



**BASELINE VEGETATION SURVEYS  
FOR  
PROPOSED WABUSH 3 MINE SITE AND POTENTIAL SKI HILL LOCATION  
LABRADOR CITY, NEWFOUNDLAND AND LABRADOR**

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## **1.0 INTRODUCTION**

AMEC Environment & Infrastructure, a division of AMEC Americas Limited (AMEC), was retained by Iron Ore Company of Canada (IOC) to conduct a Vegetation Baseline Survey at Wabush 3, a proposed area for a new open pit mine at its Labrador West mine site, and Wabush 4, an area close to the Town of Labrador City which could be developed as a downhill ski facility.

### **1.1 BACKGROUND**

IOC has been operating the Carol Project in Labrador West since the early 1960s. The company's current mining operations consist of open pit mines, mineral processing (concentrator and pellet plant) and tailings management facilities, as well as transportation infrastructure and other associated components and activities. The facilities cover an area of approximately 11,000 hectares.

IOC is proposing to construct and operate a new open pit mine, the Wabush 3 Pit, at its Labrador West mine site.

The Wabush 3 Pit will be a conventional open pit mine which will serve the IOC operations in two fundamental ways:

- Allow flexibility in providing iron ore feed to its existing concentrator plant to achieve and maintain production of iron concentrate at the mill's rated capacity of 23 million tonnes per year; and
- Provide a new source of iron ore to extend the operating life of its Carol Project.

The proposed project, as currently planned, will have a footprint of approximately 220 hectares and will include:

- An open pit mine, located just southeast of the existing Luce Pit, which contains an estimated 700 million tonnes of iron ore and has a planned operating life of 25 years;
- A waste rock disposal site, to be located just west of Wabush 3; and
- A haulage road to the northeast of Wabush 3, linking the open pit with existing ore conveyor and concentrator facilities.

The existing Smokey Mountain ski hill is located just east of the pit design limit for Wabush 3. IOC, in conjunction with the Smokey Mountain Ski Hill Association, is currently evaluating two options for the future of downhill skiing in Labrador City:

- The coexistence of Wabush 3 and Smokey Mountain; and
- The relocation of downhill skiing to a new location near Beverley Lake, known as Wabush 4.

In planning for environmental assessment of the Wabush 3 Pit and the possible development of Wabush 4 ski hill, IOC has considered the existing vegetation baseline information for both locations and determined that additional vegetation surveys were needed.

Accordingly, this report documents the results of survey work conducted in 2012 to further understand the existing vegetation habitat in the Wabush 3 and Wabush 4 locations, including general habitats and any species of special conservation interest. This information will be



helpful to IOC as it proceeds with the planning, design and implementation stages of the Wabush 3 Pit project and will assist the Smokey Mountain Ski Hill Association with its decision making and planning should relocation be determined.

## **2.0 APPROACH AND METHODS**

The following sections describe the various activities undertaken during the planning and execution of the 2012 vegetation surveys at the Wabush 3 Pit and the Wabush 4 ski facility Study Areas (See Figure 2-1).





**NOTES**

1. ALL DIMENSIONS ARE IN METRES.
2. DO NOT SCALE FROM DRAWING.
3. THIS DRAWING IS INTENDED TO SHOW RELATIVE LOCATIONS AND CONFIGURATION OF THE STUDY AREA IN SUPPORT OF THIS REPORT.
4. ALL LOCATIONS, DIMENSIONS, AND ORIENTATIONS ARE APPROXIMATE.
5. ALL DATA IN NAD27 UTM ZONE 19.

No.	Date	Description	Drawn	Chk'd	App'd

**LEGEND**

Study Area



AMEC Environment & Infrastructure  
AMEC Americas Limited

**CLIENT**

Rio Tinto  
Iron Ore Company of Canada

**PROJECT DESCRIPTION**

2012 Vegetation Baseline Survey

**DRAWING TITLE**

Study Area Locations

**PROJECT NUMBER**

TF1243033.2006

**SCALE**



<b>DRAWN BY</b> JA	<b>APPROVED BY</b> SB	<b>REVIEWED BY</b> BP
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## 2.1 Desktop Review

### 2.1.1 ELC and Other Mapping

In preparation for the plant survey fieldwork, a regional Ecological Land Classification (ELC) was conducted for the 40 square kilometre area surrounding the Study Areas, as well as detailed classifications of three areas including the proposed Wabush 3 Pit area and the potential alternative ski hill location at Wabush 4. Details specific to the ELC component as well as the associated ground truthing are reported under a separate cover. This ELC data, along with aerial photographs, topographic mapping and forest inventory data provided background information and context for the vegetation field survey component, including a regional overview of the various land / habitat types known to be present.

