Smokey Ridge Peat Harvest Proposal

Submitted by:
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Submitted to:
Saskatchewan Ministry of Environment

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Executive Summary

Premier Tech Horticulture (Premier Tech) is proposing to negotiate an agreement with the Ministry of Agriculture to harvest approximately 72 hectares (~ 177 acres) within a single, 162 hectares (~ 400 acres) *Sphagnum* (peat) bog (Smokey Ridge Bog) which is located on land owned by the Ministry of Agriculture within the Rural Municipality of Hudson Bay #394 and truck the harvested peat approximately 175 km to the existing Premier Tech processing facility in Carrot River, Saskatchewan. The peat harvest activity will disturb approximately 72 hectares (or approximately 44 %) of the Smokey Ridge bog and provide approximately 10 years of harvesting activity.

Premier Tech Horticulture Ltd. of Carrot River, Saskatchewan (Premier Tech) will be the project operator. Premier Tech is located at:

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Premier Tech is a company which has operated in Saskatchewan since 1988 and whose major focus is the long-term, systematic and sustainable development of peat harvest opportunities in Saskatchewan in order to supply its peat processing and packaging facility in Carrot River, Saskatchewan. The Premier Tech Saskatchewan operations are well-known throughout the industry for the quality of its peat moss.

Premier Tech’s current harvest operation near Carrot River no longer has enough peat to supply the Carrot River bagging and packaging facility and in 2013 (last year) production at the facility was curtailed by approximately 30%. There are no adjoining undeveloped peat sections available in the Carrot River area.

In order to maintain a supply of peat to the Carrot River Processing and Bagging Plant, Premier needs to harvest in a new area. Premier has invested significant capital in the Carrot River Processing and Bagging Plant and wishes to keep the infrastructure in place at this location and continue to provide employment and benefits to the region. In order to maintain the same quality standard and supply of peat, Premier needs to develop new peat bogs as soon as possible. The Smokey Ridge bog is proposed because it contains a high quality peat moss (i.e. contains hi-fibers and a low pH), it provides an approximate 10 year supply of peat, and there is a low amount of vegetation cover.
According to the *Canadian Peat Harvesting and the Environment (2nd Edition). Issue Paper, No. 2001-1* published by the North American Wetlands Conservation Council Committee, Saskatchewan has approximately 4.9 million hectares of peat land, which covers approximately 7.5% of the province’s land surface. The Smokey Ridge bog is not a “unique” ecosystem as numerous examples of similar bogs can be found throughout the region. This includes two additional separate small bogs, totalling approximately 54 hectares within 2 km of the harvest site.

The Smokey Ridge Bog harvest will create or sustain 4-5 seasonal jobs and 2 permanent positions in the Hudson Bay area. The seasonal positions (approximately April to November) are 3 vacuum harvester operators, 1 front-end loader operator, 1 mechanic and 1 lead hand. The permanent jobs are 1 truck drivers (contractor) and 1 loader operator. In addition, the Smokey Ridge Bog harvest project will be a key component in maintaining jobs at the Premier Tech processing and bagging facility in Carrot River, Saskatchewan.

The proposed harvest project will consist of:

- the upgrade of approximately 1.25 kilometres (0.78 miles) of existing access trail located on an existing easement to a road capable of handling the anticipated traffic;
- the establishment of 2 “borrow areas” (pits) within NW-9-46-1-W2 which will subsequently be allowed to flood and serve as the supply water for fire suppression purposes;
- the establishment of a small staging yard approximately 50 X 100 m in area;
- the construction of a perimeter drainage/diversion ditch approximately 2 meters deep and 1.5 meters wide around the entire area to be harvested in order to allow the water level within the bog to lower;
- The construction of a the drainage discharge within SE-16-46-1-W2 (to slowly lower and maintain water levels within the harvested portion of the bog);
- the construction of internal harvest drainage ditches;
- the sequential, temporary lowering of water levels in the area of the bog to be harvested;
- the natural drying of the exposed peat surface;
- the harvesting of the peat in a series of layers a few centimetres thick;
- the temporary stockpiling of the harvested peat on site; and,
- the trucking of the peat approximately 175 km (109 miles) to the existing Premier Tech processing facility in Carrot River, Saskatchewan (2 to 3 round trips per day during a five day week).

At the conclusion of the harvest activities, disturbed areas will be decommissioned and reclaimed by reconfiguring the drainage ditches (blocking and/or breaching) and allowing the natural recovery of water levels within the bog. Reclamation of the disturbed area will be completed to a post-harvest land use as directed by the Ministry of Agriculture. If the desire is to return the land to its current land use, this will be successfully completed by the re-establishment of the pre-harvest water cover followed by the introduction of donor moss to facilitate the re-establishment of a *Sphagnum* dominated vegetation community within the bog. “Donor sites” of undisturbed natural *Sphagnum* will be maintained within the Smokey Ridge Bog during operations to provide the source material.
for the re-vegetation activities. Premier Tech has demonstrated successful restoration of similar bogs in the region.

In order to harvest the peat, water levels within the harvested area of the Smokey Ridge Bog must be sequentially lowered over the life of the harvest activity to a level that allows for the safe operation of equipment on the peat and to allow the material (peat moss) to dry to optimum moisture content before it is harvested. The lowering of water levels within the bog will take place at a slow rate, not commence until after the 2014 spring freshet and be less than those experienced during a “typical” spring runoff.

Development, operations and closure activities at the Smokey Ridge site may result in minimal effect on the air quality similar to those generated by agricultural (crop farming) production in the area (primarily airborne particulates [dust] from equipment, emissions from mobile equipment, and the generator) in the immediate vicinity of the site. Such emissions will result from activities such as construction and peat harvest; service and general product transport traffic, and potentially wind generated dust from the peat stockpiles.

Premier Tech will manage and store all hazardous substances and waste dangerous goods in accordance with the requirements specified in The Hazardous Substances and Waste Dangerous Goods Regulations.

Because of the nature of the peat harvest activities combined with the other industrial activities in the region, cumulative effects, if present, will likely be limited to atmospheric emission. As the level and duration of such emission from either agriculture and/or forestry harvesting are limited, this combined with the ease of dispersion of such emission, no cumulative effects are anticipated to result from the Smokey Ridge harvest project-specific impacts when they are combined with the impacts from other existing and planned developments in the region which will result in, or contribute to, any regional or cumulative environmental effects.

The Smokey Ridge Bog is located within the southern edge of Critical Boreal Plain Range Habitat (SK2) as identified by the Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada, issued by Environment Canada in 2012. In order to mitigate potential impacts on woodland caribou resulting from proposed harvest activities, throughout the planning of the Smokey Ridge Bog harvest project, Premier Tech has incorporated mitigation techniques to minimize disturbance and/or avoid the destruction of critical habitat as defined in Appendix I of Environmental Canada’s 2012 Recovery Strategy.

Premier Tech has previously harvested peat subject to an Approval to Operate issued pursuant to Section 58 of the Environmental Protection Act, 2002, Section 26 of The Mineral Industry Environmental Protection Regulations, 1996, and section 9 of The Hazardous Substances and Waste Dangerous Goods Regulation. During operations it is anticipated that the Approval to Operate issued by the Ministry of Environment for the Smokey Bog harvest will require the monitoring of flow volumes and water quality prior to its discharge.
A number of separate permits and approvals will be required and secured by Premier Tech prior to and during the development, operation, decommissioning and reclamation of the Smokey Ridge bog harvest project. In addition, Premier Tech will adhere to the new Saskatchewan Environmental Code and associated guidance requirements as they apply to activities.

Premier Tech recognizes the importance of full and open discussion of the issues and options associated with the development of the project and the related concerns that individuals or communities may have in relation to the activities. In light of this, Premier Tech has maintained open and honest communications with local communities and individual stakeholders throughout all stages of the project. As the proponent desires to ensure that their operational practices, both now and into the future, reflect the values, expectations and needs of the community in which it is operating, continued mutually respectful engagement with all stakeholders is important to Premier Tech.

Meetings were held with representatives of the following communities/groups/organizations related to the Smokey Bog project:

- The R. M. of Hudson’s Bay No. 384;
- The Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Hudson Bay Local #114;
- The Red Earth First Nation;
- The Shoal Lake Cree Nation; and,
- The Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Archerwill Local #58

During these engagement sessions, Premier Tech made a Power Point presentation discussed the proposed project, and answered questions. No significant concerns were expressed during these meetings although the representatives of the Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Archerwill Local #58 indicated that additional consideration was required and that further communication would be beneficial as would a visit to an existing harvest operation. Premier Tech is currently in the process of organizing the requested site visit to an existing harvest site.

At the conclusion of each meeting, left hard copies of the presentation and invited the participants to contact Premier Tech in the event that they had any comments, question or concerns about the proposed harvest project.

Premier Tech is committed to continue an appropriate level of engaging the people of the region, representatives of the RM of Hudson Bay #394, people of Métis’ ancestry and leadership of the Red Earth and Shoal Lake First Nations by scheduled meetings in relevant communities. This engagement has and will continue to be undertaken in a manner that ensures that the leadership and community members in the area are fully informed about activities of the company in a manner that maximizes the opportunity for feedback on those activities.
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1 Reason for Submission

1.1 Introduction

Premier Tech Horticulture (Premier Tech) is proposing to negotiate an agreement with the Ministry of Agriculture to harvest approximately 72 hectares (≈ 177 acres) within a single, 162 hectares (≈ 400 acres) Sphagnum (peat) bog (Smokey Ridge Bog) which is located on land owned by the Ministry of Agriculture within the Rural Municipality of Hudson Bay #394 and truck the harvested peat approximately 175 km to the existing Premier Tech processing facility in Carrot River, Saskatchewan. (Figure 1) The harvest activity will disturb approximately 72 hectares of bog and provide approximately 10 years of harvesting activity.

During operations, Premier Tech will maintain “donor sites” of undisturbed natural Sphagnum within the Smokey Ridge Bog. At the conclusion of the harvest activities, the harvest area will be decommissioned. Reclamation of the disturbed area will be completed by the re-establishment of the pre-harvest water cover and introduction of donor moss to facilitate the re-establishment of a Sphagnum dominated vegetation community within the bog. Premier Tech has demonstrated that effective reclamation of this type of bog can be successfully completed in this region of Saskatchewan.

1.2 Purpose of Submission

The purpose of this Smokey Ridge Peat Harvest Proposal is to provide a description of the proposed Smokey Ridge peat harvest activity to apply for the necessary approvals/permits to proceed and to provide a “self-assessment” to demonstrate that, in Premier Tech’s opinion the proposed activity does not “trigger” the criteria specified in section 2(d) of The Environmental Assessment Act, namely:

i. That the Smokey Ridge peat harvest project is not anticipated to have an effect on any unique, rare or endangered feature of the environment [section 2(d) i];

ii. That the Smokey Ridge peat harvest project will not substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose [section 2(d) ii];

iii. That no provincial resource will be used in way that pre-empts its use for other purposes [section 2(d) iii];

iv. That the Smokey Ridge peat harvest project will not cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation [section 2(d) iv];

v. That the Smokey Ridge peat harvest project will not cause widespread public concern because of potential environmental changes [section 2(d) v];

vi. The project will not involve a new technology that is concerned with resource utilization and that may induce significant environmental change [section 2(d) vi]; and,
vii. The Smokey Ridge peat harvest project will not have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment [section 2(d) vii].

This document has also been prepared in support an application for a disposition to permit forest harvesting and activities incidental to forest harvesting within the north half of Section 9 and the south half of Section 16, Township 46, in Range 1, west of the Second Meridian pursuant to The Wildlife Habitat Lands Disposition and Alteration Regulations (further discussed in section 4.3).
Figure 1: Smokey Ridge Bog Location
2 Proposed Peat Harvest

2.1.1 Harvest Site Location

The Smokey Ridge Bog (SM Bog) is located at 695,282 m east and 5,871,684 m north (Universal Transverse Mercator Zone 13 - NAD83 datum) or latitude 52° 57’ 33” north and longitude 102° 05’ 33” west (WGS84 datum), approximately 21 kilometres north east of the Town of Hudson Bay within the R. M. of Hudson Bay No. 394 on land owned by the Saskatchewan Ministry of Agriculture.

The Smokey Ridge Bog is located primarily on:

- SW¼ of Section 16, Township 46, Range 1, West of the second meridian (SW-16-46-1-W2)
- SE¼ of Section 16, Township 46, Range 1, West of the second meridian (SE-16-46-1-W2)
- NE¼ of Section 9, Township 46, Range 1, West of the second meridian (NE-9-46-1-W2)
- NW¼ of Section 9, Township 46, Range 1, West of the second meridian (NW-9-46-1-W2)

and covers a total area of approximately 162 hectares (≈ 400 acres) of this land base (Figure 2). The harvest activity will disturb approximately 72 hectares and provide approximately 10 years of harvesting activity.

2.1.2 Program Operators

Premier Tech Horticulture Ltd. of Carrot River, Saskatchewan (Premier Tech) will be the project operator. Premier Tech is a company which has operated in Saskatchewan since 1988 and whose major focus is the long-term, systematic and sustainable development of peat harvest opportunities in Saskatchewan in order to supply its peat processing and packaging facility in Carrot River, Saskatchewan.

The Premier Tech operation is located at:

Premier Tech Horticulture Ltd.
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2.1.3 Contact Person

The primary contact person with regard to this technical proposal is:

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Phone: 306 768 4401
E-mail: gobc@premiertech.com

Or:

Danny Smith, Agricultural Supervisor
Phone: 306 865-7714
E-mail: smid@premiertech.com
Figure 2: Smokey Ridge Bog Site
2.1.4 **Scope of Project**

Premier Tech is proposing to harvest approximately 72 hectares (≈ 177 acres) within the southern portion of a single 162 hectares (≈ 400 acres) *Sphagnum* (peat) bog (Smokey Ridge Bog) (Figure 3).

The proposed harvest project will consist of:

- the upgrade of approximately 1.25 kilometres (0.78 miles) of existing access trail located on an existing easement to a road capable of handling the anticipated traffic;
- the establishment of 2 “borrow areas” (pits) within NW-9-46-1-W2 which will subsequently be allowed to flood and serve as the supply water for fire suppression purposes;
- the establishment of a small staging yard approximately 50 X 100 m in area;
- the construction of a perimeter drainage/diversion ditch approximately 2 meters deep and 1.5 meters wide around the entire area to be harvested in order to allow the water level within the bog to lower;
- The construction of a the drainage discharge within SE-16-46-1-W2 (to slowly lower and maintain water levels within the harvested portion of the bog);
- the construction of internal harvest drainage ditches;
- the sequential, temporary lowering of water levels in the area of the bog to be harvested;
- the natural drying of the exposed peat surface;
- the harvesting of the peat in a series of layers a few centimetres thick;
- the temporary stockpiling of the harvested peat on site; and,
- the trucking of the peat approximately 175 km (109 miles) to the existing Premier Tech processing facility in Carrot River, Saskatchewan.

At the conclusion of the harvest activities, disturbed areas will be decommissioned and reclaimed by reconfiguring the drainage ditches (blocking and/or breaching) and allowing the natural recovery of water levels within the bog. Reclamation of the disturbed area will be completed to a post-harvest land use as directed by the Ministry of Agriculture. If the desire is to return the land to its current land use, this will be successfully completed by the re-establishment of the pre-harvest water cover followed by the introduction of donor moss to facilitate the re-establishment of a *Sphagnum* dominated vegetation community within the bog. “Donor sites” of undisturbed natural *Sphagnum* will be maintained within the Smokey Ridge Bog during operations to provide the source material for the re-vegetation activities. Further discussion of decommissioning and reclamation is provided in section 5.9.

The Smokey Ridge Bog does have the potential for additional harvesting should a decision be made to harvest it at a future date. If a decision is made to continue the harvest within the bog beyond the scheduled 10 years, a separate application will be made at that time.
Figure 3: Smokey Ridge Site Plan
2.1.5 Need for the Program

The Premier Tech Saskatchewan operations are well-known throughout the industry for the quality of its peat moss. Over the years the majority of Premier Tech’s clients requires and utilizes an exceptionally fibrous moss which is characteristic of Saskatchewan peat.

Premier Tech’s current harvest operation near Carrot River no longer has enough peat to supply the Carrot River bagging and packaging facility and in 2013 (last year) production at the facility was curtailed by approximately 30%. There are no adjoining undeveloped peat sections available in the Carrot River area.

In order to maintain a supply of peat to the Carrot River Processing and Bagging Plant, Premier needs to harvest in a new area. Premier has invested significant capital in the Carrot River Processing and Bagging Plant and wishes to keep the infrastructure in place at this location and continue to provide employment and benefits to the region. In order to maintain the same quality standard and supply of peat, Premier needs to develop new peat bogs as soon as possible. The Smokey Ridge bog is proposed because it contains a high quality peat moss (i.e. contains hi-fibers and a low pH), it provides an approximate 10 year supply of peat, and there is a low amount of vegetation cover.

2.1.6 Program Schedule

Figure 4 provides a 2014 schedule of activities for the initial development of the Smokey Ridge Bog. It is important to note that many of the identified activities, including the actual harvesting, are weather and condition dependant (i.e. significant precipitation will delay activities).

*Figure 4: 2014 Project Schedule*

During subsequent years (2015 to 2023), site activities will consist primarily of harvesting between May and November (weather dependant) followed by the decommissioning and reclamation of the bog, staging yard and access road (as required) in 2024.
2.1.7 Site Management

Management of all activities at the Smokey Ridge Bog harvest site will be the direct responsibility of employees of Premier although the transport of the harvested materials from the site to the Carrot River Processing and Bagging Plant may be contracted to a commercial hauler(s).

2.1.8 Employment

The Smokey Ridge Bog harvest will create or sustain 4-5 seasonal jobs and 2 permanent positions in the Hudson Bay area. The seasonal positions (approximately April to November) are 3 vacuum harvester operators, 1 front-end loader operator, 1 mechanic and 1 lead hand. The permanent jobs are 1 truck drivers (contractor) and 1 loader operator.

In addition, as discussed in section 2.1.5, the Smokey Ridge Bog harvest project will be a key component in maintaining jobs at the Premier Tech processing and bagging facility in Carrot River, Saskatchewan.
3 Regulatory Context

3.1 Provincial

3.1.1 Saskatchewan Environmental Assessment Act

Section 8 of the Saskatchewan Environmental Assessment Act specifies that no person shall proceed with a development until he/she has received ministerial approval. A “development” is defined within the Act as:

“...any project, operation or activity or any alteration or expansion of any project, operation or activity which is likely to:
(i) have an effect on any unique, rare or endangered feature of the environment;
(ii) substantially utilize any provincial resource and in so doing pre-empt the use, or potential use, of that resource for any other purpose;
(iii) cause the emission of any pollutants or create by-products, residual or waste products which require handling and disposal in a manner that is not regulated by any other Act or regulation;
(iv) cause widespread public concern because of potential environmental changes;
(v) involve a new technology that is concerned with resource utilization and that may induce significant environmental change; or
(vi) have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment.”

The Smokey Ridge Peat Harvest Proposal is being submitted to provide the results of a “self-assessment” to demonstrate that, in Premier Tech Horticulture Ltd.’s opinion, the proposed activity is not likely to “trigger” the criteria specified in section 2(d) of The Environmental Assessment Act.

3.1.2 Saskatchewan Acts, Regulations & Guidelines

During all site preparations, operation, decommissioning and reclamation activities, the Smokey Ridge Bog Peat harvest project, ancillary facilities and actions will be subject (wholly or in part) to a number of provincial Acts and regulations. Premier Tech intends to adhere fully to all. The relevant Provincial Acts, regulations and guidelines likely include, but may not necessarily be limited to:

Acts
- The Clean Air Act
- The Environmental Management and Protection Act
- The Fisheries Act (Saskatchewan)
- The Forest Resource Management Act
- The Litter Control Act
- The Forest Resources Management Amendment Act
- The Prairie and Forest Fire Act
- The Provincial Lands Act
- The Wildlife Act
- The Wildlife Habitat Protection Act
- The Occupational Health and Safety Act
- The Reclaimed Industrial Site Act
- The Saskatchewan Watershed Authority Act

It is important to note that Section 2 (1) (k) of The Forest Resources Management Act\(^1\) defines “forest products” as all vegetation on or from forest land or waters on or associated with forest land, whether alive, dead or cut, and includes trees, shrubs, herbs, grasses, mosses, fungi and any parts or components of that vegetation.

