem	X	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
<i>Bromus inermis</i>	fringed brome	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carex lacustris</i>	lake sedge	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	-	
<i>Carex lenticularis</i>	lakeshore sedge	X	-	X	-	-	-	X	-	-	X	X	X	X	-	-	-	-	X
<i>Carex rostrata</i>	beaked sedge	-	-	X	-	-	-	X	-	-	-	-	X	X	-	X	-	-	-
<i>Carex</i> spp.	sedge spp.	X	X	X	-	-	X	X	X	-	X	X	X	X	X	X	X	X	X
<i>Carex viridula</i>	green sedge	-	-	X	-	-	-	X	X	-	-	-	-	-	-	X	-	-	-
<i>Eleocharis palustris</i>	common spike rush	-	-	X	-	-	-	X	X	-	-	-	-	-	-	X	-	-	-
<i>Elymus trachycaulus</i>	slender wild rye	X	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eriophorum angustifolium</i>	tall cotton-grass	-	-	X	-	-	-	X	-	-	X	X	X		-	-	-	-	-
<i>Glyceria striata</i>	fowl mannagrass	-	-	X	-	-	-	X	-	-	-	-	-	-	-	X	-	X	X
<i>Juncus balticus</i>	wirerush	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oryzopsis asperifolia</i>	rough-leaved rice grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-	-

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<i>Phleum pratense</i>	timothy	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phragmites australis</i>	common reed grass	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Poa palustris</i>	fowl blue grass	X	-	-	X	X	-	-	-	-	X	-	-	-	-	-	-	-	-
<i>Poa pratenses</i>	Kentucky blue grass	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Schoenoplectus acutus</i>	hardstem bulrush	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scirpus cyperinus</i>	woolgrass	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
<i>Scirpus hudsonianus</i>	Hudson Bay bulrush	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Woody Species - Trees																			
<i>Betula papyrifera</i>	white birch	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	X	-
<i>Larix laricina</i>	tamarack	X	-	X	-	-	X	X	-	X	-	X	X	X	X	X	-	X	-
<i>Picea glauca</i>	white spruce	-	-	-	X	-	X	-	-	X	-	-	-	-	X	-	-	X	X
<i>Picea mariana</i>	black spruce	-	-	-	-	-	-	X	-	-	-	X	X	X	-	-	X	-	-
<i>Pinus banksiana</i>	jackpine	-	-	-	-	X	X	X	X	X	X	-	-	-	-	-	-	-	-
<i>Populus balsamifera</i>	balsam poplar	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X
<i>Populus tremuloides</i>	trembling aspen	X	X	-	-	X	X	-	-	X	X	-	-	-	X	-	X	X	X
Woody Species - Shrubs																			
<i>Amelanchier alnifolia</i>	saskatoon serviceberry	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
<i>Alnus incana</i>	speckled alder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-
<i>Alnus viridis</i>	green alder	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	-	X	-
<i>Arctostaphylos uva-ursi</i>	bearberry	-	X	-	-	X	X	X	X	X	X	-	-	-	X	-	X	-	-
<i>Betula glandulosa</i>	bog birch	X	X	X	-	-	-	X	X	-	-	X	-	-	-	X	-	X	-
<i>Betula occidentalis</i>	water birch	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-
<i>Chamaedaphne calyculata</i>	leatherleaf	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-
<i>Cornus sericea</i>	red osier dogwood	X	-	X	X	-	X	X	-	X	-	-	-	-	X	-	-	-	X
<i>Corylus cornuta</i>	beaked hazel	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	X	-
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	X	X	-	-	X	X	X	X	-	X	X	X	X	X	-	X	-	-
<i>Elaeagnus commutata</i>	wolf willow	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Juniperus horizontalis</i>	creeping juniper	-	-	-	-	X	X	-	X	X	-	-	-	X	X	-	-	-	-