### 2.1.2 Plant Species at Risk and Species of Conservation Concern

A particular focus of the 2012 survey work was on the identification of any plant species of special conservation status that may be present in the Study Areas.

A number of species in Newfoundland and Labrador have been designated as protected under the federal *Species at Risk Act* (SARA) and/or the Newfoundland and Labrador *Endangered Species Act* (NL ESA).

At present there are 14 plant or lichen species listed under SARA (SARA 2012) and/or the NL ESA (NL 2012) that are known to occur in the province including:

- Barrens willow (*Salix jejuna*) (listed as Endangered by SARA and NLESA);
- Crowded wormseed mustard (*Erysimum inconspicuum* var. *coarctatum*) (listed as Endangered by NLESA);
- Long's braya (*Braya longii*) (listed as Endangered by SARA and NLESA);
- Low northern rockcress (*Neotorularia humilis*) (listed as Endangered by NLESA);
- Fernald's braya (*Braya fernaldii*) (listed as Threatened by SARA and Threatened by NLESA);
- Porsild's bryum (*Mielichhoferia macrocarpa*) (listed as Threatened by NLESA);
- Mountain fern (*Thelypteris quepaertensis*) (listed as Vulnerable by NLESA);
- Fernald's milk-vetch (*Astragalus robbinsii* var. *fernaldii*) (listed as Special Concern by SARA and Vulnerable by NLESA);
- Boreal felt lichen (*Erioderma pedicellatum*) (listed as Special Concern by SARA and Vulnerable by NLESA);
- Mackenzie's sweet vetch (*Hedysarum boreale* subsp. *Mackenzii*) (listed as Endangered by NLESA);
- Northern bog aster (*Symphotrichum boreale*) (listed as Endangered by NLESA);
- Rattlesnake root (*Prenanthes racemosa*) (listed as Endangered by NLESA);
- Mountain holly fern (*Polystichum scopulinum*) (listed as Threatened by SARA); and
- Graceful felt lichen (*Erioderma mollissimum*) (listed as Endangered by SARA).

In addition to those species that have been formally designated and protected under legislation, the study also considers other *regionally rare* plants as determined by the following

organizations that could potentially be found in the Project area. These plants are considered to be of Conservation Concern.

At the federal level in Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent body of experts responsible for identifying and assessing species that are considered to be at risk and for providing information and advice to governments regarding their potential protection, including under SARA. In Newfoundland and Labrador, designations under the NL ESA similarly follow recommendations from COSEWIC and/or the NL Species Status Advisory Committee (SSAC). Although designations of a species by COSEWIC or other such organizations do not in itself constitute legal protection, they do provide a general indication of species that may be considered rare, and thus, of some degree of potential conservation concern.

The Atlantic Canada Conservation Data Centre (ACCDC) is a non-profit organization that manages the species occurrence and distribution databases for the NL Department of Environment and Conservation (Wildlife Division). The ACCDC identifies and ranks all vascular plants known to occur in the province with consideration of the following factors: population size; number of occurrences; geographic distribution; trends in population; trends in distribution; threats to population; and threats to habitat. Each taxon is assigned a status and S-rank, which are specific to the geographic area (Labrador and/or the Island of Newfoundland) in which they occur.

These ACCDC S-ranks therefore provide a useful and relevant indication of the relative rarity and current status of plant species in the province (ACCDC 2012). Those which are relevant to the current study include provincial "S-ranks" and National "N-ranks" including:

- S1** Extremely rare: May be especially vulnerable to extirpation (typically 5 or fewer occurrences or very few remaining individuals);
- S2** Rare: May be vulnerable to extirpation due to rarity or other factors (6 to 20 occurrences or few remaining individuals);
- S3** Uncommon, or found only in a restricted range, even if abundant at some locations (21 to 100 occurrences);
- S4** Usually widespread, fairly common, and apparently secure with many occurrences, but of longer-term concern (e.g., watch list) (100+ occurrences);
- S5** Widespread, abundant, and secure, under present conditions;
- SNR** Unranked: provincial conservation status not yet assessed;
- SU** Unrankable: Possibly in peril, but status is uncertain - need more information;
- N5** Nationally Widespread, abundant, and secure, under present conditions; and
- NNR** Unranked: National conservation status not yet assessed.