**Regulations**
- The Mineral Industry Environmental Protection Regulations, 1996
- The Water Regulations, 2002
- The Environmental Spill Control Regulations
- The Hazardous Substances and Waste Dangerous Goods Regulations
- The Provincial Lands Regulations
- The Litter Control Regulations, 1973
- The Used Oil Collection Regulations
- The Wildlife Habitat Lands Designation Regulations
- The Wildlife Habitat Lands Disposition and Alteration Regulations
- The Wildlife Regulations
- The Forest Resource Management Regulations
- The Clean Air Regulation
- The Occupational Health and Safety Regulations, 1996
- The Reclaimed Industrial Sites Regulations

**Guidelines**

### 3.1.3 Saskatchewan Environmental Code

The Province of Saskatchewan is in the process of implementing a new legal framework for managing and protecting its environment. The new Saskatchewan Environmental Code and associated guidance contains requirements to be followed by anyone conducting activities regulated by any of the Acts that reference the code. The code chapters and their associated guidance will be adhered to by Premier Tech when they come into force.

### 3.1.4 Provincial Permitting

A preliminary review of provincial permit and approvals requirements for the Smokey Ridge Bog Peat harvest program to proceed has been completed. Based on that review, the project will be

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required, but may not be limited, to securing the following major provincial permits and/or approvals:

**Construction**

- *Forest Product Permit* - Sask. Ministry of Environment
- *Approval to Construct Road & Approach* – R.M. of Hudson Bay No. 394
- *Disposition (Miscellaneous Use Permit)* - Sask. Ministry of Environment &/or Ministry of Agriculture
- *Approval to Construct Facilities* - Sask. Ministry of Environment, Environmental Protection Branch
- *Approval to Construct, Install, Alter or Expand a Storage Facility (Hazardous Substances and Waste Dangerous Goods)* - Sask. Ministry of Environment, Environmental Protection Branch

**Drainage Works**

Drainage works are defined under *The Water Security Agency Act* as being “any action taken or intended for the removal or lessening of the amount of water from land and includes the deepening, straightening, widening and diversion of the course of a stream, creek or other watercourse and the construction of dykes.”

However, according to the drainage *Approval Process Fact Sheet* available from the Saskatchewan Water Security Agency website (https://www.wsask.ca/Permits-and-Approvals/Regulatory-Info/Drainage-Approval-Process) certain types of drainage works are exempt from requiring an approval from the Water Security Agency including drainage works constructed or operated by an owner of land, where the water drained and the drainage works are both located entirely on the owner’s land and the water drained does not drain from the owner’s land.

As the proposed drainage works associated with the Smokey Ridge Bog harvest activities will be discharged within the same quarter section is being harvested (SE-16-46-1-W2), Premier Tech does not anticipate a requirement to secure an *Approval to Construct and Operate Works* from the Saskatchewan Water Security Agency although it will likely require an *Aquatic Habitat Protection Permit*.

**Operations**

- *Permit to Operate* - Sask. Ministry of Environment, Environmental Protection Branch
- *Approval to Store Hazardous Substance or Waste Dangerous Goods at a Storage Facility* (Hazardous substances and waste dangerous goods) - Sask. Ministry of Environment, Environmental Protection Branch

** Decommissioning & Final Closure**

- *Approval to Decommission Storage Facility* - Sask. Ministry of Environment, Environmental Protection Branch
- *Approval to Decommission* - Sask. Ministry of Environment, Environmental Protection Branch
- *Release from Decommissioning and Reclamation* - Sask. Ministry of Environment, Environmental Protection Branch, Saskatchewan Ministry of Agriculture
• Surrender of Disposition - Sask. Ministry of Environment, Saskatchewan Ministry of Agriculture

3.2 Federal

3.2.1 Navigable Waters Protection Act

The Navigable Waters Protection Act (NWP Act) is a federal law designed to protect the public right of navigation. It ensures that works constructed in navigable waterways are reviewed and regulated so as to minimize the overall impact upon navigation. The NWP Act includes provisions for the removal of unauthorized works or obstructions that render navigation so difficult it proves to be considered dangerous. Within the Act “Navigable Waters” are defined as including any body of water capable of being navigated by any type of floating vessel for the purpose of transportation, recreation or commerce.

No aspect of the proposed Smokey Ridge Bog Peat harvest project has the potential to impact navigable waters.

3.2.2 Fisheries Act

Section 35(1) of the new federal Fisheries Act (amended November 2013), states "No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.

No aspects of the Smokey Ridge Bog Peat harvest Program, including the upgrade of the existing access trail to a road, will alter, disrupt, destroy or in any way impact or harm any fish or fish habitat.

3.2.3 Migratory Birds Conservation Act

Leaf Lake, which is located approximately 5 km north west of the Project area, is a known migratory bird concentration site, however, the Smokey Ridge Bog contains only a very small (i.e. less than < 0.25 hectare) area of open water. Based on this, the fact that significant areas of open water surround the site and that the activities proposed during the development, operation, decommissioning and reclamation of the Smokey Ridge Bog Peat harvest project are similar to those practices by agricultural producers in the area, no impact on migratory birds is anticipated as a result of the proposed project.

3.2.4 Explosives Act

The Smokey Ridge Bog Peat harvest Project, as proposed will not use, nor will it require facilities for the storage of explosive materials (magazine).
3.2.5 **Canadian Transportation Act**

The Smokey Ridge Bog Peat harvest program does not impact any rail line crossing and does not propose the relocation of a rail line; rail crossing or propose any other activity related to the Canadian Transportation Act.

3.2.6 **Indian Act and Natural Resource Act**

The Smokey Ridge Bog Peat harvest program will not be located on, nor does it require access to, through or over any federal lands such as national parks, First Nation reserves or national defence bases.

3.2.7 **Species at Risk Act**

Project planning has identified the boreal woodland caribou (*Rangifer tarandus caribou*) as likely occurring within the region of the proposed harvest activity. The boreal population of woodland caribou, including woodland caribou in Saskatchewan, is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the federal *Species at Risk Act* (SARA), and is provincially ranked as rare to uncommon (S3) in Saskatchewan.

Based on this information and in order to mitigate potential impacts on woodland caribou resulting from harvest activities, throughout the planning of the Smokey Ridge Bog harvest, Premier Tech has incorporated mitigation techniques to minimize or avoid the destruction of critical habitat as defined in Appendix I of the 2012 Environmental Canada’s *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou) Boreal population, in Canada*. Section 7.4 of this document provides a summary of the “considerations in planning” and “suggested mitigation techniques” provided in the Recovery Strategy and the responses to each employed in the planning of the Smokey Ridge Bog harvest project.

3.2.8 **Federal Policy on Wetland Conservation**

Premier Tech is also cognizant of the Federal Policy on Wetland Conservation (1991), which promotes the wise use of wetlands and protection through adequate consideration of wetland concerns in environmental assessments of development projects. The objective of the Policy is to promote the conservation of Canada’s wetlands to sustain their ecological and socio-economic functions, now and into the future.

The mitigation measures outlined, in addition to Premier Tech site reclamation plans, meet the Federal Wetland Policy’s goal of no net loss of wetland function.

In the short term, the sequence operation of the 72 ha of the Smokey Bog will experience a loss or reduction in its ecological functions; however, after successful restoration, the bog’s functions will be re-established and as such there will be no loss or reduction in wetland functions.
During operations, Premier Tech will maintain “donor sites” of undisturbed natural Sphagnum within the Smokey Ridge Bog. At the conclusion of the harvest activities, the harvest area will be decommissioned and reclamation of the disturbed area will be completed by the re-establishment of the pre-harvest water levels and the introduction of donor moss to facilitate the re-establishment of a *Sphagnum* dominated vegetation community within the bog.

At the end of its harvesting operations, if directed by the Ministry of Agriculture (land owner) Premier Tech will reclaim wetland areas within the project area in a manner that restores, to the extent possible, the function, type and area of wetlands lost directly as a result of this project. The overall goal will be to promote the maintenance of the functions and values derived from wetlands throughout the project area. Section 5.9 provides a discussion of the reclamation activities.

The hydrological function of natural flood attenuation, water storage, and discharge will be modified during drainage and harvesting, but these functions will return to their original state after restoration. Biogeochemical functions of nutrient storage/carbon sequestration will be lost during harvesting, but restored after successful reclamation as soon as peat begins to accumulate. The function of the bog as a net carbon sink will be lost during drainage, harvesting, and initial re-wetting. Restoration of the bog will return it to a net carbon sink in less than ten years if restoration is successful (Waddington et al. 2010). It will however take longer for the bog to sequester the amount of carbon that was emitted into the atmosphere, through greenhouse gas emissions, during the Project operations (Frolking et al. 2006).
4 Summary of Property

4.1 Tenure

4.1.1 Access Road

The access road will be located within the existing footprint of an existing trail established on an easement between Section 8 and Section 9, Township 46, Range 1, West of the second meridian within the Rural Municipality (R.M.) of Hudson Bay No. 394.

4.1.2 Harvest Property

The Smokey Ridge Bog is located within the Rural Municipality (R. M.) of Hudson Bay No. 394 on land owned by the Saskatchewan Ministry of Agriculture (Figure 2).

During the proposed 10 years of harvest, Premier Tech will harvest approximately 72 hectares or less than 40% of the entire bog. All of the harvesting activities will be located within the southern portion of the SW and SE¼ of Section 16, Township 46, Range 1, West of the second meridian and the northern half of the NE and NW¼ of Section 9, Township 46, Range 1, West of the second meridian (Figure 3)

4.2 Current Site Condition

4.2.1 Access Route

Figure 5: Current Access Trail
As shown in Figure 5, the current access trail exists however it will require upgrading in order to support anticipated project traffic.

4.2.2 Smokey Ridge Bog

Essentially the proposed 72 hectares harvest area is located on the southern side of a 162 hectare “undisturbed” Sphagnum moss bog interspersed with small black spruce (Figure 6). Some historical trails have been cleared within the bog, although no record could be found of when this clearing took place.

Figure 6: Smokey Ridge Bog

4.3 Current Land Use

The Smokey Ridge bog is surrounded on two sides (south and west) by active agricultural (pasture and/or cropping) lands. The land to the north and east of the proposed harvesting location are also owned by the Ministry of agriculture. No harvesting activities are anticipated to take place within 500 m of the nearest tree line (forest) on those lands.

According to line 67 of the Appendix to The Wildlife Habitat Lands Designation Regulations the north half of Section 9 and the south half of Section 16, Township 46, in Range 1, west of the Second Meridian are designated as wildlife habitat lands pursuant to subsection 3(2) of The Wildlife Habitat Protection Act.”

Section 4 (1) (e) of The Wildlife Habitat Lands Disposition and Alteration Regulations states that, subject to subsection (2) and section 5, for the purposes of subsection 6(2) of the Act, dispositions that permit forest harvesting and activities incidental to forest harvesting are “permitted dispositions”. Section 2 (c.1) of the same regulations defines “forest harvesting” as cutting, picking,
gathering, collecting, accumulating or removing forest products as defined in *The Forest Resources Management Act* by any means. Section 2 (1) (k) of *The Forest Resources Management Act* defines “forest products” as “all vegetation on or from forest land or waters on or associated with forest land, whether alive, dead or cut, and includes trees, shrubs, herbs, grasses, mosses, fungi and any parts or components of that vegetation;”

As a result, this document has also been prepared in support an application for a disposition to permit forest harvesting and activities incidental to forest harvesting within the north half of Section 9 and the south half of Section 16, Township 46, in Range 1, west of the Second Meridian pursuant to *The Wildlife Habitat Lands Disposition and Alteration Regulations.*

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5 Proposed Peat Harvest Program

5.1 Proposed Project

5.1.1 Access Road

The Smokey Bog harvest will require the upgrade of approximately 1.25 kilometers (0.78 miles) of access trail to facilitate the movement equipment to the harvest site and the movement of the product haul trucks to and from the site.

The road is anticipated to be 6 m wide and will be constructed within the existing easement corridor between Section 8 and Section 9, Township 46, Range 1, West of the second meridian (Figure 5). The route does not cross any fish bearing waters and any culvert installation that may be required will only be to facilitate drainage of the road corridor.

The road will be constructed and maintained by Premier Tech (or the R.M. of Hudson Bay No. 384).

5.1.2 Site Plan

Figure 3 is a site plan of operations and shows the full extent of development for 10 years of harvest. Initial site development will consist of the construction of the staging yard, internal bog road, main (perimeter) ditches and discharge. The field ditches and harvest areas are shown in yellow in the figure.

5.1.3 Site Preparation

A vacuum harvester technique will be used to harvest the peat moss. In order to employ this method of harvest, water levels within the harvested area of the Smokey Ridge Bog must be slowly lowered to a level that allows for the safe operation of equipment on the peat and allow the material to dry to optimum moisture content.

Perimeter Drainage Ditch

Site preparation is initiated by the construction a perimeter drainage ditch and discharge. This is accomplished by digging a ditch approximately 2 meters deep and 1.5 meters wide around the entire area to be harvested in order to allow the water level within the bog to lower. The gradient of the ditch is designed to allow for the slow reduction of water levels within the bog over the life of the harvesting activities.

The ditch will be constructed using a Track hoe with the material deposited on the outside of the ditch (outside the peat field area) over its entire length.
Tree Removal

All trees within the harvest area will be harvested and stockpiled for use as a base underlying the staging yard and internal bog road (i.e. a corduroy road base). As shown in Figure 6 there is no merchantable timber within the harvest area.

Trees will be left standing and in place around the perimeter of the harvest area and the remaining area of the bog as they provide on-going wind protection for the harvest area.

Internal Bog Road

Concurrent with the tree removal activity is the construction of the internal bog road by laying the harvested trees in a corduroy fashion and covering them with material taken from the borrow area located near the staging yard.

Peat Field Ditch Construction

The harvest area will then be divided into individual peat fields approximately 300 m long and 30 m wide by the construction of internal ditches approximately 1 m deep between each field (Figure 7).

Each field is then shaped to facilitate better surface drainage. Field ditch maintenance is completed by a screw ditcher mounted on a tractor and the peat from the ditches is placed on the fields where it will be harvested later. The cleaning of the ditches usually occur following heavy wind and when necessary during the season. If cleaning is not required during the harvesting season, it is completed after each season.

Figure 7: V-Ditcher

5.1.4 Staging Yard

Figure 8 provides a proposed site plan of the staging yard which is approximately 50m by 100 m in size and includes:

- 12’ X 16’ (≈ 3.6 m X 4.9 m) office/lunch room facility;
- 10’X 8’ (≈ 3.0 m X 2.4 m) tool shed;
- 60’ X 40’ (≈ 18 m X 12 m) concrete containment pad with a 0.3 m wall;
- 10’ X 8’ (≈ 3.0 m X 2.4 m) oil shed constructed within cement containment pad; and,
- Generator facility
Figure 8: Proposed Staging Yard Site Plan
5.1.5 Borrow Area

Two (30 m X 30 m and 33 m X 33 m) borrow pits will be developed: one on the east side of the access road in the southwest corner of NW¼ of Section 9, Township 46, Range 1, West of the second meridian (NW-9-46-1-W2) and a second immediately north of the staging yard to provide construction materials for construction of the access road, internal bog road and staging yard (Figure 9).

Once construction is complete, both borrow pits will be allowed to flood in order to create reservoirs to provide a ready supply of water for fire suppression and firefighting purposes. As such, the pits will have at least one gently sloping side to allow access for pumping which will also provide an egress route should any wildlife inadvertently fall into the resulting pond.
Figure 9: Borrow Pits /Fire Suppressions Reservoirs
5.1.6 Peat Harvest & Stockpiling

In order to initiate the harvesting activities, the surface of each peat field is loosened by employing a variety of different types of harrows. The field is then allowed to dry naturally by exposure to sun and wind.

Once a layer of peat has attained the optimum moisture level, vacuum harvesters are used to collect the peat on the surface, removing approximately 3 to 7 cm/year of peat.

Figure 10: Vacuum Harvester

Once the harvester is full it will unload the peat at the end of the field near the road. A front-end loader is then used to pile the material for temporary storage in stockpiles on site.

The stockpiles will be located along the access road within the operations area and are oriented in an east-west direction (i.e., in alignment with the prevailing winds) in order to minimize the wind effect on peat.

This process will be repeated for approximately 60-70 times in each of the peat fields over the ten year harvest schedule.

It is important to note that a residual peat layer of at least 50 cm will remain *in situ* after harvesting of the peat field is completed. This layer of peat is of limited commercial value but critically important in facilitating the regeneration of the peat during reclamation of the site. The slow rate of harvest allows Premier to easily monitor the depth to this non-commercial layer.

5.1.7 Equipment Requirements

The following is a list of equipment required to prepare and harvest a peat field of the size being proposed.

- 4 Agriculture (farm) tractors
- 1 “V” ditcher
- 1 Track hoe
- 1 Tracked dozer
- 1 Shank harrow
- 1 Peat profiler
- Fire suppression equipment
- 1 Peat conditioner
- 1 “Screw” ditcher
- 3 Peat harvesters
- 2 Bog trailers
- 1 Front end loader
- 1 Pick-up truck
5.1.8 Transportation & Processing of Product

The stockpiled peat on site is loaded onto highway transport trucks using a wheeled loader. The transport trucks are standard highway units with 16 m trailers which haul approximately 160 m³ similar to those used by the forestry industry to haul wood chips and are within the weight limits established for the transport route. Once loading is completed, the trailer will be covered with a tarp to prevent dust and debris from blowing off during transportation.

Once loaded, the trucks will travel approximately 6.5 miles (= 10.5 km) south on the existing R.M. grid road to Provincial Highway #3 and use the Provincial highways to haul the material to the existing Premier Tech Carrot River Processing and Bagging Plant. It is anticipated that the product haul will result in 2 to 3 round trips per day during a five day week.

5.1.9 Electrical Power

Electrical power will be produced on the Smokey Ridge site with an installed fuel powered generator. The generator will be located within the staging yard with appropriate secondary containment capable of containing a spill of fuel, oil and/or antifreeze in the unlikely event that an unanticipated discharge of such material occurs from the generator or its fuel supply.

Fuel for the generator will be stored in appropriate double walled tank located immediately adjacent to the generator itself. Fuels lines connecting the fuel tank to the generator will be installed in a manner that provides containment of any leaks. The fuel tank, fuel lines and generators building will be inspected regularly.

5.2 Harvest Area Water Management

In order to employ the vacuum method of peat harvest, water levels within the harvested area of the Smokey Ridge Bog must be sequentially lowered over the life of the harvest activity to a level that allows for the safe operation of equipment on the peat and to allow the material (peat) to dry to optimum moisture content before it is harvested.

Drainage of the harvest area is accomplished by the incorporation of internal ditches, approximately 1 m deep between each peat field (Figure 7). These ditches facilitate the drainage of the peat field with the water passing into the perimeter drainage ditch which is approximately 2 meters deep and 1.5 meters wide and totally surrounds around the area to be harvested.

The discharge ditch, also approximately 2 meters deep and 1.5 meters wide will originate in the northeast corner of the perimeter ditch and discharge on the fringe of the Smokey Ridge bog (Figure 3) on the same quarter section on which harvesting is taking place and will disperse naturally within the connected wetlands and follow the natural drainage in an east south east direction from SE-16-46-1-W2. During operations, Premier will conduct regular maintenance of the system of ditches in order to maintain a gradient designed to allow for the slow and managed lowering of water levels within the harvest area. The rate at which the water level is lowered within the harvest area is
managed throughout the construction and harvest operation in manner that will ensure that the discharge does not cause any surface erosion and to ensure that the discharge does not significantly change the downstream wetland regime.