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<i>Lysimachia thyrsoiflora</i>	tufted loosestrife	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
<i>Maianthemum canadense</i>	wild lily-of-the-valley	X	X	-	-	-	X	X	X	-	-	-	-	-	X	-	-	-	-
<i>Maianthemum stellatum</i>	star flowered false Solomon's seal	X	X	X	-	X	-	-	-	-	-	X	-	-	-	-	-	-	X
<i>Maianthemum trifolium</i>	three-leaved false Solomon's seal	-	-	-	-	-	-	X	-	-	-	X	X	X	X	-	-	-	-
<i>Melilotus officinalis</i>	yellow sweet clover	X	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-
<i>Mentha arvensis</i>	wild mint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X
<i>Menyanthes trifoliata</i>	buckbean	-	-	X	-	-	-	-	-	-	-	X	-	-	-	X	-	-	-
<i>Mitella nuda</i>	common mitrewort	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
<i>Oxytropis lambertii</i>	purple locoweed	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-
<i>Pastinaca sativa</i>	wild parsnip	X	X	-	-	-	-	X	-	X	X	-	-	-	-	-	-	-	-
<i>Petasite palmatus</i>	palmate-leaved coltsfoot	X	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-
<i>Petasite sagittatus</i>	arrow-leaved coltsfoot	-	-	X	-	-	-	-	-	-	-	X	X	X	-	-	-	-	-
<i>Physostegia virginiana</i>	false dragonhead	-	-	X	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-
<i>Plantago major</i>	common plantain	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Platanthera viridis</i>	northern green bog-orchid	-	-	-	-	-	-	X	-	-	-	-	-	X	X	-	X	-	-
<i>Polygala paucifolia</i>	fringed milkwort	X	-	-	-	-	-	-	X	-	-	-	-	-	X	-	X	-	-
<i>Polygala senega</i>	seneca root	-	X	-	-	-	X	X	-	X	X	-	-	-	-	-	-	-	-
<i>Primula incana</i>	mealy primrose	-	-	-	-	X	-	-	-	-	-	-	-	-	X	-	-	-	-
<i>Ranunculus acris</i>	meadow buttercup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
<i>Rubus acaulis</i>	dwarf raspberry	-	X	-	-	-	-	-	-	-	-	-	-	-	X	X	-	X	-
<i>Rubus chamaemorus</i>	cloudberry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-
<i>Rubus pubescens</i>	dew berry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	-
<i>Sanicula marilandica</i>	black snakeroot	X	X	-	X	X	X	X	X	-	-	-	-	-	X	-	-	-	-
<i>Sarracenia purpurea</i>	pitcher plant	-	-	-	-	-	-	-	-	-	-	-	-	X	-	X	-	-	-
<i>Sisyrinchium montanum</i>	common blue-eyed grass	-	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-
<i>Sium suave</i>	water parsnip	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X
<i>Solidago canadensis</i>	Canada goldenrod	-	-	-	-	-	-	X	X	X	-	-	-	-	-	-	X	-	-

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<i>Solidago graminifolia</i>	flat top goldenrod	-	-	-	-	-	-	X	X	X	-	-	-	-	-	-	X	-	
<i>Stellaria calycantha</i>	northern stitchwort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-
<i>Taraxacum officinale</i>	common dandelion	X	X	-	X	-	X	-	-	-	-	-	-	-	X	-	-	-	-
<i>Thalictrum dasycarpum</i>	tall meadow rue	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	X
<i>Thalictrum venulosum</i>	veiny meadow rue	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Trientalis borealis</i>	northern star flower	-	-	-	X	-	X	-	X	-	-	X	X	X	X	-	X	X	-
<i>Tripleurospermum perforata</i>	scentless chamomile	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Typha latifolia</i>	common cattail	X	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	X	X
<i>Vicia americana</i>	american vetch	-	X	-	-	-	X	X	-	X	X	-	-	-	X	-	-	-	-
<i>Viola adunca</i>	early blue violet	-	-	-	-	-	X	-	-	X	-	-	-	-	-	-	-	X	X
<i>Viola palustris</i>	marsh violet	-	-	-	-	-	-	X	-	-	-	-	-	X	-	-	-	-	-
<i>Viola pubescens</i>	yellow violet	-	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
<i>Viola renifolia</i>	kidney violet	X	X	-	X	-	-	-	X	-	-	X	-	-	-	-	-	X	