Plants ranked S1, S2 and S3 are considered to be of conservation concern and plants ranked SNR and SU are possibly of conservation concern. Although this study includes consideration of such rare and uncommon plant species, it should again be noted that these terms are not synonymous with "listed" or "protected" species, in that most of these plants are not designated or protected under provincial and/or federal legislation.

### **2.1.3 Habitat Modeling**

Background research for the study included obtaining, reviewing and updating the various relevant lists of protected and / or regionally rare plants in Newfoundland and Labrador, with a particular focus on those which may be potentially present in the Labrador City area. This

included reviewing the following:

**Listed / Protected Plants**

- SARA (Canadian *Species At Risk Act* – Schedule 1);
- NLESA (Newfoundland & Labrador *Endangered Species Act and Regulations*);

**Other Regionally Rare (but not “Listed”) Plants (No legal protection)**

- COSEWIC (Committee on the Status of Endangered Wildlife in Canada);
- NGSWG (National General Status Working Group); and
- ACCDC (Atlantic Canada Conservation Data Centre).

Habitat modeling was carried out comparing the known habitat requirements for identified listed and rare plant species and the available habitat on site, and a list of priority species was assembled containing plants that have some potential to occur within the proposed expansion areas, based on habitat and range. It was conservatively assumed that most rare plants known to occur in Labrador have at least some potential to occur within the area since the identification of the actual range of many plants in Labrador has not yet been finalized due to under reporting.