It is also important to note that the lowering of water levels within the bog will take place at a slow rate, not commence until after the 2014 spring freshet and be less that those experienced during a “typical” spring runoff.

During operations it is anticipated that the Approval to Operate issued by the Ministry of Environment will require the monitoring of flow volumes and water quality prior to its discharge. This monitoring is further discussed in section 5.8.

5.3 Site Air Emissions

Development, operations and closure activities at the Smokey Ridge site may result in minimal effect on the air quality similar to those generated by agricultural (crop farming) production in the area (primarily airborne particulates [dust] from equipment, emissions from mobile equipment, and the generator) in the immediate vicinity of the site. Such emissions will result from activities such as construction and peat harvest; service and general product transport traffic, and potentially wind generated dust from the peat stockpiles.

Appropriate dust suppression measures such as watering, will be taken to maintain air quality within the standards specified in The Clean Air Regulations. In addition, all requirements specified in The Occupational Health and Safety Regulations, 1996 related to emissions will be complied with.

Premier will implement the following mitigation measures for dust suppression, which include applying water to internal access roads (if necessary) to control dust, covering peat during transport, covering peat stockpiles (if necessary), and ceasing peat harvesting activities on excessively windy days, regular inspection of equipment and minimizing the idling of vehicles. With the implementation of these mitigation measures the residual effect is considered to be “negligible” (see section 7.1.2).

5.4 Hazardous Substances and Waste Dangerous Goods

5.4.1 Introduction

Premier Tech will manage and store all hazardous substances and waste dangerous goods in accordance with the requirements specified in The Hazardous Substances and Waste Dangerous Goods Regulations.

5.4.2 Inventory

Based on the anticipated level of activity at the site, the total estimated volumes of hazardous substances and waste dangerous goods on site at any one time is estimated to be:
• Diesel fuel - 8,500 L (≈ 1,870 imperial gallons)
• Gasoline - 1,250 L (275 imperial gallons)
• Motor and hydraulic oil - 200 L (44 imperial gallons)
• Antifreeze - 16 L (3.5 imperial gallons)
• Used oil - 1,250 L (275 imperial gallons)

These materials are required for equipment operations and maintenance purposes. No other chemicals, hazardous substances or waste dangerous goods are anticipated to be present within the yard or on the Smokey Bog harvest site.

Used oil and lubricants on site will be stored in appropriate containers and transported off site for recycling or disposal at a license disposal facility. Premier Tech will consider used “absorbents” and oily rags in a manner similar to used oil with appropriate storage with secondary containment and disposal at a licensed facility.

5.4.3 Storage

Premier Tech will prepare and submit an Application for Approval to Construct (or Upgrade) a Storage Facility (EPB #133) in accordance with The Hazardous Substances and Waste Dangerous Goods Regulations. Construction of the hazardous substances and waste dangerous goods storage facility will only occur after approval of the proposed facility has been received.

All hazardous substances and waste dangerous goods will be stored in appropriate containers (i.e. tankage with double walled construction to contain leakage to the primary (internal) tank) which will located on an 18 x 12 m concrete containment pad with a 0.3 m wall in order to provide further effective secondary containment in the unlikely event of a spill. All fueling of equipment will occur within the containment pad to ensure that any potential spillage during tank and equipment filling will be contained.

No fuels, oils or other hazardous substances will be stored within 100 m of any water body and no equipment maintenance or re-fuelling will be conducted within 100 m of a water body.

A Spill Kit will be located in the immediate vicinity of the fuelling station and the actions identified in Premier Tech’s Environmental Contingency Plan will be implemented immediately in the unlikely event that an unanticipated discharge takes place.

5.5 Waste Management

5.5.1 Introduction

Premier Tech intends to employ the 4Rs Principles in waste management at the Smokey Bog harvest sit. That is:

1. Wherever possible, waste reduction will be the preferable option.
2. If waste is produced, every effort will be made to reuse it if practicable.

3. Recycling is the third option in the waste management hierarchy. Although recycling helps to conserve resources and reduce wastes, it is important to remember that there are economic and environmental costs associated with waste collection and recycling. For this reason, recycling will only be considered for waste which cannot be reduced or reused.

4. Finally, it may be possible to recover materials or energy from waste which cannot be reduced, reused or recycled.

5.5.2 Site Solid Waste

“Domestic” and “industrial” waste generated at the Premier Tech Smokey Bog harvest site will be collected and temporarily stored in wildlife proof containers. Any waste that cannot be reused or recycled will be disposed of by hauling the material off site for disposal in an approved waste disposal site (i.e. Hudson Bay landfill).

Premier Tech will consider used “absorbents” and oily rags in a manner similar to used oil with appropriate storage with secondary containment and disposal at a licensed facility. All other potentially hazardous waste materials generated at the site will be recycled (e.g. spent lubricants or antifreeze) or disposed of in accordance with appropriate regulations.

5.5.3 Site Sewage Waste

Human waste management will consist of the use of Portable toilets, often referred to as Port-A-Potties, located at the site. These will consist of portable enclosures containing a chemical toilet (a toilet bowl filled with disinfectant instead of water) which will be emptied on a regular basis by a licensed sewage handling contractor.

5.6 Health, Safety & Environment Quality Management

5.6.1 Introduction

Premier Tech has committed to making occupational health and safety a primary objective in all of the company’s development and operational activities.

Premier Tech recognizes that the safety of its employees is a core value that cannot be compromised. Employees are expected to be aware of workplace hazards and risks, and “risky” behaviour is not acceptable. Compliance with safety standards and procedures is absolute.

5.6.2 Occupational Health & Safety

The safety concerns at the Smokey Ridge harvest site are anticipated to be essentially the same as those encountered in similar agriculture type operations. These include risks associated with the use of heavy mobile equipment, stationary industrial equipment and machinery, hydrocarbons and antifreeze, noise, air quality and extreme weather conditions.
The emphasis at the site will be on the prevention of safety and/or health problems through the development of a companywide safety culture, safety conscious employees and maintaining a safe work environment. This will be accomplished through a combination of training and diligence in monitoring the workplace to identify and minimize factors that may have the potential to pose an unnecessary risk to the health and safety of a worker.

Some of the more significant activities related to health and safety that will be implemented are as follows:

**New Employees Orientation**

Upon their arrival at the Smokey Bog site all new employees will attend orientation sessions on safety, fire protection, environmental awareness, site rules and any other related topic.

**Safety Manuals**

A safety manual will be prepared and be available to all employees. Employees will be required to read and be familiar with its contents.

**Hearing Conservation**

Noise surveys will be carried out throughout the sites at regular intervals and any areas above the 85 dBA level will be posted and employees will be required to wear hearing protection. Hearing protection will be issued to every employee and will also be available at strategic locations (related to noise levels) throughout the project sites.

**Personal Protective Equipment**

Efforts will be made to reduce or eliminate workplace hazards whenever and wherever possible. However, when this is not possible, approved personal protective equipment will be provided and used. Any employee that is required to wear personal protective equipment will be trained in its use, maintenance and capabilities.

**Lock Out Procedures**

In order to ensure that machinery and other equipment (both electrical and fueled) cannot be inadvertently used or started and jeopardize the safety of any employee working on the equipment, lock out procedures will be developed and must be followed.

**Mobile Equipment**

Employees with duties that include the operation of mobile equipment will be trained in the safe operation, maintenance and inspection of such equipment.
Fire Protection

The Smokey Ridge Harvest site will be completely dependent on its own resources for fire prevention and suppression. As such, programs, procedures and practices have been developed at previous Premier Tech harvest sites and will be reviewed, updated and implemented at the Smokey Ridge site in order to insure that fire prevention and protection are of paramount importance.

Fire extinguishers and other firefighting equipment will be located at strategic points throughout the site and maintained in good working order.

Work Place Hazardous Materials Information System

Although the type of hazardous materials on site will be limited (i.e. fuels, oils and antifreeze, etc.), in order to ensure that all employees are able to identify any and all hazardous materials a Workplace Hazardous Materials Information System (WHMIS) program will be implemented at the project site. The program will include labeling of products by suppliers, submission of Material Safety Data Sheets by suppliers, the labeling of containers tanks and piping, the appropriate posting of Material Safety Data Sheets, and the effective training of employees.

First Aid

All employees will be encouraged to obtain first aid certification.

In the event of a medical emergency, sick/injured persons can be rapidly transported to the Hudson Bay (nearest) medical facility.

Emergency Vehicle/Communications

A vehicle will be available at all times on each site to evacuate injured or sick personnel to the medical facility.

At least one working cellular or satellite phone will be on each site at all times.

5.6.3 Upset Conditions

In the case of any unanticipated or upset condition on Smokey Ridge site or transportation routes, the policy will be as follows:

1. Protect the health and safety of persons in the area.
2. Protect the environment.
3. Protect the facility.

A Spill Response Plan is being prepared to cover all aspects of the Smokey Ridge site and cover all chemicals, fuel and other hazardous and waste dangerous goods present on the site or being transported to and from the site. All supervisory personnel will be familiar with the updated Plan and it will be made available at various strategic locations throughout the site for easy access.
5.7 Malfunctions or Accidents

5.7.1 Introduction

Malfunctions or accidents must be a consideration in the planning and operation of a project such as the Smokey Ridge harvest and this section considers the potential malfunctions and accidents related to significant aspects of the proposed activities. These include: site development, harvesting activities, peat transport from the site the Carrot River Processing and Bagging Plant, and hazardous substances transport and management at the site.

Various malfunctions were considered in terms of their probability of occurrence, response in the event that they do occur and the potential effects of occurrence.

5.7.2 Emergency & Spill Response Management

Premier Tech is in the process of preparing an Environmental Contingency Plan which will include and Emergency Response Contingency Plan and Spill Contingency Plan for its activities at the Smokey Ridge Bog. This plan will consist of a number of Environmental Protection Plans (EPP) focusing on specific activities and/or situations. These EPP documents provide proactive as well as reactive procedures to be implemented to prevent and/or mitigate accidental releases or spills of potentially harmful substances. The plan will include general contingency planning including, but not necessarily limited to;

- actions to be taken in the event of a spillage of contaminated waters outside of contained areas,
- an action plan to deal with spills of specific hazardous materials used on site; and.
- a general action plan to deal with spills of unspecified hazardous materials.

The Premier Tech Smokey Bog Harvest Environmental Contingency Plan will be reviewed at least annually by company management and on an as-needed basis by employees and supervisors. The EPPs are designed as living documents which can be amended as improved procedures are identified.

In any and all cases of an unanticipated discharge or upset condition on the site, the Premier Tech policy is as follows:

1. Protect the health and safety of persons in the area.
2. Protect the environment.
3. Protect the facility and equipment.

In the event that a reportable spill does occur, the person having control of the pollutant that has been spilled will employ the appropriate emergency response plan and notify (report) the occurrence to the Saskatchewan Ministry of Environment, Spill Control Center at 1-800-667-7525.
The report shall, at a minimum, contain the following information:

- Reporting agent;
- Location and time of the spill;
- The type of material spilled;
- Quantity of material spilled:
- Details of any action taken and/or proposed to be taken at the spill site; and
- A description of the location of the spill and the immediate surrounding area.

The person having control of the spilled material and the owner of the material will then submit a written report within seven days of the reportable spill taking place. The written report will, but may not necessarily be limited to, the following:

- Location of and time of spill;
- The type and quantity of material spilled;
- A description of the spill site area;
- Details of any remedial action taken with respect to the spill;
- The method and location of disposal of spilled material, clean-up material and contaminated soils; and
- Changes in procedures or actions undertaken to ensure similar events are not repeated.

5.7.3 Hazardous Substances Storage Areas

A number of hazardous substances and waste dangerous goods materials will be employed on the Smokey Ridge site. All of these materials will be stored in vessels or facilities designed for the materials being stored and in accordance with applicable Acts and regulations.

A significant spill to the environment from the facility has the potential to affect the surface environment in addition to surface and/or ground waters in the area. As such, the facilities will be constructed with suitable secondary containment to retain the material stored within and each will be operated in a manner that limits the potential for spillage.

All outdoor fuel storage tanks will located within the containment pad and be of double walled construction to contain leakage to the primary (internal) tank. Fuelling stations will be located within the containment pad and constructed and operated in a manner that minimizes spill during fuelling activities. In addition, the tanks and fuelling stations will be subject to daily inspections and any items identified during that inspection will be addressed as soon as identified.

In the event of an unanticipated release from a storage facility, emergency response procedures, defined in the Environmental Contingency Plan, will be implemented. A typical response to a spill will be to ensure worker safety in the area, isolating the source of the spilled material, containing the spilled material and clean-up of the area. This spill response coupled with site runoff design will
ensure that any spill of hazardous substances or waste dangerous goods will be contained within the operating areas of the sites.

The expected frequency of such events is considered very low and this, combined with a rapid and effective response mechanism in the event that such an event does occur, will ensure that malfunctions associated with the storage of hazardous substances and waste dangerous goods result in minimal residual impacts to the environment.

5.7.4 Transportation Accident

Transportation accidents involving one or more vehicles could potentially result in the release of a hazardous substance or waste dangerous goods. In all instances, emergency response plans suitable for the materials being transported will be developed and, in the event that an accident happens, implemented. Through proper emergency response and clean-up, the potential residual environmental impacts of such an occurrence will be kept to a minimum.

5.7.5 Fire Suppression

All facilities associated with the Smokey Ridge harvest will be entirely self-reliant for fire prevention and suppression. As such, Premier Tech has developed a Fire Prevention and Procedures Program in order to insure that fire prevention and protection are of paramount importance.

During operations, all precautions will be taken to prevent and suppress forest fires near the sites. Burning or open fires will be strictly prohibited at all sites. Firefighting equipment will be readily and accessible on site during the fire season as prescribed by Section 21(3) of The Prairie and Forest Fire Act. As per Section 21(3) of The Prairie and Forest Fires Act, all equipment will have firefighting equipment on site in a readily accessible area and serviceable during the fire season. All water packs and pails to be kept full of water during the fire season. In addition all heavy equipment and fuelling sites will have approved and fully charged fire extinguishers installed. All equipment on site will be kept in good operating condition and clean ensuring there is no build-up of combustible materials near manifolds, exhaust systems and mufflers.

The equipment refueling site will be designated and no smoking allowed while fueling equipment.

Fire extinguishers and other firefighting equipment will be located at strategic points throughout the site, and maintained in good working order. In addition, the “borrow” pit created to source materials for construction purposes during development will be flooded to provide an easily accessible source of water for fighting purposes. Suitable equipment (i.e. pumps, hoses, nozzles) will be stored in appropriate locations and maintained in good working order in order to supply water from this source to the fire location. Appropriate training will be provided to ensure an effective and efficient force of appropriately trained individuals is always on site to perform necessary fire suppression duties.

Once approval to proceed with the project is received and the project implemented, the Smokey Ridge Site Fire Prevention and Procedures Plan (Program) will be submitted to the Ministry of
Environment and will include the following in order to assist the Ministry’s fire suppression activities:

- An identification of any staff with firefighting training and their training levels;
- Radio frequencies, contact phone list, and other communication information for contacting program staff;
- Inventory list of firefighting equipment on site (e.g. dozers, power units, chain saws, fire wagon with 2-1200 gallon tanks equipped with a pump, hoses and nozzles. Barrels, shovels, water cannons, are on site, etc.) other than the required firefighting equipment;
- An emergency response plan in case of a forest fire including, but not necessarily limited to, program staff assignments and contacts; steps to be taken for initial suppression; steps to be taken to contact Ministry of Environment: identify any known nearby industries, residences, etc.; and
- Premier Tech will also follow Ministry of Environment recommendations on the creation and maintenance of buffers around buildings and equipment.

5.8 Inspections, Monitoring & Reporting

5.8.1 Management Plans

Vegetation Management

In all related activities, Premier Tech will avoid the introduction of exotic plant species to the Smokey Ridge Bog by:

- ensuring that equipment is clean and free of weeds before moving into areas of native vegetation;
- limiting vegetation clearing to only those areas necessary for construction, harvest and safety, limiting grubbing to areas that will be filled or excavated and clearly marking all work area boundaries to prevent excessive clearing of vegetation outside the designated work area;
- Implementation of re-vegetation (using only “donor” species from the Smokey Ridge bog) as soon as reasonably possible after the peat harvest is complete in order to facilitate the establishment of a viable vegetation ecosystem within the disturbed area.

Emission Management

A marginal increase in atmospheric emissions during the construction, operation and decommissioning phases of this Project will occur mainly to dust and vehicle emissions. During the construction and decommissioning phases, the primary sources of emissions will be from
construction equipment and vehicles, and dust picked up by wind or moving vehicles. Emissions during the operational phase will originate from equipment and vehicles, and potentially dust from the peat stockpiles and from the peat hauling trucks. Premier will implement mitigation measures, which include applying water to internal access roads (if necessary), covering peat during transport, covering peat stockpiles (as necessary), minimizing the idling of vehicles, ceasing peat harvesting activities on excessively windy days, and regular inspection of equipment. With the implementation of mitigation measures the residual effect is considered to be minor, reversible, and not significant.

5.8.2 Visual Inspections

Environmental inspection activities at the Smokey Ridge harvest site will include daily inspections of all equipment (mobile equipment, generator, etc.) for fuel, lubricants and/or coolants leaks. Secondary containment and emergency spill equipment will be at locations (concrete containment, pump locations, etc.) that the potential for a hazardous material spill may exist.

Regular, visual inspections will also be made of specific areas of the site that may pose a risk to the environment. This will include, but may not necessarily be limited to:

- All hazardous substances and waste dangerous goods storage areas;
- The generator and fuel supply;
- All mobile equipment (primarily for leaks);
- The perimeter drainage ditch and discharge ditch;
- Equipment fuelling station; and
- All waste disposal containers.

Premier Tech will maintain a log that records the time and date of each inspection, who conducted the inspection and the results.

5.8.3 Water Quality Monitoring

Prior to initiating any development activities at the Smokey Ridge Bog, Premier Tech prepare and submit a proposed environmental monitoring at each of the site which will include, but not necessarily limited to:

- Proposed water quality sampling station locations;
- Proposed frequency of sample collection at each station;
- Proposed suite of parameters for analysis at each station;
- A proposed schedule of inspection of site facilities by a qualified individual; and
- Any additional monitoring deemed appropriate or specified by the appropriate regulatory agencies.
Generally, it is anticipated that the major components of the water monitoring program will consist of the following:

- Drainage ditch immediately prior to discharge to the northeast fringe of the Smokey Ridge bog
  - Water quality
    - Monthly (during the open water season) – Sample date and time, Field pH, Field Specific Conductance, Field Temperature, Ca, Mg, Na, K, Cl, $SO_4$, Sum of ions, $NO_3$, Alkalinity, $CO_3$, $HCO_3$, OH, Fe, Mn, TSS, and Total Hardness
    - Estimate of total flow in m$^3$/sec

5.8.4 Reporting

As generally required in an Approval to operate issued by the Ministry of Environment, Premier Tech will prepare and submit an environmental report to the Ministry of Environment on a frequency as defined by the Ministry. That report will provide a summary of the previous period monitoring program and prior to submitting each report, representatives of Premier Tech will review the data with respect to accuracy and completeness, water quality and the Saskatchewan Surface Water Quality Objectives. All data will be reported numerically in tables and graphically when warranted and will include all previous concentration measured at each location for the previous months (to a maximum of 1 year).

The report will also summarize the all maintenance performed on the drainage works and other alteration made to site infrastructure, any reclamation activities undertaken, the results of required inspections conducted, and a summary of any incidents that had the potential to impact the environment during the reporting period. In addition the report will include aerial digital photographs of surface activities during the reporting year.