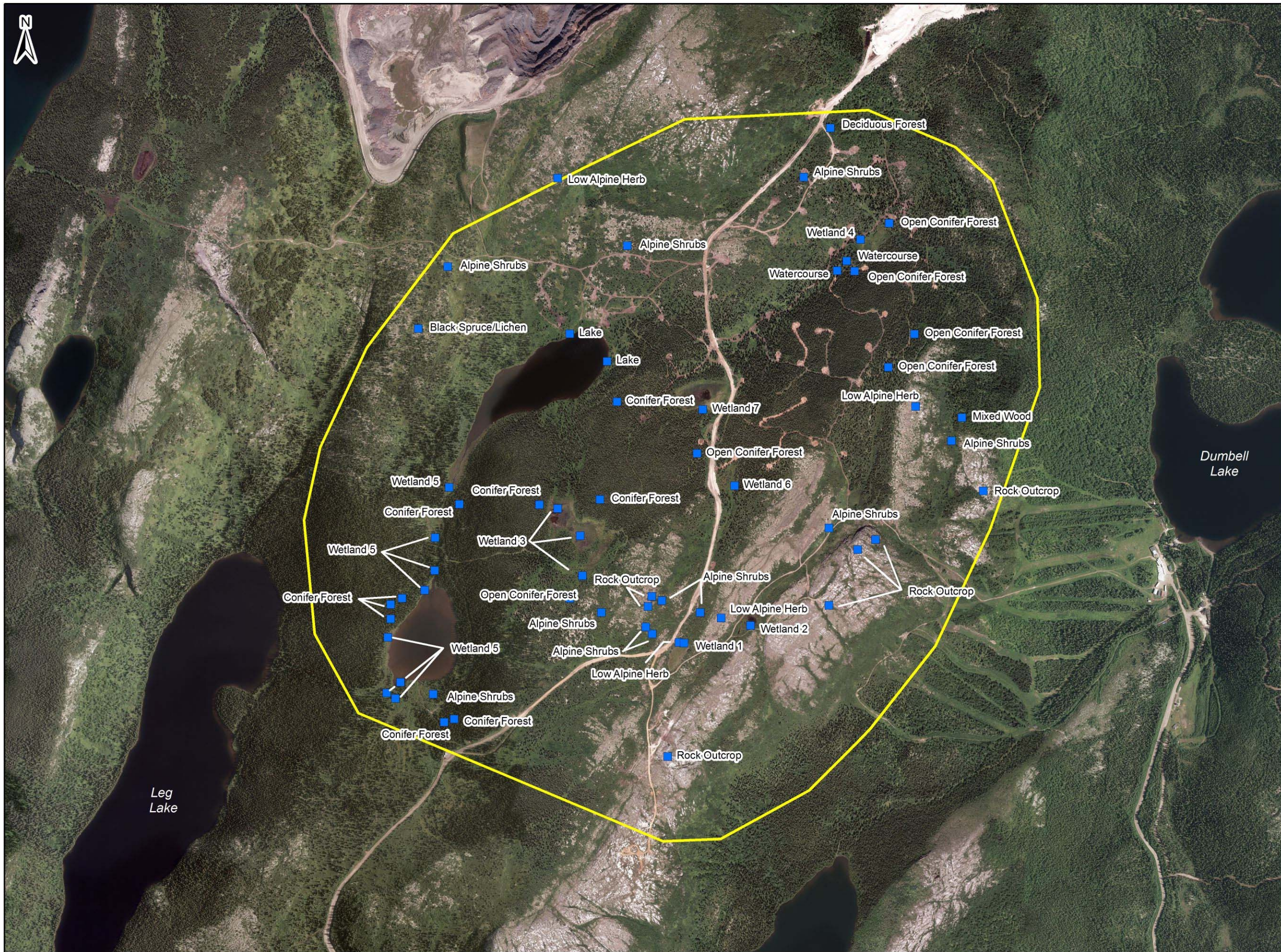
**2.2 Survey Method**

Field surveys were conducted by AMEC Biologist Scott Burley and AMEC Environmental Scientist Cheryl Tucker between August 13<sup>th</sup> and August 21<sup>st</sup> 2012. Figure 2-2 shows the locations of survey points within the Study Areas.

Plant surveys were carried out in accordance with standardized methodologies by a qualified botanist (Scott Burley, M.Sc.), with a particular focus on any species identified by the federal and/or provincial governments to be rare. Survey methods consisted of optically controlled meanders across identified habitat polygons within the boundaries of the Study Areas in order to ensure adequate coverage of potential rare plant locations (Figure 2-2).

All habitat types located within the Study Areas were surveyed. Field work was scheduled for the middle of August to coincide with optimal phenology for the plant species at risk and plant species of conservation concern. Based on previous experience, the likelihood for presence of rare plants is generally higher in wetlands and riparian areas than in dry and forest habitats. Therefore, riparian and wetland areas received a longer survey effort during the surveys. All plant species observed were recorded (Appendix A) along with the habitat type in which each species was encountered (Appendix B). Site photos of habitat types in each of the Study Areas were also recorded (Appendix C).





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No.	Date	Description	Drawn	Chk'd	App'd

**LEGEND**

- Study Area
- Survey Point Location



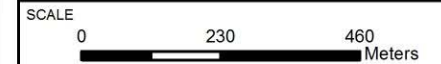
AMEC Environment & Infrastructure  
AMEC Americas Limited

CLIENT  
**Rio Tinto  
Iron Ore Company of Canada**

PROJECT DESCRIPTION  
**2012 Vegetation Baseline Survey**

DRAWING TITLE  
**Survey Point Locations at  
Wabush 3**

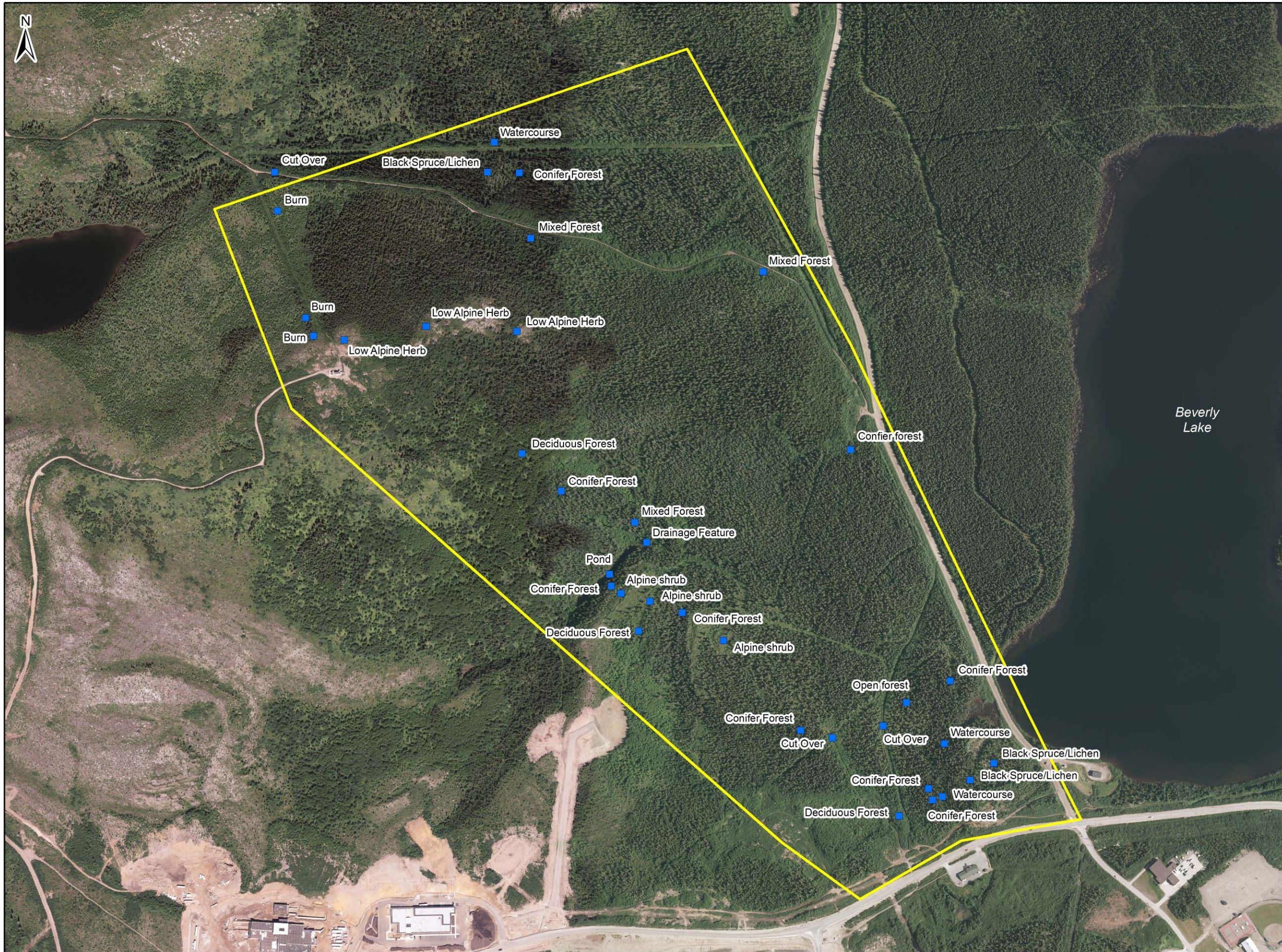
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FIGURE NO. <b>2.2</b>	DATE <b>October 2012</b>	REV <b>0</b>
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**LEGEND**

- Study Area
- Survey Point Location



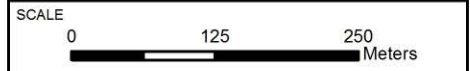
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AMEC Americas Limited

CLIENT  
**Rio Tinto  
Iron Ore Company of Canada**

PROJECT DESCRIPTION  
**2012 Vegetation Baseline Survey**

DRAWING TITLE  
**Survey Point Locations at  
Wabush 4 Ski Hill**

PROJECT NUMBER  
**TF1243033.2006**



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## 2.3 Data Collection

Survey locations within each of the Study Areas were tracked (see Appendix D) using a handheld GPS unit (accurate to within 5 m) by periodically recording coordinates in UTM Zone 19 NAD 27. Coordinates were also recorded when rare plant species were identified in the field as well as when the major habitat type changed.

When a rare plant species was positively identified in the field, the following data was collected:

- Geographical location (Easting and Northing using GPS);
- Location and habitat description;
- Photos;

Vegetation species lists were recorded for each habitat type encountered within the identified project footprint boundaries. Species difficult to identify in the field (e.g. willows, sedges, and grasses) were collected in the field and identified using a microscope in the laboratory.

Species nomenclature followed a number of sources including; Blondeau et al. 2004, Flora of North America 2002, Hinds 2000, Munden 2001, and Roland and Zink 1998.

## 3.0 RESULTS

A total of 111 plant species, subspecies and varieties of plants were found during the field surveys at the Wabush 3 and Wabush 4 Study Areas (Appendix A). No plant species listed and protected under *SARA* (Schedule 1) or *NL ESA* were found during the survey.

### 3.1 Habitat Types Within Study Area

A total of 12 major habitat types were encountered during the vegetation survey of the two Study Areas. These include:

- Black Spruce/Lichen Forest;
- Conifer Forest;
- Open Conifer Forest;
- Deciduous Forest (Hardwood);
- Mixed Wood Forest;
- Alpine Shrub;
- Low Alpine Herb;
- Rock Outcrop;
- Wetland (Fen);
- Riparian;
- Cut Over; and
- Burn.