In the unlikely event that the monitor shows any unusual results or excursions, the report will also report the results of the monitoring and include a detailed discussion of any remedial actions taken by the project to address the ‘unusual’ event.

5.9 Decommissioning & Reclamation

5.9.1 Introduction

Section 12 of The Mineral Industry Environmental Protection Regulations, 1996 states:

12 Subject to subsections 13(1) and (2), no person shall operate or permanently close a pollutant control facility, mine or mill until:

(a) a decommissioning and reclamation plan for the mining site has been approved by the minister;

(b) a proposal for an assurance fund to ensure the completion of the decommissioning and reclamation for the mining site has been approved by the minister; and
(c) the assurance fund mentioned in clause (b) has been established to the minister’s satisfaction.

As such, Premier Tech has both a legal and a moral responsibility to decommission, cleanup and reclaim all sites related to the Smokey Ridge harvest site including all roads and borrow areas at the cessation of activities. The corporation fully intends to do so in the manner prescribed by the appropriate regulatory authority and believes the site can be decommissioned and reclaimed to a condition that will allow for the unrestricted access and use similar to that which the site was subject to before development.

Should a decision be taken to cease operations at the site, Premier Tech will, as prescribed in the anticipated Approval to Operate issued and Section 18 of The Mineral Industry Environmental Protection Regulations, 1996:

(a) advise the minister in writing at least 60 days before commencing the permanent closure; and

(b) implement any decommissioning and reclamation plan approved by the minister according to the time frames set out in the plan.

Once this activity has been completed, Premier Tech will review and update the conceptual decommissioning plan previously filed with the Ministry of Environment (regulator) and Ministry of Agriculture (owner), submit the plan for review and after receiving approval, initiate decommissioning and reclamation. In all decommissioning and reclamation activities, Premier Tech intends to implement passive decommissioning and reclamation strategies. The intent of this strategy is to minimize, to the extent possible, the use of engineered containment structures on the site as such engineered facilities will likely require long term care and maintenance.

In addition, during all decommissioning activities, Premier Tech will maximize opportunities to recycle and reuse materials wherever possible as this will serve to reduce the total amount of material that will have to be disposed of during decommissioning and reclamation activities.

5.9.2 Conceptual Decommissioning Plan

A detailed decommissioning plan will be prepared and submitted to the appropriate regulatory agencies for review and approval prior to initiating the final decommissioning of the site. However, in general terms, the decommissioning of the sites will be accomplished in staged activities that will include, but not necessarily be limited to the following:

- All buildings and other structures constructed within the site will be removed and reused, recycled or disposed of unless otherwise approved by the appropriate regulatory agency.
- All concrete pads will be removed or, subject to regulatory approval.
- All wetlands and natural drainage areas that may have been disturbed will be rehabilitated to the pre-disturbed condition whenever possible.
• Contouring of all disturbed areas will be completed in order to minimize soil and water erosion and to encourage the growth of vegetation.

• The removal of all culverts along the access roads and the scarification of the roadway (if required).

5.9.3 Conceptual Reclamation Plan

Site reclamation will be conducted following the completion of decommissioning and will be tailored to the wishes of Saskatchewan Ministry of Agriculture, the owner of the land. That Ministry may wish that the future land use of the bog be more suitable for agricultural (e.g., grazing) than its present state.

Alternately, Premier Horticulture Ltd. can also, if requested, conduct a reclamation process oriented to peat land restoration which it has done before with positive results, establishing an ecosystem similar to that which existed before the peat harvest.

Premier tech has successfully reclaimed harvested peat areas in Saskatchewan in the past and will follow the site restoration recommendations from *The Peatland Restoration Guide* (Quinty and Rochefort 2003) during the reclamation of the Smokey Ridge bog.

Reclamation methods are summarized below:

• During operations, Premier Tech will preserve a section of the peat land in its natural state and use it as a donor site for restoration activities.

• After harvesting activities have ceased, the peat harvest fields will be prepared by blocking the drainage ditches in the fall and allowing the storage of snow melt water during the spring. The drainage ditches will be blocked with peat for a distance of 2 to 3 m, and then compacted with machinery. Well decomposed peat is recommended for ditch blocking and should be used to block ditches at approximately 100 m intervals. Peat used for ditch blocking will come from either beside the ditch or from the centre of the fields which are slightly dome shaped.

• At the same time ditches are blocked, small closed basins will be developed within the abandoned fields. These small depressions are designed to store water in small pools and help increase biodiversity during the restoration process.

• The topography of the fields will be left uneven, with surface irregularities preserved.

• Dome-shaped fields will be re-contoured (or “profiled”) so that a depression exists in the centre.
• Collection of plant material for regeneration from the donor site will be completed in the spring when ground thaw is about 10 cm from the surface as the regeneration capacity of this layer is greatest at that time. Also, the underlying frozen ground helps provide a solid base from which to work with heavy machinery; the plants are easier to collect under these conditions; and the roots and soil structure of the donor site are preserved.

• Collection areas within the donor site will focus on treeless areas where the sphagnum forms hummocks and flats. These sites are typically drier and more similar to the abandoned peat fields to which the plants will be relocated.

• To ensure adequate ground frost development during the winter preceding collection, it may be necessary to clear the snow from the collection areas within the donor sites. The areas will be clearly marked in the fall so that winter snow clearing can take place.

• A rotivator may be used to shred the surface (top 10 cm) of the donor site prior to plant collection. A small track hoe with grapples will then load the shredded plants onto a trailer and the material transported to the restoration site and kept in piles for a few days. It is important not to leave the shredded material on the donor site as the plants will dry too quickly.

• The “donor” peat material will then be spread in a uniform layer 2 to 3 cm thick over the restoration site using a manure spreader. This should be completed preferably when the ground is still frozen. Straw mulch is required to cover the plant material to assist in survival and growth. It is recommended that the excess of mulch be spread manually to prevent loss of the plant's regeneration capacity. A straw mulch (2 bales of hay/100m², or 3000 kg/ha) is recommended. The straw must cover the entire surface in an even manner, with no large clumps being left.

5.9.4 Transition Phase Monitoring

A follow-up monitoring procedure will be followed to ensure that appropriate vegetation is re-establishing on the restoration site. A monitoring stations will be established, with the first monitoring visit be in the fall after planting, followed by an inspection the following summer. Each station will be clearly marked with a stake to ensure subsequent visits are examining the same location. At each station, the percentage of ground covered by the mosses and other introduced plants will be recorded within a 3 m radius around the stake.

5.9.5 Decommissioning Financial Surety

Premier Tech will develop a detailed conceptual decommissioning and reclamation plan and estimate of associated costs for all aspects of the entire plan and submit it to the Ministry of Environment for review and approval.
Once approval of the Conceptual Decommissioning and Reclamation Plan and associated cost estimates is received from the Ministry of Environment, Premier Tech will immediately establish an assurance fund to cover the cost of decommissioning and reclamation in an amount and form approved by the Minister and the requirements of *The Mineral Industry Environmental Protection Regulations, 1996*.

It is anticipated that once all areas are decommissioned and reclaimed, unrestricted access and land use should be permitted.

Once all decommissioning and reclamation activities have been completed and monitoring and visual inspections have confirmed that each site is chemically and physically stable and appropriate re-vegetation is underway, Premier Tech will make an application for a Release from Decommissioning and Reclamation in order to obtain a release from further monitoring and maintenance responsibilities and from the obligation to maintain the financial assurance instrument.
6 Existing Environment

6.1 Peatlands in Saskatchewan

The Smokey Ridge bog is not a “unique” ecosystem as numerous examples of similar bogs can be found throughout the region. This includes two additional separate small bogs, totalling approximately 54 hectares within 2 km of the harvest site.

According to Canadian Peat Harvesting and the Environment (2nd Edition). Issue Paper, No. 2001-1 published by the North American Wetlands Conservation Council Committee, Saskatchewan has approximately 4.9 million hectares of peatland, which covers approximately 7.5% of the province’s land surface.

6.2 Smokey Ridge Bog Ecoregion Description

The Smokey Ridge Bog is located in the Overflow River lowland of the Mid-Boreal Lowland Ecoregion within the Boreal Plain Ecozone.

Boreal Plain Ecozone

The Boreal Plain is an area of rolling plain based on sedimentary rock and covered by thick glacial deposits, interspersed by lakes and glacial kettles. The warmer climate of the ecozone, in relation to those, further north, supports a greater variety of vegetation. The forest is mixed hardwood and coniferous species that include white and black spruce, jack pine, aspen, white birch, and balsam poplar. Lowlands near water may have American elm, green ash, and willows and sedges, along with a variety of flowering plants.

More than fifty of the province’s seventy-two mammal species have been identified within the Ecozone. Bird species richness is also high, with a number of migrants breeding in the area. Human activities in the region include forest-based hunting, fishing, trapping, and logging. Approximately 16% of the land is devoted to agriculture, along the southern margins; this includes grain production, as well as the raising of livestock.

Mid-Boreal Lowland

The Mid-Boreal Lowland ecoregion of the Boreal Plain Ecozone is the lower-lying area of the region, along the Manitoba border. The low relief area is dominated by fens and peat bogs, with less wooded land. The ecodistricts are: Mossy River Plain, Namew Lake Upland, Saskatchewan Delta, and Overflowing River Lowland.
Overflow River Lowland

This lowland is described by Acton et al. (1998) flat-lying glacial till plain with many subdued beach features and large tracts of organic deposits which cover almost 75% of the landscape; the northern part is almost completely overlain by organic materials. The remainder of the lowland comprises Dark Gray Chernozemic soils formed in a mixture of sandy glaciofluvial materials and clay loam, highly calcareous, water-modified glacial till derived from Palaeozoic limestone. Upper Cretaceous shale bedrock underlies the glacial drift at a depth of 3 to 30 m.

The entire lowland is nearly level, sloping gently to the northeast from a western high of 335 to 275 m in the northeast at the Manitoba border. External drainage is to the east into Lake Winnipegosis via the Overflowing, Red Deer, and Armit rivers and to the northeast into Carrot River via the Pasquia River and Niska Creek.

The best stands of forest occur on the better drained mineral soils along the banks of streams, rivers, and drainage ways. They include white spruce, trembling aspen, balsam poplar, American elm, green ash, and Manitoba maple. Willows occur on the more poorly drained mineral soils. Beach ridges and imperfectly drained organic uplands commonly support jack pine, black spruce, tamarack, and, occasionally, trembling aspen. The dominant vegetation of the bog areas is stunted stands of black spruce and tamarack with an undergrowth of sphagnum moss and Labrador tea.

6.2.1 Climate

The Smokey Bog is located within the Mid-boreal Lowland Ecoregion, which experiences a subarctic climate to the north and a humid continental climate to the south. The summers are cool and short, having a frost-free period of 114 days and a total of 1,395 degree days above 5°C (Acton et al. 1998). The climate station closest to the project is located in Aylsham, Saskatchewan, approximately 73 km northwest of the site. Climate observations at Aylsham are available for the period of 1971 to 2000. Mean daily temperatures in Aylsham range from -19.2°C in January to 17.7°C in July, with an annual average temperature of 1.1°C. The annual mean rainfall at Aylsham is 349.4 mm and the mean annual snowfall 116.3 cm, with a total mean annual precipitation of 465.6 mm.

6.3 Regional Noise

No baseline noise data is available for the Smokey Ridge bog but as the area is relatively remote and no major non-natural sources exists the noise are anticipated to be typical of baseline environmental levels recorded in other areas (EUB 2007). Noise levels of 40 dBA to 50 dBA are commonly cited as values observed for streams, bird calls and wind rustling though trees (Acoustical 2012).

Noise effects on wildlife have been analyzed in oil and gas development projects to define “zones of influence” (AMEC 2005) or noise disturbance buffer widths (AXYS 2001; Devon 2006). Buffers for woodland caribou (Rangifer tarandus caribou) were 300 to 500 m from the noise source, while
buffers for moose (*Alces americana*) were 200 to 1000 m from the noise source. Black bear (*Ursus americanus*) buffer was 500 m wide.

The Smokey Ridge bog is surrounded on two sides (south and west) by active agricultural (pasture and/or cropping). To the north and east, no harvesting activities are anticipated to take place within 500 m of the nearest tree line (forest).

### 6.4 Regional Surface Hydrology

Surface hydrology in the Smokey Ridge Bog area has been altered significantly by road construction, agricultural practices, a large scale ditching program conducted by the Saskatchewan Department of Agriculture, Conservation and Development Branch in the 1950s and early 1960s and, more recently, small scale ditching to the east and south of the Smokey ridge Bog (Figure 11 and 12).

![Figure 11: 1962 Ditching Map](image)

*(Portion of: Key Plan, Smoky Ridge Cons. Area No.24, Plan No. 37462-31, Saskatchewan Department of Agriculture, Conservation and Development Branch, May 10, 1962)*
Figure 12: Recent Ditching

A review of surface elevations at the point of discharge, water from the Smokey Ridge harvest operations will disperse naturally (i.e. likely with no defined channel) into a wetlands to the east and southeast of the discharge point (Figure 13) eventually entering a more defined bog south east of the Smokey Ridge bog. Overflow from the second bog is collected by the ditching constructed by the Department of Agriculture, Conservation and Development Branch in the 1950s and early 1960s which discharges to the Red Deer River.
Figure 13: Regional Elevation & Anticipated Discharge Dispersion Area
### 6.5 Terrestrial Environment

#### 6.5.1 Plant Species

A preliminary plant survey was conducted in 2002 by Stantec of three separate bogs within 1.7 km radius of and including the Smokey Ridge Bog. Plant communities within the bogs were found to be relatively homogenous and contained 45 species of plants as identified in Table 1.

**Table 1: Plant Species Observed in Bogs**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andromeda glaucophylia</td>
<td>bog-rosemary</td>
</tr>
<tr>
<td>Aster borealis</td>
<td>marsh ester</td>
</tr>
<tr>
<td>Betula glandulosa</td>
<td>bog birch</td>
</tr>
<tr>
<td>Betula papyrifera</td>
<td>white birch</td>
</tr>
<tr>
<td>Betula pumila</td>
<td>dwarf birch</td>
</tr>
<tr>
<td>Carex spp.</td>
<td>sedge</td>
</tr>
<tr>
<td>Chamaedaphne calyculata</td>
<td>leather leaf</td>
</tr>
<tr>
<td>Cladina mitis</td>
<td>green reindeer lichen</td>
</tr>
<tr>
<td>Cladina rangiferina</td>
<td>grey reindeer lichen</td>
</tr>
<tr>
<td>Cladina stellaris</td>
<td>northern reindeer lichen</td>
</tr>
<tr>
<td>Cladoia coccifera</td>
<td>red pixie-cup</td>
</tr>
<tr>
<td>Drosera rotundifolia</td>
<td>round-leaved sundew</td>
</tr>
<tr>
<td>Dryopteris austriaca</td>
<td>spinulose shield fern</td>
</tr>
<tr>
<td>Epilobium angustifolium</td>
<td>fireweed</td>
</tr>
<tr>
<td>Equisetum arvense</td>
<td>common horsetail</td>
</tr>
<tr>
<td>Equisetum palustre</td>
<td>marsh horsetail</td>
</tr>
<tr>
<td>Eriophorum angustifolium</td>
<td>tall cotton grass</td>
</tr>
<tr>
<td>Eriophorum vaginatum ssp. vaginatum</td>
<td>sheathed cotton grass</td>
</tr>
<tr>
<td>Fragaria glauce</td>
<td>wild strawberry</td>
</tr>
<tr>
<td>Gaulthm boreale</td>
<td>northern bedstraw</td>
</tr>
<tr>
<td>Gaultheria hispidula</td>
<td>creeping snowberry</td>
</tr>
<tr>
<td>Geum triflorum</td>
<td>three-flowered avens</td>
</tr>
<tr>
<td>Hylocomium spendens</td>
<td>stair-step moss</td>
</tr>
<tr>
<td>Kalmia polifolia</td>
<td>bog laurel</td>
</tr>
<tr>
<td>Larix laricina</td>
<td>larch/tamarack</td>
</tr>
<tr>
<td>Lepidiumgroenlandicum</td>
<td>Labrador tea</td>
</tr>
<tr>
<td>Menyanthes trifoliata</td>
<td>buck-bean</td>
</tr>
<tr>
<td>Oxycoccus microcarpus</td>
<td>small bog cranberry</td>
</tr>
<tr>
<td>Panassie paltris</td>
<td>Northern grass-of-pammassus</td>
</tr>
<tr>
<td>Petasites palnatus</td>
<td>palmate-leaved coltsfoot</td>
</tr>
<tr>
<td>Petasites sagittatus</td>
<td>arrow-leaved coltsfoot</td>
</tr>
<tr>
<td>Picea mariana</td>
<td>black spruce</td>
</tr>
<tr>
<td>Pinus banksiana</td>
<td>jack pine</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Polytrichum juniperinum</td>
<td>juniper moss</td>
</tr>
<tr>
<td>Populus tremuloides</td>
<td>aspen poplar</td>
</tr>
<tr>
<td>Ptillium crista-castrensis</td>
<td>knight’s plume moss</td>
</tr>
</tbody>
</table>

At the time of the preliminary plant survey, the specific 72 hectare harvest site that is the subject of this proposal was not specifically identified. As a result, a detailed rare plant survey of the proposed harvest area was not completed. In order to address this, a rare plant survey will be conducted by qualified persons from Canada North Environmental Services Limited Partnership (Can North) in June 2014, prior to any development activities. That survey will include the access trail, the staging yard and the 72 ha harvest area.

In the event that this site specific vegetation survey identifies a particular rare plant occurrence within the proposed disturbed area, Premier Tech will undertake the transplantation of the plant to alternate locations of suitable habitat outside the potential impact area. Based on the investigation and recommendations, it is anticipated that this would provide successful mitigation. For example, species that could potentially occur within the area disturbed by the Smokey Bog project and therefore possibly require transplantation all have fairly general habitat requirements (e.g. few-flowered sedge occurs in digressional areas such as bogs, fens, and in riparian areas) growing on Sphagnum moss.

If transplantation is required, the monitoring and reporting of transplantation success on a schedule and duration agreed to by SKCDC and the Ministry of Environment will be undertaken in order to evaluate the success of mitigation measures.

### 6.5.2 Wildlife Species

#### Amphibians and Reptiles

Five species of reptiles and amphibians have known occurrences within the Mid-Boreal Lowland ecoregion; red-sided garter snake (*Thamnophis sirtalis*), Canadian toad (*Bufo hemiophrys*), northern leopard frog (*Rana pipiens*), wood frog (*Rana sylvatica*), and boreal chorus frog (*Pseudacris maculata*) (Acton et al. 1998).
Birds

Bird diversity in the Mid-Boreal Lowland ecoregion is moderately high and considered an important area for waterfowl habitat. There are large populations of barred owls (Strix varia) in this ecoregion along with breeding habitat for the black-throated blue warbler (Dendroica caerulescens) which is rarely seen in other parts of the province. The most common resident bird species in the ecoregion include Common Loon (Gavia immer), Wood Duck (Aix sponsa), Nashville Warbler (Vermicoraruficapilla), Blue-winged Teal (Anas discors), American Coot (Fulica americana), Franklin’s Gull (Leucophaeus pipixcan), Mallard (Anas playtrhynchos), and the Canada Goose (Branta canadensis) (Acton et al. 1998).

Mammals

The diversity of mammals within the Mid-Boreal Lowland ecoregion is relatively low, however, populations of moose (Alces alces) are some of the highest in the province. Some of the common mammal species within the ecoregion include white-tailed deer (Odocoileus virginianus), elk (Cervus canadensis), black bear (Ursus americanus), beaver (Castor canadensis), muskrat (Ondatra zibethicus), red squirrel (Tamiascurus hudsonicus) and porcupine (Erethizon dorsatum) and woodland caribou (Rangifer tarandus caribou) (Acton et al. 1998).