The following sections provide a description of each habitat type encountered. Appendix C provides photographs of all major habitat types encountered during the survey. Figure 3-1 displays the locations of identified habitat types within each of the Study Areas.



### **3.1.1 Black Spruce/Lichen Forest**

Black Spruce/Lichen Forest habitat type was encountered at both Study Areas. This ecotype is dominated by Black Spruce (*Picea mariana*) and Larch (*Larix laricina*) in the canopy. The understorey varies between lichen (*Cladonia sp.*) dominated ground cover with Alpine Bilberry (*Vaccinium uliginosum*) and Black Crowberry (*Empetrum nigrum*), intermixed with patches of Feathermoss ground cover (*Ptilium crista-castrensis* and *Pleurozium schreberi*) with Labrador tea (*Rhododendron groenlandicum*).

### **3.1.2 Conifer Forest**

Mature Conifer Forest is a dominant habitat type occurring at both Study Areas. This ecotype is characterized by Black Spruce, Balsam Fir (*Abies balsamea*), and White Spruce (*Picea glauca*) dominating the relatively closed canopy. The understorey in this habitat type included areas consisting of dense Balsam Fir regeneration interspersed with less dense patches where species such as Bunch Berry (*Cornus canadensis*), Twin Flower (*Linnaea borealis*), Labrador Tea and Creeping Snowberry (*Gaultheria hispida*) dominate. Feathermoss was found to make up a large portion of the ground cover along with small patches of *Sphagnum* moss in wetter depressions.

### **3.1.3 Open Conifer Forest**

Open Conifer habitat is also present at both Study Areas. The dominant species in this habitat type is very similar to the Conifer Forest where Black Spruce, Balsam Fir and White Spruce dominate the canopy with Labrador Tea, Bunch Berry, Twin Flower and Creeping Snowberry dominating the understorey. The difference in this habitat is that the canopy is slightly more open with forest gaps either dominated by regenerating Balsam Fir or shrub species such as willows (*Salix bebbiana*, *S. discolor*, and *S. petiolaris*) and Glandular Birch (*Betula glandulosa*).

### **3.1.4 Deciduous Forest (Hardwood)**

Deciduous Forest ecotype was encountered at both Study Areas and in most cases it represented an ecotype at a young successional stage following a disturbance. These areas are dominated by Paper Birch (*Betula papyrifera*) and Heart-leaved Paper Birch (*Betula papyrifera var. cordifolia*) and willows in the canopy with Large-leaved Goldenrod (*Solidago macrophylla*), Bunch Berry, Twin Flower and Clinton Lily (*Clintonia borealis*) dominating the understorey. Ground cover in these areas consists of mosses associated with disturbance such as *Polytrichum commune*.

### **3.1.5 Mixed Wood**

Mixed Wood Forests were recorded at both Study Areas. Dominant species in the canopy consist of a mix of coniferous trees (Black Spruce, White Spruce and Balsam Fir) and deciduous trees (Paper Birch and Heart-leaved Paper Birch). The understorey in this ecotype consists of forest understorey species such as Bunch Berry, Clinton Lily and Northern Oak Fern (*Gymnocarpium dryopteris*).

### **3.1.6 Alpine Shrub**

Alpine Shrub ecotype was noted at both Study Areas, in particular at higher elevations. This ecotype is characterized by a dominance of short to intermediate shrub species such as Glandular Birch and willows (*S. bebbiana*, *S. discolor* and *S. vestita*) and, in many cases, represents a transition area between forest and rock outcrop. Species typically occurring in these ecotypes also include Large-leaved Goldenrod, Northern Oak Fern, Twin Flower and Bunch Berry.

### **3.1.7 Low Alpine Herb**

Low Alpine Herb ecotype was encountered at both Study Areas typically at higher elevations at

the tops of hills where soils are very shallow or lacking. This ecotype is closely connected to Rock Outcrops (see below) where these habitat types tend to occur together as a mosaic in many areas. Low Alpine Herb vegetation is dominated by low growing herbaceous and shrub species such as Black Crowberry, Labrador Tea, Partridge Berry (*Vaccinium vitis-idaea*), Alpine Bilberry (*Vaccinium uliginosum*) and lichens (*Cladonia sp.*).

### **3.1.8 Rock Outcrop**

Rock Outcrop ecotype was identified at both Study Areas and is typically located at high elevations. This ecotype is characterized by sparse vegetation cover consisting of a mosaic of exposed rock with lichens (*Umbilicaria sp.*) intermixed with low growing shrubs such as Alpine Bearberry (*Arctostaphylos alpina*), Alpine Bilberry, Black Crowberry, Labrador Tea, Glandular Birch and Partridge Berry.