6.6 Rare, Sensitive, & At-Risk Species

A database searches for records of rare, sensitive, or at-risk species potentially occurring within a 30 km radius of NW 09-46-01 W2M was completed on May 9th, 2014. The searched included the Saskatchewan Conservation Data Centre (SKCDC) Wildlife Application database (SKCDC 2014a), the SKCDC Bird Atlas (SKCDC 2014b), the Species at Risk Public Registry (SARPR 2014), and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2014). Database searches were completed for a 30 km radius centered on the quarter section of interest.

A total of two amphibian species, 33 birds, three insects, one mammal, and 55 plant species were been found to occur within 30 km of the Project area (Appendix A) although significant number of the species identified within the 30 km radius of the site have a preferred habitat significantly different than that presented within the Smokey Ridge Bog.

Northern leopard frogs (Lithobatespipiens) are federally listed as Special Concern, and have a 500m setback guideline for breeding ponds. Canadian toads (Anaxyrushemiophrys) are not federally listed, but do have provincial setback guidelines. Of the rare plant species returned in the database search, none of them are federally listed species at risk; however, all S1 to S3 plant species have associated provincial activity restriction guidelines (50 m for high disturbance activities). Of the bird species that occurred, 14 are federally listed under SARA or COSEWIC, and all have provincial setback guidelines associated with their nests or breeding grounds. Woodland caribou (Rangifer tarandus caribou) are federally listed as threatened under SARA. None of the insect species are federally listed or have provincial setback guidelines.
Woodland Caribou

The boreal population of woodland caribou, including woodland caribou in Saskatchewan, is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the Species at Risk Act (SARA), and is provincially ranked as rare to uncommon (S3) in Saskatchewan.

The Smokey Ridge Bog is located within the southern edge of Critical Boreal Plain Range Habitat (SK2) as identified by the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada*, issued by Environment Canada in 2012.

6.7 Heritage Resources

A description of the land on which the peat harvest is proposed was submitted to the Developer’s Online Screening Tool, Heritage Conservation Branch, Saskatchewan Ministry of Parks, Culture and Sports (www.pcs.gov.sk.ca/SensitiveLocations) and all four properties return a response that “development on this quarter-section will require further screening by the Heritage Conservation Branch” because each quarter-section is heritage-sensitive or has not been screened yet for heritage sensitivity.

As a result, Premier Tech provided a project description to the Heritage Conservation Branch for further screening. On May 13, 2014, the Heritage Conservation Branch provided a letter to Premier Tech (Appendix B) which states that no known archaeological sites are in direct conflict with the proposed development, that the proposed peat harvest activities will occur on lands judged to have a low heritage potential (bog), therefore they have no further concerns with the proceeding as planned.
7  Potential Impacts and Mitigation Measures

7.1  Assessment Scope and Methodology

This section presents a general overview of the assessment methodology adopted to conduct an assessment of the impacts resulting from the Smokey Ridge Bog as proposed. It also defines the ‘scope of the project’ and the ‘scope of the assessment’ which provides the framework used to conduct the assessment.

7.1.1  Overview of General Assessment Methodology

The Canadian Environmental assessment Agency (CEAA) Environmental Assessment reference guide outlines the need to systematically consider how project facilities and operations interact with the environment. Where potential ‘adverse’ effects are identified, feasible mitigation measures are to be identified, and an assessment carried out on the ‘residual’ effects.

The proposed Smokey Ridge peat harvest will be undertaken using previously proven methods of water level management, peat harvest and bog reclamation. In addition, the following considerations were taken into account:

- The effectiveness and success of a variety of operational practices, processes, and mitigation measures that have been determined from actual operational information from existing and historical peat harvesting activities in Saskatchewan by Premier Tech;
- This historical operational information provides a sound basis for predicting future performance, and therefore impacts with confidence; and,
- A detailed consideration of potential malfunctions or incidents and their potential impacts.

In conducting the assessment of potential impacts there was also a need to systematically consider how project facilities and operations interact with the environment. Where potential ‘adverse’ effects were identified, feasible mitigation measures were identified, and an assessment carried out on the ‘residual’ effects.

Accordingly, a robust approach has been applied in carrying out this assessment, as discussed briefly in this section.

A description of the existing environment provides the basis to determine the likely interactions between the project components/activities and the surrounding environment; and likewise between the environment and the project. The environment, as defined by the Environmental Assessment Act, was considered and characterized in terms of ‘environmental components’ that may be affected by the project. The consideration of various aspects of culture, heritage, archaeology and traditional land and resource use was limited to those that are likely to result from project effects.
The starting point in conducting the assessment was to characterize the project components/activities associated with various feasible alternatives (technically and economically) that have been defined, and to identify those that have the potential to interact with the surrounding environment. The potential project-environment interactions for this assessment are associated with various ‘inputs’ and ‘outputs’ required for activities, such as bog water management as well as the operation of supporting facilities and infrastructure.

The inputs largely consist of consumables (e.g., fuel for the equipment) and labour; the outputs consist of a product, air emissions and various waste products. There are also supporting facilities and activities, such as transportation, which can interact directly with the environment.

The assessment of environmental effects involved predicting and evaluating the likely environmental implications of the proposed project. The assessment was carried out in a systematic manner, as discussed below.

In the final analysis, a six-step process was used to assess project impacts in order to ensure that the interactions between the project components and the project setting are adequately described, that the likely effects are identified and properly assessed, that mitigation measures are applied, and that the significance of any residual effect is determined. The steps are as follows:

**Step 1:** Describe the project facilities and activities;

**Step 2:** Identify and describe those components of the project setting (environmental, heritage, etc.) that will be or could be affected by the project development;

**Step 3:** Identify the nature and extent of the impact of any interaction between the project and the existing project setting;

**Step 4:** Identify proposed measure(s) available to manage the impacts identified in Step 3;

**Step 5:** Identify the magnitude, frequency, duration, significance and mitigative measure applicable to minimize of any residual effects of the project after mitigation measures are applied; and

**Step 6:** Assess the significance of any residual effects.

### 7.1.2 Ranking of Potential Environmental Impacts

In assessing the potential impacts of the proposed harvest program, the following definitions are provided to describe the significance of potential effects on the environment and hence the potential risks associated with an activity:

*No effect* means that there is no interaction between the activity (or substances, etc.) and the population or that the interaction has no effect;
**Negligible effect** is defined as one affecting the population or specific group of individuals at a localized area and/or over a short period in such a way as to be similar in effect to small random changes in the population due to natural environmental fluctuations, but having no measurable effect on the populations as a whole;

**Minor effect** is defined as one affecting the population or specific group of individuals at a localized area/or over the period (one generation or less), but not affecting other tropic levels or the integrity of any population as a whole. It may be localized;

**Moderate effect** is defined as one affecting a portion of a population, which may result in a change in abundance and/or distribution over one or more generations of that portion of the population or any population dependant on it, but does not change the integrity of any population as a whole. It may be localized; and

**Major effect** is defined as one affecting a whole population or species in sufficient magnitude to cause a decline in abundance and/or a change in distribution beyond which natural recruitment (reproduction, immigration, to affected areas) would not return that population or species, or any population or species, or any population or species dependent on it, to its former level within several generations.

### 7.2 Potential Impacts & Mitigation

Table 2 provides a summary of identified potential impacts, the expected duration, spatial extent and the significance of the identified impacts to various components of the natural ecosystem and proposed mitigation to address the identified impact. The last column identifies potential residual effects after the successful application of mitigation measures; including the successful decommissioning and reclamation of the disturbed portion of the Smokey Ridge Bog.

The ability to successfully decommission and reclaim the bog and minimize the residual effects has been developed with due consideration of the operational impacts/effects of Premier Tech’s previous operations in the region, their success in implementing mitigation activities and eventual effectively reclaiming similar sites.
<table>
<thead>
<tr>
<th>Site/Activity/Aspect</th>
<th>Potential Impact to Ecosystem Component</th>
<th>Duration of Impact</th>
<th>Significance of Impact</th>
<th>Spatial Extent of Impact</th>
<th>Mitigation</th>
<th>Residual Effects (Assumes Successful Mitigation and/or Reclamation)</th>
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</thead>
<tbody>
<tr>
<td><strong>Construction and Development</strong></td>
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<tr>
<td>Existing access trail upgrade to road</td>
<td>- Removal of vegetation in right of way</td>
<td>10 years (includes construction, operation &amp; decommissioning)</td>
<td>Moderate effect</td>
<td>Local Area</td>
<td>Decommission, re-vegetate &amp; close road</td>
<td>Negligible effect</td>
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<tr>
<td></td>
<td>- Dusting</td>
<td></td>
<td>Minor effect</td>
<td>Local Area</td>
<td>Appropriate dust suppression measures</td>
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<td></td>
<td>- Erosion and sedimentation in road corridor</td>
<td></td>
<td>Minor effect</td>
<td>Local Area</td>
<td>Implement appropriate erosion and sedimentation minimization measures</td>
<td></td>
</tr>
<tr>
<td>Borrow area development &amp; operation</td>
<td>- Removal of vegetation</td>
<td>1 month</td>
<td>Negligible effect</td>
<td>Site</td>
<td>Decommission, &amp; flood</td>
<td>Negligible effect</td>
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<td></td>
<td>- Dusting</td>
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<td>Site</td>
<td>Appropriate dust suppression measures</td>
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<tr>
<td>Vehicular traffic &amp; material haulage to site</td>
<td>- Wildlife disturbance</td>
<td>1 month</td>
<td>Negligible effect</td>
<td>Local Area</td>
<td>- Minimize traffic volume</td>
<td>Negligible effect</td>
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<td></td>
<td>- Wildlife interactions</td>
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<td>Minor effect</td>
<td>Local Area</td>
<td>- Sound vehicle maintenance</td>
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<td>- Dusting</td>
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<td>Minor effect</td>
<td>Local Area</td>
<td>- Enforced speed limits</td>
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<tr>
<td>Site preparation disturbance</td>
<td>- Removal of vegetation</td>
<td>10 years (includes construction, operation &amp; decommissioning)</td>
<td>Moderate effect</td>
<td>Local Area</td>
<td>- Qualified &amp; careful operations</td>
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<td></td>
<td>- Surface disturbance</td>
<td>1 month</td>
<td>Negligible effect</td>
<td>Local Area</td>
<td>Appropriate dust suppression measures if required</td>
<td></td>
</tr>
<tr>
<td>Supporting infrastructure construction</td>
<td>- Dusting</td>
<td>2 months</td>
<td>Minor effect</td>
<td>Site</td>
<td>- Noise abatement strategy if warranted</td>
<td>Negligible effect</td>
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<tr>
<td>Drainage ditch</td>
<td>- Lowering of bog/harvest area water levels</td>
<td>10 years (includes construction, operation &amp; decommissioning)</td>
<td>Moderate effect</td>
<td>Local Area</td>
<td>- Natural recharge of waters (passive mitigation)</td>
<td>Negligible effect</td>
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<td></td>
<td>- Discharge of water</td>
<td></td>
<td>Minor effect</td>
<td>Local Area</td>
<td>- Discharge to existing wetlands which will diffuse and moderate flows and impacts</td>
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<tr>
<td>Discharge water</td>
<td>- Discharge water quality</td>
<td>10 years (includes construction, operation &amp; decommissioning)</td>
<td>Negligible effect</td>
<td>Regional</td>
<td>- Conduct water quality monitoring per the Approval to Operate</td>
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<tr>
<td>Noise (from construction)</td>
<td>- Impact to wildlife</td>
<td>2 months</td>
<td>Negligible effect</td>
<td>Local Area</td>
<td>- Noise abatement strategy if warranted</td>
<td>Temporary negligible effect</td>
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<tr>
<td>Rare plant species</td>
<td>- Disturbance</td>
<td>One time</td>
<td>Minor effect</td>
<td>Site</td>
<td>- Transplant &amp; monitor success</td>
<td>Negligible effect</td>
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<tr>
<td>Noxious weeds</td>
<td>- Introduction to area</td>
<td>2 months</td>
<td>Negligible effect</td>
<td>Site</td>
<td>- Appropriate clearing of off-site equipment</td>
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<tr>
<td>Rare &amp; endangered wildlife species</td>
<td>- Disturbance</td>
<td>2 months</td>
<td>Minor effect</td>
<td>Site</td>
<td>- Locate and remove during decommissioning if required</td>
<td>Negligible effect</td>
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<td>Harvest Operations</td>
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<tr>
<td>Operational air emissions</td>
<td>- Agriculture tractor exhaust</td>
<td>10 years</td>
<td>Negligible effect</td>
<td>Site</td>
<td>- Monitoring and maintenance</td>
<td>Negligible effect</td>
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<td>- Dusting</td>
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<td>Site</td>
<td>- Dust suppression measures as required</td>
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<tr>
<td>Noise (from operation)</td>
<td>- Impact to wildlife</td>
<td>10 years</td>
<td>Negligible effect</td>
<td>Site</td>
<td>- Noise abatement strategy if warranted</td>
<td>Negligible effect</td>
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<td>Vehicular traffic &amp; product haulage</td>
<td>- Wildlife disturbance</td>
<td>10 years</td>
<td>Negligible effect</td>
<td>Local Area</td>
<td>- Minimize traffic volume</td>
<td>Negligible effect</td>
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<td>- Wildlife interactions</td>
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<td>Minor effect</td>
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<td>- Sound vehicle maintenance</td>
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<td>- Enforced speed limits</td>
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<td>Aesthetics</td>
<td>- Change in landscape topology</td>
<td>10 years</td>
<td>Minor effect</td>
<td>Site</td>
<td>- Qualified &amp; careful operations</td>
<td>Negligible effect</td>
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<td>- Re-establish natural water level after decommissioning</td>
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<td>Site/Activity/Aspect</td>
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<td>- Strict adherence to employee no hunting policy</td>
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<td>Rare &amp; endangered wildlife species</td>
<td>- Disturbance</td>
<td>- 10 years</td>
<td>- Minor effect</td>
<td>- Local Area</td>
<td>- Appropriate management</td>
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<td>LOCATE AND REMOVE DURING DECOMMISSIONING IF REQUIRED</td>
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<td>- NOLGIBLE EFFECT DUE TO CLEANUP PROCEDURES</td>
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<td>Noise (from decommissioning activities)</td>
<td>- Impact to wildlife</td>
<td>- 1 month</td>
<td>- Negligible</td>
<td>- Site</td>
<td>- Noise abatement strategy if warranted</td>
<td>- Temporary negligible effect</td>
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<td>Vehicular traffic &amp; material haulage</td>
<td>- Wildlife disturbance</td>
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<td>- Appropriate dust suppression measures</td>
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<td>Noxious weeds</td>
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<td>Rare &amp; endangered wildlife species</td>
<td>- Disturbance</td>
<td>- 1 month</td>
<td>- Minor effect</td>
<td>- Local Area</td>
<td>- Appropriate management</td>
<td>- Negligible effect</td>
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<tr>
<td>Cumulative Impacts</td>
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<td>- Strict adherence to employee no hunting policy</td>
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<tr>
<td>Increased traffic on grids and highways</td>
<td>- Air emissions</td>
<td>- 10 years</td>
<td>- Negligible</td>
<td>- Regional Area</td>
<td>- Minimize traffic volume</td>
<td>- Negligible effect</td>
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<td></td>
<td>- Wildlife disturbance</td>
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<td>- Minor effects</td>
<td>- Regional Area</td>
<td>- Sound vehicle maintenance</td>
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<td>- Appropriate dust suppression measures</td>
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<tr>
<td>Increased local access</td>
<td>- Increase in hunting/fishing</td>
<td>- 10 year</td>
<td>- Negligible (access trail currently exist)</td>
<td>- Local Area</td>
<td>- Restrict access to site</td>
<td>- Negligible effect</td>
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<td>- Site restrictions on hunting policy</td>
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<td></td>
<td>- Decommission and close access roads</td>
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</table>
7.3 Rare Plants

A rare plant survey will be conducted by qualified persons from Canada North Environmental Services Limited Partnership (Can North) prior to any development activities. That survey will include the access trail, the staging yard and the 72 ha harvest area.

In the event that this site specific vegetation survey identifies a particular rare plant occurrence within the proposed disturbed area, Premier Tech will undertake the transplantation of the plant to alternate locations of suitable habitat outside the potential impact area. Based on the investigation and recommendations, it is anticipated that this would provide successful mitigation. For example, species that could potentially occur within the area disturbed by the Smokey Bog project and therefore possibly require transplantation all have fairly general habitat requirements (e.g. few-flowered sedge occurs in digressional areas such as bogs, fens, and in riparian areas) growing on Sphagnum moss.

If transplantation is required, the monitoring and reporting of transplantation success on a schedule and duration agreed to by SKCDC and the Ministry of Environment will be undertaken in order to evaluate the success of mitigation measures.

7.4 Woodland Caribou

The boreal population of woodland caribou, including woodland caribou in Saskatchewan, is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the federal *Species at Risk Act* (SARA), and is provincially ranked as rare to uncommon (S3) in Saskatchewan.

The preferred habitat of the boreal population of woodland caribou includes upland areas with mature to old-growth coniferous forests (black spruce and jack pine) and conifer dominated peat lands (Rettie and Messier 2000; COSEWIC 2002; EC 2009b; SARPR 2011a). During calving season, habitats with reduced predation risk, such as islands in water bodies, lake shorelines, peat lands, and forests, are preferred (SARPR 2011b).

The Smokey Ridge Bog is located within the R.M. of Hudson Bay No. 384 and within the southern edge of Critical Boreal Plain Range Habitat (SK2) as identified by the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada*, issued by Environment Canada in 2012.

Boreal caribou alternate their feeding patterns depending on the time of the year. During winter, caribou feed on terrestrial lichens and ericaceous shrubs. This is done by digging through the snow (i.e. cratering) to reach foraging species. When cratering becomes too difficult, due to snow depth or density, caribou feed on arboreal lichens. During the other months of the year caribou feed on mushrooms and green vascular plants (Bergerud 2000). Sedges, grasses, forbs and the
leaves of shrubs as well as fungi and lichen species make up most of their diet during the summer.

In order to better understand the spatial, temporal and landscape characteristics of calving sites and calving seasons for boreal caribou, Dyke analyzed the movement pattern of 31 animals in the boreal plains and boreal shield ecozones. Telemetry data from 31 females in the boreal plains and boreal shield ecozones [12 from the Kississing-Naosap herd in Manitoba (northeast of Smokey Ridge Bog) between 2002 and 2005, and 19 from the Smoothstone-Wapaweka animals in Saskatchewan west of the Smokey Ridge Bog) between 2005 and 2007] were analysed. The calving season extended from April 29 to June 7 for the Smoothstone-Wapaweka animals and from May 4 to May 29 for the Kississing-Naosap herd. (Dyke, 2008)

Based on its location and physical attributes, the Smokey Ridge bog cannot be considered as optimum preferred woodland caribou habitat. Notwithstanding this, and in order to mitigate potential impacts on woodland caribou resulting from proposed harvest activities, throughout the planning of the Smokey Ridge Bog harvest, Premier Tech has incorporated mitigation techniques to minimize or avoid the destruction of critical habitat as defined in Appendix I of the 2012 Environmental Canada’s *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou) Boreal population, in Canada*. Table 3 provides a summary of the “considerations in planning” and “suggested mitigation techniques” provided in the *Recovery Strategy* and the responses to each employed in the planning of the Smokey Ridge Bog harvest project.