### **3.1.9 Wetlands**

A number of wetlands have been identified within the two Study areas including seven Fen wetland types at Wabush 3 and 1 Fen located at the southeast corner of the Wabush 4 Study Area.

The Fen wetland surveyed at Wabush 4 represents an open water, herb fen and Shrub Fen complex. Species dominating this wetland include Blue-Joint Reedgrass (*Calamagrostis canadensis*), Sedge species (*Carex magellanicum* var *irrigua* and *Carex trisperma*) and Leather Leaf (*Chamaedaphne calyculata*) within the Herb Fen portion and Alder (*Alnus incana*), Bebb's Willow (*Salix bebbiana*) and Pussy Willow (*Salix discolor*) dominating the Shrub Fen.

All seven wetlands surveyed at the Wabush 3 Study Area were classified as an Herb Fen, Shrub Fen or combination of the two. In many cases these wetlands contained areas dominated by emergent species such as Inflated Sedge (*Carex vesicaria*), Thread Rush (*Juncus filiformis*), and Canada Burnet (*Sanguisorba canadensis*) interspersed with shrub dominated patches with Meadow Willow (*Salix petiolaris*), Pussy Willow and Bebb's Willow.

The uniform Herb Fen located at the Wabush 3 Study Area consisted of a homogeneous coverage primarily dominated with Inflated Sedge, Blue-Joint Reedgrass and Thread Rush.

### **3.1.10 Riparian**

Riparian habitat was encountered along the small watercourses, ponds and lakes that occur within the two Study Areas. Riparian habitat is generally dominated by tall shrubs including Alder (*Alnus incana*) and willow species (*Salix petiolaris* and *Salix bebbiana*). The ground layer consists of Large-leaved Goldenrod (*Solidago macrophylla*), Northern Beech Fern (*Phegopteris connectilis*), Canada Burnet and Twin Flower.

### **3.1.11 Cut Over**

A number of areas in the Wabush 4 Ski Hill Study Area were recently cleared and are currently maintained as dirt trails or have been left to regenerate naturally. Vegetation in these areas typically consists of tall shrubs including Alder, Pussy Willow and Bebb's Willow. Twin Flower, Large-leaved Goldenrod and Bunch Berry dominate the ground cover.

### **3.1.12 Burn**

An area previously burned was recorded in the Wabush 4 Ski Hill Study Area. This area currently consists of regenerating White Birch with Twin Flower, Bunch Berry, and Creeping Snowberry as dominants in the understorey.

### 3.2 LEGALLY PROTECTED (LISTED) OR REGIONALLY RARE PLANT SPECIES

No plant species listed and protected under SARA (Schedule 1) or NL ESA were found during the 2012 plant surveys at the Wabush 3 or Wabush 4 Ski Hill Study Areas.

Additionally, none of the plant species identified during the surveys have been designated by COSEWIC (COSEWIC 2008).