The most significant of these include (but not limited to):

- Limiting the harvest area to a small 72 ha polygon.
- Limiting the harvest activities to the southern portion of the bog only.
- Initial development of the site will take place in mid to late June to avoid potential calving season and subsequent harvests will commence in late May in subsequent years to minimize harassment of caribou.
- A strictly enforced policy that prohibits hunting by any employees while on site or while travel to and from the work place will be in place.
- A previously disturbed (existing, cleared access trail) will be upgraded to access the site and thereby eliminate the need for a new disturbance.
- Access to the site will be limited and will not open any area beyond the harvest site.
- The site will be decommissioned and reclaimed after the peat harvest.
## Table 3: Woodland Caribou Mitigation in Project Planning

<table>
<thead>
<tr>
<th>Considerations in Planning (EC&lt;sup&gt;5&lt;/sup&gt;)</th>
<th>Suggested Mitigation Techniques (EC)</th>
<th>Smokey Ridge Project Planning</th>
</tr>
</thead>
</table>
| Threshold of disturbance in short- and long-term | Minimize the footprint of development  
Consider habitat locations where habitat is already disturbed  
Restore habitat to provide continual availability of undisturbed habitat over time | - Harvest operation limited to 10 years followed by decommissioning & reclamation  
- 1.25 km existing access trail to site will be upgraded  
- Site & access will be decommissioned and reclaimed after harvest |
| Ecological factors | Avoid destruction of biophysical attributes | - Smokey Ridge bog is not optimum woodland caribou habitat  
- Bog has active agricultural lands (crop /pasture) on south and east sides |
| Spatial configuration | Minimize disturbance by adapting its shape (small polygons vs. linear shape) | - Harvest has been limited to 72 ha polygon  
- Harvest area is less than 40 % of total bog area |
| Sensory disturbance | Minimization of noise, light smells, vibrations to prevent harassment | - Initial development will take place in mid to late June to avoid potential calving season  
- Harvest will commence in late May in subsequent years to minimize harassment |
| Pollution | Mitigate pollution through scrubbers or other techniques. | - Only emission from project will be from a limited number of agricultural tractor exhaust |
| Timing of disturbance | Certain types of disturbance could occur only in seasons when boreal caribou are not using the area or do not respond negatively to activity | - Initial development will take place in mid to late June to avoid calving season  
- Harvest will commence in late May in subsequent years to minimize harassment |
| Induced effects | New access roads to previously undisturbed areas may induce further disturbance by opening territory to more development, recreational user, etc. This could be prevented by an access management plan that could include limiting access, decommissioning roads, etc. | - A strictly enforced policy that prohibits hunting by any employees while on site or while travel to and from the work place will be in place.  
- 1.25 km existing access trail to site will be upgraded  
- Access will be limited and will not open any area beyond the harvest site  
- Site will be decommissioned and reclaimed after harvest |
| Corridors that support predator movement | Impact may be reduced by using techniques that prevent use of corridors by predators (no compacting of snow, immediate replanting of trees, etc.) | - Site & access will be decommissioned and reclaimed after harvest activities are completed |
| Increases in predator and/or alternate prey populations | Mortality management techniques may be considered where the killing of predators would be a final, necessary option implemented temporarily, along with habitat restoration. | - Not applicable to project |

---

7.5 GHG Emissions

7.5.1 Introduction

Lowering the water levels in the harvest area, stockpiling, and restoration will change the ability of the peat profile to produce and emit carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) (Glatzel et al. 2004). The Smokey Ridge harvest area bog will become a source of greenhouse gases during construction, operation and decommissioning phases (Waddington and Price 2000, Anderson 2006, and Kimmel 2010).

7.5.2 Drainage

During development and operations, drainage ditches will be created to lower the water table within the harvest area. The lowering of the water levels to facilitate harvest will cause oxic conditions within the peat field, resulting in increased aerobic microbial decomposition and CH4 oxidation, causing increased CO2 emissions. The drainage ditches, on the other hand, will be a large source of CH4 emissions because of the saturated, anaerobic conditions and warm temperatures during the summer (Waddington et al. 2009).

7.5.3 Stockpiling

Once the peat is harvested it will be stockpiled before being packaged. The peat decomposition that occurs during the stockpiling stage will result in significant CO2 emissions. Depending on conditions, peat stockpiles can emit up to 3g CO2 m-2 hr-1 (Ahlholm and Silvola 1990).

7.5.4 Rewetting

During restoration, rewetting will reduce emissions of CO2 and N20, but CH4 emissions will increase (Kirkinen et al. 2007). As peat accumulates, the bog will again become a sink for CO2; however, the emissions of the stronger greenhouse gas, CH4, will result in the restored bog remaining a net carbon source in the short term (Waddington and Price 2000, Anderson 2006, and Kimmel 2010). In the long term, as peat accumulates and slowly sequesters carbon, the bog will reach a switchover point and once again become a net carbon sink (Waddington and Price 2000).

Overall, the largest sources of greenhouse gas emissions during the peat extraction processes will be the drainage ditches, as they will have increased CH4 emissions because of the increased methanogenic activity caused by the saturated and anoxic conditions (Waddington et al. 2009). Secondly, stockpiling for several months will release large amounts of CO2.

7.5.5 Mitigation

To limit the emission of greenhouse gases during the project phases, Premier will shorten the duration of peat stockpiling, as much as possible, and implement rewetting and restoration activities as soon as possible after harvesting is complete. Rewetting will decrease the overall oxidation of the
peat field and thus reduce CO$_2$ production. Early restoration and rewetting will prevent peat temperature increases and irreversible changes to peat structure which could inhibit *Sphagnum* re-establishment (Waddington et al. 2001).

### 7.5.6 Significance

The residual effect of increased greenhouse gases in the long term is considered moderate. Restoration of the bog will return it to a net carbon sink in less than ten years if restoration is successful (Waddington et al. 2010). However, although the bog may regain its net carbon sink function within 10 years, it will take significantly longer (up to 100 years) for the bog to sequester the amount of carbon that was emitted into the atmosphere, through greenhouse gas emissions, during the Project operations (Frolking et al. 2006).

### 7.6 Cumulative Impacts

Cumulative environmental impacts are the project-specific impacts of the project, combined with the impacts from existing and planned developments in the region which will result in, or contribute to, any regional or cumulative environmental effects.

The most significant “industrial” activities in the area are the Weyerhaeuser’s Structurewood plant located south of Hudson Bay (approximately 22 km southeast of the Smokey Ridge site) and it related forest harvest activities within the Pasquia Porcupine Forest Management Area. Other “industrial” activities located in a more immediate vicinity of the Smokey Ridge site are related to agriculture which primarily consists of crop production, hay production and pasturing of cattle. There are no other peat harvest activities in the region. Premier Tech is not aware of any other planned future developments in the region.

Because of the nature of the peat harvest activities combined with the other industrial activities in the region, cumulative effects, if present, will likely be limited to atmospheric emission. As the level and duration of such emission from either agriculture and/or forestry harvesting are limited, this combined with the ease of dispersion of such emission, no cumulative effects are anticipated to result from the Smokey Ridge harvest project-specific impacts when they are combined with the impacts from other existing and planned developments in the region which will result in, or contribute to, any regional or cumulative environmental effects.

### 7.7 Impacts of the Environment on the Project

#### 7.7.1 Introduction

This section provides an assessment of potential impacts the environment may have on the project as proposed.
7.7.2 Forest Fire

All facilities associated with Smokey Ridge Harvest Program will be self-reliant for fire prevention and suppression. As discussed in section 5.7.5 programs, procedures and practices will be developed and implemented at the site in order to ensure that fire prevention and protection are of paramount importance.

7.7.3 Drought Conditions

The impacts of a short or long term drought in the project area will have a minimal impact on the project operations as proposed. The two most significant implications with regard to this condition would likely be the increased potential of forest fires in the area and a potential decrease in surface flows into the bog. Neither is expected to have a significant effect on the project or its environmental impacts.

7.7.4 Major Precipitation Event

A major precipitation event (i.e. a 1-in-100 year event) could have the potential to flood the containment pad within the staging yard although this is likely to have little impact as the hazardous substances and waste dangerous goods storage facilities located within the pad will be stored in double walled tanks and the area will be well maintained.

A major precipitation event will have a minimal effect on the harvest area as the Smokey Ridge bog and downstream areas are wet lands which tend to retain significant precipitation and moderate the discharge over time. A major precipitation event will require Premier Tech to cease harvesting activities until the harvest area returns to a dry condition.

7.7.5 Seismic Event

Extensive research on the tectonic stability of the boreal region has been carried out by numerous investigators and concluded that the region is one of the most tectonically stable areas in the world. Seismic activity is not considered to be an issue for the Smokey Ridge harvest project activities due to the extremely low probability of significant seismic activity in the region and the type of operation being proposed.

7.7.6 Global Warming/Climate Change

Assessing the potential changes in climate resulting from global warming in a particular region of Canada has been and continues to be a challenge. Although a number of complicated and reputed general circulation models have been developed and used to simulate the effect of various concentrations of greenhouse gasses on the global climate, they differ to some extent in terms of how the operate and the input parameters used. Consequently, although the models produce similar results on a global scale, significant variations occur on a regional scale.
Generally it can be stated that higher air temperatures are predicted for most of Canada with noticeably warmer fall and winter periods. The models also suggest that increased winter precipitation may lead to more intense runoff events and that evaporation and evapotranspiration rates are generally expected to increase in many areas of Canada.

The Smokey Ridge bog by its nature is a natural is a modifying feature which can handle significant precipitation or snow melts events and therefore potential increases in runoff do not pose a significant risk.
8 Stakeholder, First Nations and Métis Engagement

8.1 Introduction

The prospect of a project such as the Smokey Ridge harvest project can promise economic benefits to a community in the form of employment and business development. However, the same project may also raise concerns and uncertainty in a segment of the community, particularly with regard to the potential for negative impacts to the biophysical environment or to traditionally important activities such as hunting, trapping and fishing.

Premier Tech recognizes the importance of full and open discussion of the issues and options associated with the development of the project and the related concerns that individuals or communities may have in relation to the activities. In light of this, Premier Tech has maintained open and honest communications with local communities and individual stakeholders throughout all stages of the project. As the proponent desires to ensure that their operational practices, both now and into the future, reflect the values, expectations and needs of the community in which it is operating, continued mutually respectful engagement with all stakeholders is important to Premier Tech.

Stakeholders are defined as those groups, sub-groups and/or individual people whom the project might affect. They all have a stake in the progress of the project, whether they are regulators, supporters or critics.

The stakeholder engagement to date have been undertaken to ensure open and informed discussion of developing the Smokey Ridge harvest project. In the end, all parties must be satisfied, to the extent possible that the site and associated activities pose no danger to worker health and safety, public health and safety, and are not a source of unnecessary negative impact on the environment during operations and that after decommissioning and reclamation are complete the site will, to the extent possible, allow for a productive use of the land similar to its original use prior to harvest or to an acceptable alternative.

8.2 Guiding Principles

The following principles have and will continue to be used by Premier Tech and its representatives in conducting engagement with stakeholders:

- Communicate clearly and at the right time.
- Provide full information promptly to encourage fair and informed discussion.
• Support engagement/consultation to the maximum by responding to information requests fully and quickly.

• Establish clear and realistic timetables for accepting requests, suggestions and submissions, and be sensitive to the limited resources available to people and groups.

• Provide information, particularly technical information, in plain language.

• Give practical help to people and groups to take part, with attention to equal opportunity.

• Ensure that people who join the engagement/consultation process at different stages will, as much as possible be able to influence the direction of the developing project.

• Stimulate conciliatory and constructive exchanges of views and genuinely try to address, without prejudice, the major issues identified.

• Frequently monitor and evaluate the effectiveness of the engagement/consultation program during and at the end of each phase of the project.

• Share with the community the responsibility for effective engagement/consultations.

8.3 Identification of Primary Stakeholders

The following communities/groups/organizations were identified as the primary stakeholders related to the Smokey Bog project:

• The R. M. of Hudson’s Bay No. 384;

• The Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Hudson Bay Local #114;

• The Red Earth First Nation; and,

• The Shoal Lake Cree Nation

As Premier Tech has, in the past, also consulted with the Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Archerwill Local #58, this local was also included in the list.

8.4 Community Engagement Activities

8.4.1 Smokey Ridge Bog Harvest Presentation

During community engagement sessions, Premier Tech made a Power Point presentation and/or provided hard copies of the presentation. Appendix C provides a copy of the presentation hard copy.

8.4.2 R.M. of Hudson Bay No.384

A meeting was held with the Reeve and two councillors from the R.M. of Hudson Bay on the morning of May 8, 2014 in the R.M. office in Hudson Bay. During the presentation, a number of questions were posed and answered primarily dealing with the upgrade of the access trail, road traffic (primarily from the product haul) on the grid roads within the R.M. and the ability of existing
ditching to handle flows from the harvest area drainage. With regard to the latter, it was pointed out by Premier Tech that the lowering of water levels within the bog will take place at a slow rate, not commence until after the 2014 spring freshet and be less that those experienced during a “typical spring runoff”.

No concerns were identified with the proposed Smokey Ridge harvest project as proposed by the Reeve or the two councillors in attendance.

8.4.3 Métis Nation of Saskatchewan, Eastern Region II, Hudson Bay Local #114

By invitation and with the permission of the Reeve of the R.M. of Hudson Bay, the President of the Hudson Bay Métis Local #114 also attended the meeting on the morning of May 8, 2014 in the R.M. office in Hudson Bay. During the presentation, he raised a number of issues primarily related to access to the site and suggested placing a security gate at the property boundary to limit access.

During the meeting and in private one-on-one discussion after the meeting, no concerns were identified with the proposed Smokey Ridge harvest project as proposed by the President of the Hudson Bay Métis Local #114.

8.4.4 Red Earth First Nation

Copies of the presentation (Appendix C) were hand delivered to the administration offices of the Red Earth First Nation on May 21, 2014 and a meeting to discuss the proposed harvest project was held with three Councillors. During the meeting, representatives of Premier Tech provided an overview of the proposed project and answered questions. No concerns were expressed by the Councillors in attendance.

Premier Tech also left printed copies of the presentation with a cover letter which stated that Premier Tech was currently in the process of making the appropriate application to begin development of the Smokey Ridge harvest this spring. The letter concluded by inviting the Chief and Council to contact Premier Tech in the event that they had any comments, question or concerns about the harvest project.

8.4.5 Shoal Lake Cree Nation

Similarly, on May 21, 2014 copies of the presentation (Appendix C) were hand delivered to the administration offices of the Shoal Lake Cree Nation and a meeting to discuss the proposed harvest project was held with three Councillors. During the meeting, representatives of Premier Tech provided an overview of the proposed project and answered questions. No concerns were expressed by the Councillors in attendance.

Premier Tech also left printed copies of the presentation with a cover letter which stated that Premier Tech was currently in the process of making the appropriate application to begin development of the Smokey Ridge harvest this spring. The letter concluded by inviting the
Chief and Council to contact Premier Tech in the event that they had any comments, question or concerns about the harvest project.

8.4.6 Métis Nation of Saskatchewan, Eastern Region II, Archerwill Local #58

Premier Tech met with representatives of the Archerwill Métis Local #58 in Tisdale Saskatchewan for May 28, 2014. During the meeting, representatives of Premier Tech provided an overview of the proposed project and answered questions. The representatives indicated that additional consideration was required and indicated that further communication would be beneficial as would a site visit to an existing operation which Premier Tech is currently in the process of organizing.

Premier Tech left printed copies of the presentation and concluded by inviting the representatives to contact Premier Tech in the event that they had any comments, question or concerns about the harvest project.

8.5 Continuing Engagement

Premier Tech is committed to continue an appropriate level of engaging the people of the region, representatives of the RM of Hudson Bay #394, people of Métis’ ancestry and leadership of the Red Earth and Shoal Lake First Nations by scheduled meetings in relevant communities. This engagement has and will continue to be undertaken in a manner that ensures that the leadership and community members in the area are fully informed about activities of the company in a manner that maximizes the opportunity for feedback on those activities.
9 Summary & Self-Assessment

9.1 Summary

Premier Tech Horticulture (Premier Tech) is proposing to harvest approximately 72 hectares (≈ 177 acres) within a single, 162 hectares (≈ 400 acres) *Sphagnum* (peat) bog (Smokey Ridge Bog) which is located primarily on land by the Ministry of Agriculture within the Rural Municipality of Hudson Bay #394 and truck the harvested peat approximately 175 km to the existing Premier Tech processing facility in Carrot River, Saskatchewan. The harvest activity will disturb approximately 72 hectares and provide approximately 10 years of harvesting activity.

The Premier Tech Saskatchewan operations are well-known throughout the industry for the quality of its peat moss. Over the years the majority of Premier Tech’s clients requires and utilizes an exceptionally fibrous moss which is characteristic of Saskatchewan peat.

Premier Tech’s current harvest operation near Carrot River no longer has enough peat to supply the Carrot River bagging and packaging facility and in 2013 (last year) production at the facility was curtailed by approximately 30%. There are no adjoining undeveloped peat sections available in the Carrot River area.

In order to maintain a supply of peat to the Carrot River Processing and Bagging Plant, Premier needs to harvest in a new area. Premier has invested significant capital in the Carrot River Processing and Bagging Plant and wishes to keep the infrastructure in place at this location and continue to provide employment and benefits to the region. In order to maintain the same quality standard and supply of peat, Premier needs to develop new peat bogs as soon as possible. The Smokey Ridge bog is proposed because it contains a high quality peat moss (i.e. contains hi-fibers and a low pH), it provides an approximate 10 year supply of peat, and there is a low amount of vegetation cover.

At the conclusion of the harvest activities, the harvest area will be decommissioned. Site reclamation will be conducted following the completion of decommissioning and will be tailored to the wishes of Saskatchewan Ministry of Agriculture, the owner of the land. That Ministry may wish that the future land use of the bog be more suitable for agricultural (e.g., grazing) than its present state.

Alternately, Premier Horticulture Ltd. can also, if requested, conduct a reclamation process oriented to peat land restoration which it has done before with positive results, establishing an ecosystem similar to that which existed before the peat harvest.

Premier tech has successfully reclaimed harvested peat areas in Saskatchewan in the past and will follow the site restoration recommendations from *The Peatland Restoration Guide* (Quinty and Rochefort 2003) during the reclamation of the Smokey Ridge bog.
9.2 Self-Assessment

This Smokey Ridge Peat Harvest Proposal is also being submitted to provide the results of a “self-assessment” to demonstrate that, in Premier Tech Horticulture Ltd’s opinion, the proposed activity is not likely to “trigger” the criteria specified in section 2(d) of The Environmental Assessment Act. The following table (Table 4) is a reproduction of the “Self-Assessment Checklist” provided in Appendix A of the Technical Proposal Guidelines, A Guide to Assessing Projects and Preparing proposals Under the Environmental Assessment Act, November 2012 (Ministry of Environment) and is provided as a summary of the reasons for this conclusion.
### Table 4: Smokey Ridge Peat Harvest Project Self-Assessment Checklist

<table>
<thead>
<tr>
<th>Is the proposed project a ‘development’?</th>
<th>Yes</th>
<th>No</th>
<th>Mitigation or Regulated Through Permits &amp; Approvals</th>
</tr>
</thead>
</table>
| 1. Is the proposed project likely to have an effect on any unique, rare or endangered feature of the environment? | X   |    | • The Heritage Conservation Branch provided a letter to Premier Tech which states that no known archaeological sites are in direct conflict with the proposed Smokey Ridge peat harvest development, that the proposed peat harvest activities will occur on lands judged to have a low heritage potential (bog) and therefore the Branch has no further concerns with the project proceeding as planned.  
• The Smokey Ridge Bog is located within the southern edge of Critical Boreal Plain Range Habitat (SK2) as identified by the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada*, issued by Environment Canada in 2012. In order to mitigate potential impacts on woodland caribou resulting from proposed harvest activities, throughout the planning of the Smokey Ridge Bog harvest project, Premier Tech has incorporated mitigation techniques to minimize disturbance and/or avoid the destruction of critical habitat as defined in Appendix I of Environmental Canada’s 2012 *Recovery Strategy*.  
• According to *Canadian Peat Harvesting and the Environment (2nd Edition). Issue Paper, No. 2001-1* published by the North American Wetlands Conservation Council Committee, Saskatchewan has approximately 4.9 million hectares of peatland, which covers approximately 7.5% of the province’s land surface.  
• The Smokey Ridge bog is not a “unique” ecosystem as numerous examples of similar bogs can be found throughout the region. This includes two additional separate small bogs, totalling approximately 54 hectares within 2 km of the harvest site.  
• Premier Tech has commitment to and will conduct a site specific rare plant survey of the access trail and harvest site prior to any project related disturbance, transplant rare plants if any are located and monitoring the success of the transplanting effort.  

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<tr>
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<tr>
<td>Mitigation or Regulated Through Permits &amp; Approvals</td>
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<td><em>Disposition and Alteration Regulations</em> states that, subject to subsection (2) and section 5, for the purposes of subsection 6(2) of the Act, dispositions that permit forest harvesting and activities incidental to forest harvesting are “permitted dispositions”. Section 2 (c.1) of the same regulations defines “forest harvesting” as cutting, picking, gathering, collecting, accumulating or removing forest products as defined in <em>The Forest Resources Management Act</em> by any means. Section 2 (1) (k) of <em>The Forest Resources Management Act</em> defines “forest products” as “all vegetation on or from forest land or waters on or associated with forest land, whether alive, dead or cut, and includes trees, shrubs, herbs, grasses, mosses, fungi and any parts or components of that vegetation;”</td>
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<tr>
<td>• As a result, the proposal has also been prepared in support of an application for a disposition to permit forest harvesting and activities incidental to forest harvesting within the north half of Section 9 and the south half of Section 16, Township 46, in Range 1, west of the Second Meridian pursuant to <em>The Wildlife Habitat Lands Disposition and Alteration Regulations</em>.</td>
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<tr>
<td>• Premier Tech will decommission all facilities and, if requested by the Ministry of Agriculture (the land owner), conduct a reclamation process oriented to peat land restoration establishing an ecosystem similar to that which existed before the peat harvest. Premier Tech has demonstrated successful restoration of similar bogs in the region.</td>
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</table>

2. Is the proposed project likely to substantially utilize any provincial resource and, in so doing, pre-empt the use, or potential use, of that resource for any other purpose?

<table>
<thead>
<tr>
<th>Yes</th>
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<tr>
<td>• Premier Tech is proposing to harvest approximately 72 hectares (≈ 177 acres) within the southern portion of a single 162 hectares (≈ 400 acres) <em>Sphagnum</em> (peat) bog (Smokey Ridge Bog).</td>
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<td>ecosystem similar to that which existed before the peat harvest. Premier Tech has demonstrated successful restoration of similar bogs in the region.</td>
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<td>3. Will the proposed project cause the emission of any pollutants or create by-products, residual or waste products, which will require handling and disposal in a manner that is not regulated under any other Act or regulation?</td>
<td>X</td>
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<tr>
<td>• Premier Tech has previously harvested peat subject to an Approval to Operate issued pursuant to Section 58 of <em>the Environmental Protection Act, 2002</em>, Section 26 of <em>The Mineral Industry Environmental Protection Regulations, 1996</em>, and section 9 of <em>The Hazardous Substances and Waste Dangerous Goods Regulation</em>.</td>
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<tr>
<td>• Premier Tech will adhere to the new Saskatchewan Environmental Code and associated guidance requirements as they apply to the harvest activities.</td>
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<tr>
<td>• The following permits/approvals are anticipated for the Smokey Ridge harvest project:</td>
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<td>o <em>Forest Product Permit</em> – Sask. Ministry of Environment</td>
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<td>o <em>Approval to Construct Road &amp; Approach</em> – R.M. of Hudson Bay No. 394</td>
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<td>o <em>Disposition (Miscellaneous Use Permit)</em> – Sask. Ministry of Environment &amp;/or Ministry of Agriculture</td>
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<td>o <em>Aquatic Habitat Protection Permit</em></td>
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<td>o <em>Approval to Construct Facilities</em> – Sask. Ministry of Environment, Environmental Protection Branch</td>
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<tr>
<td>o <em>Approval to Construct, Install, Alter or Expand a Storage Facility (Hazardous Substances and Waste Dangerous Goods)</em> – Sask. Ministry of Environment, Environmental Protection Branch</td>
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<tr>
<td>o <em>Permit to Operate</em> – Sask. Ministry of Environment, Environmental Protection Branch</td>
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<tr>
<td>o <em>Approval to Store Hazardous Substance or Waste Dangerous Goods at a Storage Facility</em> – Sask. Ministry of Environment, Environmental Protection Branch</td>
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<td>o <em>Approval to Decommission Storage Facility</em> – Sask. Ministry of Environment, Environmental Protection Branch</td>
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<tr>
<td>o <em>Release from Decommissioning and Reclamation</em> – Sask. Ministry of Environment, Environmental Protection Branch, Saskatchewan Ministry of Agriculture</td>
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<tr>
<td>o <em>Surrender of Disposition</em> – Sask. Ministry of Environment, Saskatchewan Ministry of Agriculture</td>
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<td>4. Is the proposed project likely to cause widespread public concern</td>
<td>X</td>
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<td>• Stakeholder engagement on the proposed Smokey Ridge harvest activity were conducted with representatives of the R.M. of Hudson Bay No. 384, the Métis Nation of Saskatchewan, Saskatchewan Eastern Region II, Hudson Bay Local #114 and Archerwill Métis Local #58; the</td>
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<td>about potential environmental changes?</td>
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<td>5. Is the proposed project likely to involve new technology that is concerned with resource utilization and that may induce significant environmental change?</td>
<td>X</td>
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<td>6. Is the proposed project likely to have a significant impact on the environment or necessitate a further development which is likely to have a significant impact on the environment?</td>
<td>X</td>
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10 References


Dyke, 2008, *Spatial and temporal characterization of woodland caribou (Rangifer tarandus caribou) calving habitat in the boreal plains and boreal shield ecozones of Manitoba and Saskatchewan*. Casidhe Dyke, Master’s Thesis, University of Manitoba


Quinty and Rochefort, Peatland restoration guide, 2nd ed. Canadian Sphagnum Peat Moss Association et New Brunswick Department of Natural Resources and Energy, Québec, Québec. 106 p.


Appendix A

Database Search for Rare, Sensitive, or At-Risk Species
TECHNICAL MEMORANDUM

Date: May 9th, 2014

To: Don Hovdebo
Kingsmere Resource Services Inc.

From: Candace Piper
Canada North Environmental Services

Subject: Results of the Database Search for Rare, Sensitive, or At-Risk Species Completed for NW 09-46-01-W2M.

CanNorth Project No. 1909

Introduction

The purpose of this memo is to provide the results of the database search for NW 09-46-01 W2M, completed by Canada North Environmental Services (CanNorth) for Kingsmere Resource Services Inc. This desktop survey consisted of database searches for records of rare, sensitive, or at-risk species potentially occurring within the area of NW 09-46-01 W2M. Databases searched included the Saskatchewan Conservation Data Centre (SKCDC) Wildlife Application database (SKCDC 2014a), the SKCDC Bird Atlas (SKCDC 2014b), the Species at Risk Public Registry (SARPR 2014), and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2014). Database searches were completed for a 30 km radius centred on the quarter section of interest.

Results

A total of two amphibian species, 33 birds, three insects, one mammal, and 55 plant species were been found to occur within 30 km of the Project area (Table 1). Leaf Lake, which is located approximately 5 km north of the Project area, is a known migratory bird concentration site.

Northern leopard frogs (Lithobates pipiens) are federally listed as Special Concern, and have a 500m setback guideline for breeding ponds (MOE 2014). Canadian toads (Anaxyrus hemiophrys) are not federally listed, but do have provincial setback guidelines. Of the rare plant species returned in the database search, none of them are federally listed species at risk; however, all S1 to S3 plant species have associated provincial activity restriction guidelines (50
m for high disturbance activities). Of the bird species that occurred, 14 are federally listed under SARA or COSEWIC, and all have provincial setback guidelines associated with their nests or breeding grounds. Woodland caribou (Rangifer tarandus caribou) are federally listed as threatened under SARA. None of the insect species are federally listed or have provincial setback guidelines.

**Summary and Conclusion**

I trust that this memorandum presents the information you require. Should you have any further comments or questions, please contact the undersigned.

Candace Piper, M.Sc., A.Ag.
Botanist

**Canada North Environmental Services Limited Partnership**

**References**


Year Round 90 Breeds in shallow areas of ponds, lakes and marshes. Winters in uplands in areas with sandy soil

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Federal</th>
<th>Provincial</th>
<th>Activity Restriction Guidelines</th>
<th>Recommended Setback Distance (m) for High Disturbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaxyrus hemiophrys</td>
<td>Canadian toad</td>
<td>Not at Risk</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Lithobates pipiens</td>
<td>Northern leopard frog</td>
<td>Special Concern</td>
<td>Special Concern</td>
<td>Schedule 1</td>
<td>S4 Ponds used for breeding Year Round 90</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Acrocephalus cooperi</td>
<td>Cooper’s hawk</td>
<td>Not at Risk</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Anthus pratensis</td>
<td>Sprague’s pipit</td>
<td>Threatened</td>
<td>Threatened</td>
<td>Schedule 1</td>
<td>S3B Nest site April 1 to August 31 250</td>
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<tr>
<td>Ardea herodias</td>
<td>Great blue heron</td>
<td>-</td>
<td>-</td>
<td>S3B Nesting colony April 1 to August 1 1000</td>
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<tr>
<td>Arvicola flavicollis</td>
<td>Short-tailed vole</td>
<td>Special Concern</td>
<td>Special Concern</td>
<td>Schedule 1</td>
<td>S1BL,S2N Nest site May 15 to July 15 300</td>
</tr>
<tr>
<td>Batrachoseps jessenii</td>
<td>American bittern</td>
<td>-</td>
<td>-</td>
<td>S4B Nest site May 1 to July 31 350</td>
<td>Shallow wetlands with silt, dense emergent vegetation (Poole 2003).</td>
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<tr>
<td>Carollina canadensis</td>
<td>Canada warbler</td>
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<td>Threatened</td>
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<td>S3B Nest site May 1 to July 31 300</td>
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<td>Caprimulgus vociferus</td>
<td>Whip-poor-will</td>
<td>Threatened</td>
<td>Threatened</td>
<td>Schedule 1</td>
<td>S3B Nest site May 1 to August 31 200</td>
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<tr>
<td>Chamaea elegans</td>
<td>Chimney swift</td>
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<td>Schedule 1</td>
<td>S2B Nest site May 1 to July 31 300</td>
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<tr>
<td>Chilaimus niger</td>
<td>Black tern</td>
<td>Not at Risk</td>
<td>-</td>
<td>S4B,S4M Nesting colony May 1 to July 15 400</td>
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<tr>
<td>Chondrocolis minor</td>
<td>Common nightjar</td>
<td>Threatened</td>
<td>Special Concern</td>
<td>Schedule 1</td>
<td>S45SBL,S45SM Nest Site May 1- Aug 31 200</td>
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<tr>
<td>Chophus philadelphia</td>
<td>Bonaparte’s gull</td>
<td>-</td>
<td>-</td>
<td>S4B,S4M Nesting colony May 1 to July 15 400</td>
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<tr>
<td>Contopus cooperi</td>
<td>Olive-sided flycatcher</td>
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<td>Threatened</td>
<td>Schedule 1</td>
<td>S4B,S4M Nesting colony May 1 to August 31 300</td>
</tr>
<tr>
<td>Contopus bicinctus</td>
<td>Trumpter-swan</td>
<td>-</td>
<td>-</td>
<td>S4B Nest site April 1 to July 31 1000</td>
<td></td>
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<tr>
<td>Dolichon externus</td>
<td>Bobolink</td>
<td>Threatened</td>
<td>-</td>
<td>S3B Active nest May 1 to August 31 200</td>
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<tr>
<td>Elapheius carolinus</td>
<td>Rusty blackbird</td>
<td>Special Concern</td>
<td>Special Concern</td>
<td>Schedule 1</td>
<td>S4B Nest site May 1 to July 31 300</td>
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<tr>
<td>Grus americana</td>
<td>Whooping crane</td>
<td>Endangered</td>
<td>Endangered</td>
<td>Schedule 1</td>
<td>SXB,S1M Staging areas May 1-Nov 1 1000</td>
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<tr>
<td>Halichoeres leucopus</td>
<td>Bald eagle</td>
<td>Not at Risk</td>
<td>-</td>
<td>S4B,S4M,S4S Nest site March 15 to July 15 1000</td>
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<tr>
<td>Hirundo rustica</td>
<td>Barn swallow</td>
<td>Threatened</td>
<td>-</td>
<td>S4B,S5M Nesting colony May 1 to August 31 100</td>
<td></td>
</tr>
<tr>
<td>Leucophaeus pipixenus</td>
<td>Finsnipe</td>
<td>Not at Risk</td>
<td>-</td>
<td>S4B,S5M Nesting colony May 1 to July 31 400</td>
<td></td>
</tr>
<tr>
<td>Nyctiturnus nycticorax</td>
<td>Black-crowned night-heron</td>
<td>-</td>
<td>-</td>
<td>S5B Nesting colony April 1 to July 31 1000</td>
<td></td>
</tr>
<tr>
<td>Pandion haliaetus</td>
<td>Osprey</td>
<td>-</td>
<td>-</td>
<td>S4B,S5M Nesting colony May 1 to July 31 1000</td>
<td></td>
</tr>
<tr>
<td>Podiceps grisegena</td>
<td>Red-necked grebe</td>
<td>Not at Risk</td>
<td>-</td>
<td>S3B Nesting colony May 15 to July 15 200</td>
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</tr>
<tr>
<td>Podiceps majochistus</td>
<td>Eared grebe</td>
<td>-</td>
<td>-</td>
<td>S3B Nesting colony May 15 to July 15 200</td>
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<tr>
<td>Podilymbus podiceps</td>
<td>Pearl-billed grebe</td>
<td>-</td>
<td>-</td>
<td>S3B Nesting colony May 15 to July 15 200</td>
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<tr>
<td>Riparia riparia</td>
<td>Bank swallow</td>
<td>Threatened</td>
<td>-</td>
<td>S5B,S5M Nesting colony May 1 to July 31 400</td>
<td></td>
</tr>
</tbody>
</table>

**Amphibians**

**Birds**

**Saskatchewan Conservation Data Centre and Saskatchewan Bird Atlas database search results for sensitive species known to occur in a 30-km radius from NW 09-46-01 W2M.**

**TABLE 1**

**Federal**

**Provincial**

**SKCDC Rank**

**Area**

**Restricted Activity Dates**

**Recommended Setback Distance (m) for High Disturbance**

**Habitat Description**
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Province</th>
<th>Federal</th>
<th>Activity Restriction Guidelines</th>
<th>Recommended Setback Distance (m) for Disturbance</th>
<th>Habitat Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterna forsteri</td>
<td>Forster's tern</td>
<td>-</td>
<td>-</td>
<td>S2B, S2M Nesting colony</td>
<td>May 1 to July 15 400</td>
<td>Breeds in fresh, brackish, and saltwater marshes, including many borders of lakes, islands, or streams (Poole 2005).</td>
</tr>
<tr>
<td>Sterna hirundo</td>
<td>Common tern</td>
<td>Not at Risk</td>
<td>-</td>
<td>S1B, S1M Nesting colony</td>
<td>May 1 to July 15 400</td>
<td>Breeds in colonies with rocky or gravelly substrates (Poole 2005).</td>
</tr>
<tr>
<td>Sterna paradis</td>
<td>Great grey owl</td>
<td>Not at Risk</td>
<td>-</td>
<td>S1B, S1M Nesting colony</td>
<td>May 1 to July 15 400</td>
<td>Across tundra, primarily hay or tall sedge. Breeds in discontinous or discontinous forest in the southern parts of its range (Poole 2005).</td>
</tr>
<tr>
<td>Sterna striata</td>
<td>Barred owl</td>
<td>Not at Risk</td>
<td>-</td>
<td>S1B, S1M Nesting colony</td>
<td>May 1 to July 15 400</td>
<td>Breeds in discontinous or mixed forests bordering open areas such as fens, meadows, or marshes (Poole 2005).</td>
</tr>
<tr>
<td>Tympanuchus phasianellus</td>
<td>Sharp-tailed grouse</td>
<td>-</td>
<td>-</td>
<td>S1B, S1M Lake</td>
<td>March 15 to May 15 400</td>
<td>Occurs in gravelly areas with dense herbaceous cover and patches of shrubs. Lakes typically occur on flat areas with less vegetation (Poole 2005).</td>
</tr>
</tbody>
</table>

**Insects**

Anacostia ovata
- - - S1 - - - Near stream in forest openings and edges (BSMA 2014)

Papilio machaon
- - - S1 - - - - - - Explored hilltops with old sedge (Lambersby et al. 1998).

**Mammals**

Bunyip tarandus caribou
- - - S2 Occurrence Year-round 50 - - - Old growth coniferous forests, consisting of black spruce, white spruce, and tamarack, rich in Rangifer tarandus caribou (SARAPR 2014).

**Plants**

Achillea millefolium
- - - S1 - - - - - - - Small, mossy forests (Looman and Best 1979)

Anemone quinquefolia var. quinquefolia
- - - S1 - - - - - - - Wood anemone  - - - S2 Occurrence Year-round 50<br>Common moonwort  - - - S1 Occurrence Year-round 50<br>Common water cress, fens, and swamps (Harms and Leighton 2011a)

Carex buxbaumii
- - - S2 Occurrence Year-round 50<br>Assiniboia sedges and wet meadows in the boreal forest (LaBerge et al. 1998).

Carex leiosiphon
- - - S2 Occurrence Year-round 50<br>Yellow sedge  - - - S1 Occurrence Year-round 50<br>Yellow sedge areas, open roads and bracken (Leighton and Li 2011b)

Claytonia bulbosa var. americana
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet to wet, mossy, coniferous and mixedwood forest, and fogs (Harms and Leighton 2011b).

Comptonia peregrina
- - - S2 Occurrence Year-round 50<br>Marsh bellflower  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands (Looman and Best 1979).

Carex lateriflora
- - - S2 Occurrence Year-round 50<br>Festuca sedge  - - - S2 Occurrence Year-round 50<br>Meet open forest at low elevations (Looman and Best 1979).

Carex ciliaris
- - - S2 Occurrence Year-round 50<br>Yellow sedge  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Carex pseudocyperus
- - - S2 Occurrence Year-round 50<br>Yellow sedge  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Carex leiosiphon
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Chamaelirium luteum ssp. occidentalis
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Chamaelirium luteum ssp. occidentalis
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Chamaelirium luteum ssp. occidentalis
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).

Chamaelirium luteum ssp. occidentalis
- - - S2 Occurrence Year-round 50<br>Fairy slipper  - - - S1 Occurrence Year-round 50<br>Meet meadows and wetlands at open fields, grasses, and swamps (Looman and Best 2004).
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Federals</th>
<th>Province</th>
<th>Activity Restriction Guidelines*</th>
<th>Recommended Setback Distance (m) for High Disturbance</th>
<th>Habitat Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hydrilla verticillata</em></td>
<td></td>
<td>-</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands and swamps</td>
<td>(Lyman and Best 1979).</td>
</tr>
<tr>
<td><em>Lamium amplexicaule var. acuminata</em></td>
<td></td>
<td>-</td>
<td>-</td>
<td>S152 Occurrence Year-round</td>
<td>50 Disturbed moist forest (Moss 1994).</td>
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<tr>
<td><em>Medicago polymorpha var. linarioides</em></td>
<td></td>
<td>-</td>
<td>S152 Occurrence Year-round</td>
<td>50 Wetlands and swamps</td>
<td>(Moss 1994).</td>
<td></td>
</tr>
<tr>
<td><em>Milium effusum var. complanatum</em></td>
<td></td>
<td>-</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands, ponds, and swamps (Lyman and Best 1979).</td>
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</tr>
<tr>
<td><em>Nassella flexilis</em></td>
<td></td>
<td>Flexible meadow</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands, ponds, and swamps (Moss 1994).</td>
<td></td>
</tr>
<tr>
<td><em>Nymphaea lakei</em></td>
<td>Small white water-lily</td>
<td>-</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands, ponds, and swamps (Lyman and Best 1979).</td>
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<tr>
<td><em>Plantago erecta</em></td>
<td>Large mountain milkwort</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Most forested and open woodlands (Lyman and Best 1979).</td>
<td></td>
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<tr>
<td><em>Pokonigia pinnatifida</em></td>
<td>Pink winged milkwort</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Most forested or mixed forest (Kershaw et al. 2001).</td>
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<tr>
<td><em>Potentilla fruticosa</em></td>
<td>Smooth black-eyed susie</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Dry slopes, on gravelly or sandy soils near streams, lakes, or roadsides (Kershaw et al. 2001).</td>
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<td></td>
</tr>
<tr>
<td><em>Pterostylophora alba</em></td>
<td>White lettuce</td>
<td>-</td>
<td>-</td>
<td>S1 Occurrence Year-round</td>
<td>50 Dry forest (Lyman and Best 1979).</td>
<td></td>
</tr>
<tr>
<td><em>Prenanthes alba</em></td>
<td>White lettuce</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands, ponds, and swamps (Lyman and Best 1979).</td>
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<td></td>
</tr>
<tr>
<td><em>Rhinanthus minor</em></td>
<td>Little yellow rattlegrass</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Wetlands, ponds, and swamps (Lyman and Best 1979).</td>
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</tr>
<tr>
<td><em>Sambucina racemosa</em></td>
<td>Red elderberry</td>
<td>-</td>
<td>S3 Occurrence Year-round</td>
<td>50 Most open forests (Lyman and Best 1979).</td>
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<tr>
<td><em>Scolopendrella globosa</em></td>
<td>Low spicate meadow</td>
<td>-</td>
<td>S2 Occurrence Year-round</td>
<td>50 Dry, rocky, open forests and grassy areas near forests (Kershaw et al. 2001).</td>
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<tr>
<td><em>Selinum acrorum var. acrorum</em></td>
<td>Northern slender ladies'-tresses</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Less forested and open woodlands (Lyman and Best 1979).</td>
<td></td>
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<tr>
<td><em>Sesuvium angustifolium</em></td>
<td>Slappee-leaf twisted-stalk</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Most forested and shrubby areas (Moss 1994).</td>
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<td></td>
</tr>
<tr>
<td><em>Trillium cernuum</em></td>
<td>Nodding shamrock</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Most forested and shrubby areas (Moss 1994).</td>
<td></td>
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<tr>
<td><em>Utricularia minor</em></td>
<td>Lesser bladderwort</td>
<td>-</td>
<td>S253 Occurrence Year-round</td>
<td>50 Bees and shallow water in forestal areas (Lyman and Best 1979).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Vaccinium virgatum var. abnormale</em></td>
<td>Smooth yellow violet</td>
<td>-</td>
<td>-</td>
<td>S1 Occurrence Year-round</td>
<td>50 Most, deciduous floodplain woods on steep, hummock, alluvial soil (USA 2014).</td>
<td></td>
</tr>
</tbody>
</table>

Sources: EC 2009; MOE 2014; SKCDC 2014a; SKCDC 2014b; SKCDC 2014c; SKCDC 2014d; SKCDC 2014e.

Note: all amphibian, mammal, plant, and insect species were identified by the Wildlife Map Application and all bird species listed were identified by the Saskatchewan Bird Atlas unless otherwise stated.

*Based on federal and provincial activity restriction guidelines for high disturbance activities.

Species identified by both the Saskatchewan Bird Atlas and the SKCDC Wildlife Map Application.

Species identified by the SKCDC Wildlife Map Application-only.
Appendix B

Clearance Letter Heritage Conservation Branch
May 13, 2014

Mr. Claude Gobeil
Premier Tech Horticulture Ltd.
P.O. Box 790, Birch Road
CARROT RIVER SK S0E 0L0

Dear Mr. Gobeil:

RE: Premier Tech Peat Harvest:
SW 16-46-1 W2M;
SE 16-46-1 W2M;
NE 9-46-1 W2M;
NW 9-46-1 W2M;
HERITAGE RESOURCE REVIEW

Thank you for referring this development proposal to our office for heritage resource review.

No known archaeological sites are in direct conflict with the proposed development. Peat harvest activities will occur on lands judged to have a low heritage potential (bog). Therefore, our office has no further concerns with this project proceeding as planned.

If you have any questions regarding this project please do not hesitate to contact me.

Sincerely,

Wade Dargin
Archaeologist/First Nation Liaison Officer
Archaeological Resource Management
Appendix C

Smokey Ridge Harvest Consultation Presentation
Smokey Ridge Peat Harvest Project

May 08, 2014
Who We Are

• Premier Tech Horticulture Ltd. of Carrot River, Saskatchewan (Premier Tech) is a company whose major focus is the long-term, systematic, sustainable development of peat harvest opportunities in Saskatchewan in order to supply product to our existing peat processing and bagging facility located in Carrot River, Saskatchewan.

• We have been successfully operating in Saskatchewan since 1988.

• The primary contacts on the Smokey Ridge Bog harvest project are:

  Claude Gobeil, Operations Director
  Phone: 306 768 4401
  E-mail: gobc@premiertech.com
  Or:
  Danny Smith, Agricultural Supervisor
  Phone: 306 865 7714
  E-mail: smid@premiertech.com
Smokey Ridge Harvest Project Summary

• Premier Tech Horticulture (Premier Tech) is proposing to negotiate an agreement with the Ministry of Agriculture to harvest approximately 72 hectares (≈ 177 acres) within a single Sphagnum (peat) bog (Smokey Ridge Bog);

• Temporarily stockpile the harvested peat on site; and,

• Transport the peat approximately 175 km to our existing processing and bagging facility in Carrot River, Saskatchewan.
Smokey Ridge Harvest Project
Summary

• The 72 hectare site will provide approximately 10 years of peat harvesting activities.

• During operations, Premier Tech will maintain “donor sites” of undisturbed natural *Sphagnum* within the Smokey Ridge Bog.

• At the conclusion of the harvest activities, decommissioning of all site infrastructure will be completed followed by the reclamation of disturbed areas.
Smokey Ridge Harvest Project

- All of the harvesting activities will only disturb approximately 40% of the bog, including only:
  - the southern portion of the SW and SE¼ of Section 16, Township 46, Range 1, West of the second meridian; and
  - the northern half of the NE and NW¼ of Section 9, Township 46, Range 1, West of the second meridian
- All of this land is currently held by the Saskatchewan Ministry of Agriculture.
Smokey Ridge Harvest Project

The proposed harvest will consist of:

1. the upgrade of approximately 1.25 kilometers (0.78 miles) of existing access trail located on an existing easement to a road capable of handling the anticipated traffic;

2. the establishment of 2 “borrow areas” (pits) within NW-9-46-1-W2 which will subsequently be allowed to flood and serve as the supply water for fire suppression purposes:

3. the establishment of a small staging yard approximately 50 X 100 m in area;

4. the construction of a perimeter drainage/diversion ditch approximately 2 meters deep and 1.5 meters wide around the entire area to be harvested in order to allow the water level within the bog to lower.

5. the construction of a the drainage discharge within NE-16-46-1-W2 (to lower and maintain water levels within the harvested portion of the bog);
Smokey Ridge Harvest Project

(cont’d)

6. the construction of internal harvest drainage ditches;
7. the sequential, temporary lowering of water levels in the area of the bog to be harvested;
8. the natural drying of the exposed peat surface;
9. the harvesting of the peat in a series of layers a few centimeters thick;
10. the temporary stockpiling of the harvested peat on site; and,
11. the trucking the peat approximately 175 km (109 miles) to the existing Premier Tech processing facility in Carrot River, Saskatchewan.
Access Road Upgrade

The harvest activities will require the upgrade of approximately 1.25 kilometers (0.78 miles) of access trail to facilitate the movement equipment, employees and fuel to the harvest site and the movement of the product from the site.
Smokey Ridge Site Plan

- Harvest Areas
- Staging Yard
- Access Road
- Internal Bog Road
- Perimeter Drainage Ditches & Discharge
Borrow Pits

- 2 “borrow areas” (pits) within NW-9-46-1-W2 will be used to construct roads and the staging yard.

- Both of the borrow pits will subsequently be allowed to flood and serve as the supply water for fire suppression and fire fighting purposes.
Staging Yard

- Approximately 50m by 100 m in size and includes:

- 12’ X 16’ (≈ 3.6 m X 4.9 m) office/lunch room facility;
- 10’X 8’ (≈ 3.0 m X 4.9 m) tool shed.
- Generator facility;
- 60’ X 40’ (≈ 18 m X 12 m) concrete containment pad with a 0.3 m wall; and,
- 8’ X 10’ (≈ 3.0 m X 4.9 m) oil shed constructed within cement containment pad.
Hazardous Substances and Waste Dangerous Goods Management

• Premier Tech will construct all relevant facilities in accordance with *The Hazardous Substances and Waste Dangerous Goods Regulations.*
• All hazardous substances such as diesel, gas, lubricants (engine and hydraulic fluids) and antifreeze will be stored in suitable containers located within the concrete containment pad which is surrounded by a 0.3 m containment wall;
• Waste dangerous goods such as used oil and used antifreeze will be stored within suitable containers located within the same containment pad;
• A Spill Kit will be located in the immediate vicinity of the fuelling station within the concrete containment facility.
• A Spill Response Plan will be in place to cover all aspects of the Smokey Ridge site and all hazardous substances and waste dangerous goods present on the site.
Site Waste Management

• “Domestic” and “industrial” waste generated at the Smokey Bog harvest site will be collected and temporarily stored in wildlife proof containers. Any waste that cannot be reused or recycled will be disposed of by hauling the material off site for disposal in an approved waste disposal site.

• Human waste management will consist of the use of portable toilets (i.e. PortaPotties), which will be emptied on a regular basis by a licensed sewage handling contractor.
Smokey Ridge Bog Development

The following provides a discussion of the development of the site and harvest activities

1. Access road development
   a. Borrow pit development
   b. Construct access road

2. Site preparation
   a. Construct perimeter ditch and discharge
      I. This is accomplished by digging a ditch approximately 2 meters deep and 1.5 meters wide around the entire area to be harvested in order to allow the water level within the bog to be lowered.
      II. The gradient of the ditch is designed to allow for the slow reduction of water levels within the bog over the life-of-the-project.
      III. The discharge will be located at the north east perimeter of the Smokey Ridge Bog
      IV. The ditch will be constructed using a Track hoe with the material deposited on the outside of the ditch (outside the peat field area) over its entire length

3. Tree removal within the harvest area only

4. Construction of the internal bog road
3. Peat field development

The harvest area is divided into individual peat fields approximately 300 m long and 30 m wide by the construction of internal ditches, approximately 1 m deep between each field.
4. Peat harvest

a. In order to initiate the harvesting activities, the surface of each peat field is loosened by employing a variety of different types of harrows.

b. The field is then allowed to dry naturally by exposure to sun and wind.

c. Once a layer of peat has attained the optimum moisture level, vacuum harvesters are used to collect the peat from the surface, removing approximately 3 to 7 cm/year of peat.
5. Stockpiling
   a. Once the harvester is full it will unload the peat at the end of the field near the internal bog road.
   b. A front-end loader is then used to pile the material for temporary storage in stockpiles on site.
   c. The stockpiles will be located along the access road within the operations area and are oriented in an east-west direction (i.e. in alignment with the prevailing winds) in order to minimize the wind effect on peat.
Smokey Ridge Bog Harvest & Handling

6. Transportation
   a. The stockpiled peat is loaded onto highway transport trucks using a wheeled loader.
   b. The transport trucks are standard highway units with 16 m trailers which haul approximately 160 m$^3$.
   c. They are similar to those used by the forestry industry to haul wood chips and are within the weight limits established for the transport route.

- It is anticipated that the product haul will result in 2 to 3 round trips per day during week days.
Product Transportation Route

- The transport trucks will travel approximately 6.5 miles (∼ 10.5 km) south on the existing R.M. grid roads to Provincial Highway #3 and use the Provincial highways to haul the material to the existing Carrot River processing and bagging plant.
Smokey Ridge Bog Development Schedule

- 2014 development schedule

<table>
<thead>
<tr>
<th>Activity</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<tbody>
<tr>
<td>Conduct rare plant survey</td>
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<td>Mobilize</td>
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<td>Construct access road</td>
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<td>Bog tree removal</td>
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<tr>
<td>Construct internal bog road</td>
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<tr>
<td>Construct main perimeter ditch</td>
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<td>Construct staging yard</td>
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<tr>
<td>Construct internal field drainage ditches</td>
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<tr>
<td>Initiate site preparation (profiling, etc.)</td>
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<tr>
<td>Harvest</td>
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<tr>
<td>Seasonal shutdown preparation</td>
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<tr>
<td>Demobilize</td>
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</tbody>
</table>

- During subsequent years (2015 to 2023), site activities will consist primarily of drainage ditch maintenance and harvesting between May and November (weather dependant)

- Decommissioning and reclamation of the harvest area, drainage ditch, staging yard and access road (if required) is anticipated in 2024.
Equipment & Employment

• The following equipment is required to prepare and harvest a peat field of the size being proposed.
  4 Agriculture (farm) tractors  1 V ditcher
  1 Track hoe  Tracked dozer
  1 Shank harrow  1 Peat profiler
  1 Peat conditioner  3 Peat harvesters
  2 Bog trailers  Front end loader
  1 Pick-up truck

• The Smokey Ridge Bog harvest will create or sustain 4 - 5 seasonal jobs and 2 permanent positions at the site.

• The bog harvest will also assist in maintaining jobs at the Premier Tech processing and bagging facility in Carrot River, Saskatchewan
Decommissioning & Reclamation

Operations

• During operations, Premier Tech will develop and regularly update a detailed conceptual decommissioning and reclamation plan for the site.

• That plan will include an estimate of associated costs for all aspects of the entire plan and submit it to the Ministry of Environment for review and approval.

• Once approval of the Conceptual Decommissioning and Reclamation Plan and associated cost estimates is received from the Ministry of Environment, Premier Tech will immediately establish an assurance fund to cover the cost of decommissioning and reclamation in an amount and form approved by the Minister and the requirements of *The Mineral Industry Environmental Protection Regulations, 1996*. 
Decommissioning & Reclamation

Final Closure

• At the end of harvesting operations, a detailed decommissioning and reclamation plan will be prepared and submitted to the appropriate regulatory agencies for review and approval prior to initiating the final decommissioning of the site.

• However, in general terms, the decommissioning of the sites will be accomplished in staged activities that will include, but not necessarily be limited to the following:
  • All buildings and other structures constructed within the site will be removed and reused, recycled or disposed of unless otherwise approved by the appropriate regulatory agency.
  • All concrete pads will be removed or, subject to regulatory approval, levelled and buried.
  • Contouring of all disturbed areas will be completed in order to minimize erosion and to encourage the growth of vegetation.
  • The removal of all culverts along the access road and the scarification of the roadway (if required).
Reclamation

• Site reclamation will be conducted following the completion of decommissioning and will be tailored to the wishes of Saskatchewan Agriculture and Food, the owner of the land.

• The Department may wish that the future land use of the bog be more suitable for agricultural (e.g., grazing) than at present.

• Alternately, Premier Horticulture Ltd. can also, if requested, conduct a reclamation process oriented to peat land restoration which it has done before with positive results, establishing an ecosystem similar to that which existed before the peat harvest.
Environmental Impacts

• Premier Tech is in the process of completing an assessment of the potential environmental impacts resulting from the development, operation, decommissioning and reclamation of the Smokey Ridge harvest activities.

• This has included an identification of potential impacts, the expected duration, spatial extent and the significance of the identified impacts to the natural ecosystem.

• The assessment has also included the identification of actions that will be taken to mitigate (or reduce the significance) of the identified impact.

• Other than an increase (2 or 3 round trips per week day) in truck traffic on the grid road south of the site to Highway #3, all of the identified impacts are likely restricted to the Smokey Ridge Bog or to the harvest site itself.
Environmental Impacts

- As the discharge of water from the drainage ditch will take place within NE-16-46-1-W2 on the northeast fringe of the Smokey Ridge Bog, the discharge is not anticipated to impact surface hydrology (flows or quality) in the region.

- No aspects of the Smokey Ridge Bog Peat harvest program, including the upgrade of the existing access trail to a road, will alter, disrupt, destroy or in any way impact or harm any fish or fish habitat.

- No impact to migratory birds is anticipated as a result of the construction, operation or decommissioning of the proposed project.

- The road upgrade will take place on a previously cleared trail within an existing easement.

- The site can be decommissioned and reclaimed to a condition that will allow for the unrestricted access and use similar to that which the site was subject to before development.
Woodland Caribou

• The Smokey Ridge Bog is located within the southern edge of Critical Boreal Plain Range Habitat (SK2) as identified by the *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada*, issued by Environment Canada in 2012.

• The boreal population of woodland caribou, including woodland caribou in Saskatchewan, is designated as threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and by the federal *Species at Risk Act (SARA)*, and is provincially ranked as rare to uncommon (S3) in Saskatchewan.

• Based on its location and physical attributes, the Smokey Ridge bog is not considered as optimum woodland caribou habitat.
Woodland Caribou

• Notwithstanding this, and in order to mitigate potential impacts on woodland caribou resulting from proposed harvest activities, Premier Tech has incorporated mitigation techniques to minimize or avoid the destruction of critical woodland caribou habitat.

• These include (but are not limited to):
  • Limiting the harvest area to a small 72 ha polygon
  • Limiting the harvest activities to the southern portion of the bog only.
  • Initial development of the site will take place in mid to late June to avoid potential calving season and subsequent harvests will commence in late May in subsequent years to minimize harassment of caribou
  • A strictly enforced policy that prohibits hunting by any employees while on site or while travel to and from the work place will be in place.
  • A previously disturbed (existing, cleared access trail) will be upgraded to access the site and thereby eliminate the need for a new disturbance.
  • Access to the site will be limited and will not open any area beyond the harvest site.
  • The site will be decommissioned and reclaimed after the peat harvest
Regulatory Permits & Approvals

• A preliminary review of provincial permit and approvals required for the Smokey Ridge Bog Peat harvest program to proceed has been completed.

• Based on that review, Premier Tech will be required to secure, at a minimum, the following major permits/approvals:
  • *Forest Product Permit*
  • *Disposition (Miscellaneous Use Permit)*
  • *Aquatic Habitat Protection Permit*
  • *Approval to Construct Pollutant Control Facilities*
  • *Approval to Construct, Install, Alter or Expand a Storage Facility (Hazardous Substances and Waste Dangerous Goods)*
  • *Permit to Operate* (which requires regular renewal over the life of the project)
  • *Approval to Store Hazardous Substance or Waste Dangerous Goods at a Storage Facility*
  • *Approval to Decommission Storage Facility*
  • *Approval to Decommission Site*
  • *Release from Decommissioning and Reclamation*
Inspections, Monitoring & Reporting

- During operations, Premier Tech will make regular daily inspections of specific areas of the operations including, but not necessarily limited to:
  - All hazardous substances and waste dangerous goods storage areas;
  - The generator;
  - All mobile equipment (primarily for leaks);
  - The perimeter drainage ditch and discharge ditch;
  - Equipment fueling station; and
  - All waste disposal containers.

- The *Permit to Operate* issued by the Ministry of Environment will also contain requirements that Premier Tech conduct regular monitoring and provide regular environmental reports to them for review.

- During operations, the site and its operations will also be subject to regular inspections by representatives of the Saskatchewan Ministry of Environment.
Smokey Ridge Harvest Project

Premier Tech is interested in hearing and responding to your:

Questions?
Concerns?
Comments?

And to thank you for your time!