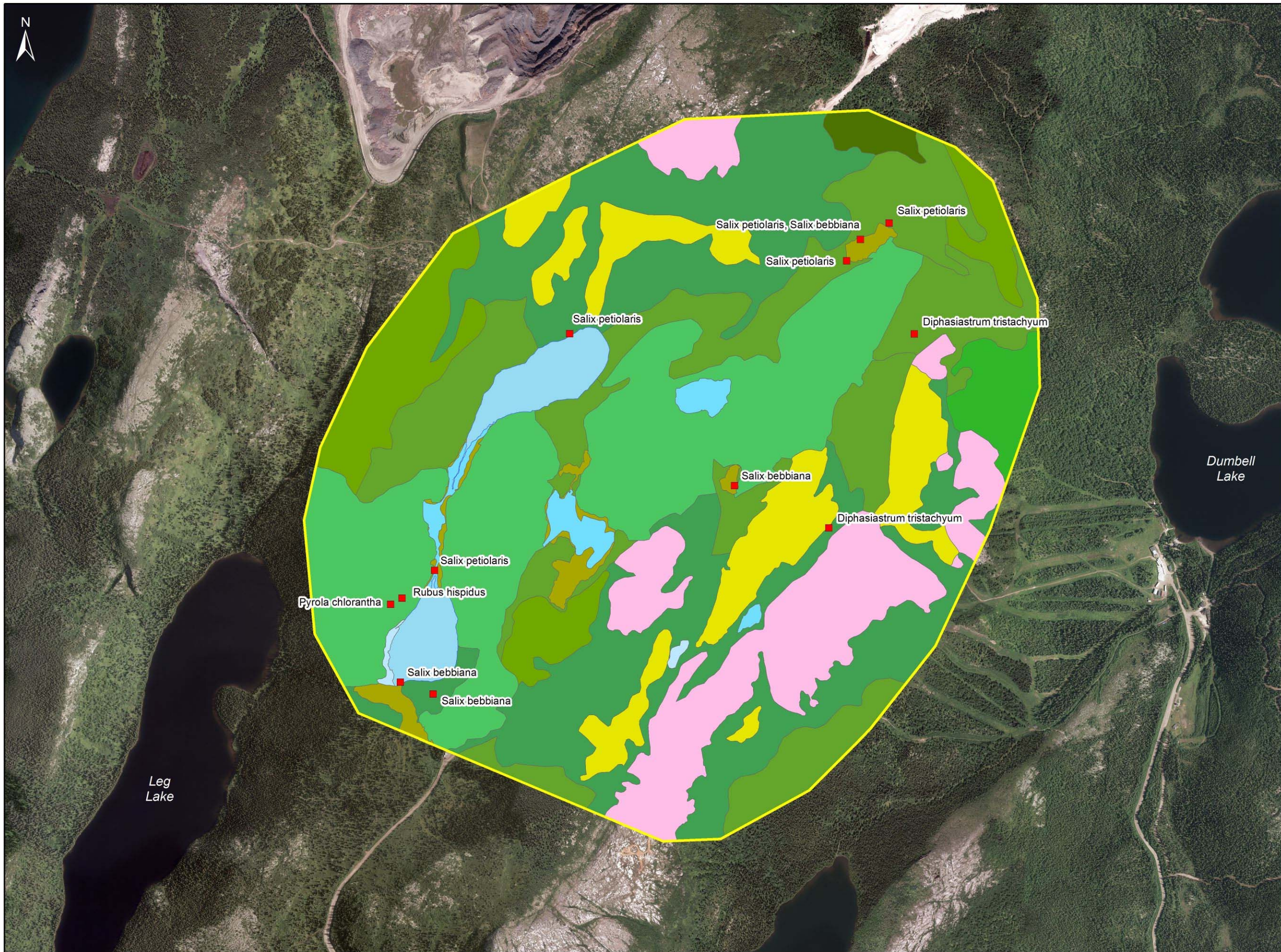
The 2012 plant survey of the Study Areas identified a total of 32 plant species that are listed by ACCDC as having a provincial sub-rarity rank with a range which includes S1, S2 or S3 (eg. S2S4, S3S5, etc) indicating a possible species of conservation concern. See Appendix B for a complete list of plant species with associated habitats. One of these species, Greenish-flowered Wintergreen (*Pyrola Chlorantha*) is ranked as an S2S3 by ACCDC. The General Status Ranks, prepared by the National General Status Working Group (NGSWG 2011), indicate that Greenish-flowered Wintergreen has a General Status Rank of 3 indicating this species is Sensitive in Newfoundland and Labrador. This species was recorded in the Coniferous Forest ecotype in both Study Areas. Bebb's Willow (*Salix bebbina*) is ranked as an S2S4 by ACCDC. The General Status Ranks indicate that Bebb's Willow has a General Status Rank of 5 indicating that data is insufficient for which to reliably evaluate the general status. This species was recorded in the Alpine Shrub, Fen, Deciduous Forest and Cutover habitat types. All other species recorded in the Study Area listed by ACCDC as having a provincial sub-rarity rank with a range which includes S1, S2 or S3 have a NGSWG rank of 4 indicating that these species are secure within the province of Newfoundland and Labrador.

Figure 3-1 depicts the locations of field identified rare (ACCDC rank S1, S2 or S3) plant species within the Study Areas. It should again be noted that ACCDC ranks reflect a degree of relative rarity in the region, and do not themselves constitute any legal designation or protection for such species.

There have been a limited number of vegetation surveys conducted in Labrador and as such the ACCDC species status represents somewhat of a working draft. This can explain why many of the species listed above have a draft rank consisting of a range (e.g. S3S5 and S3S4) where the conservation status for many species listed in Appendix B range from secure to uncommon or rare. As more information is collected regarding the distribution of these species, rankings for these species will likely be adjusted accordingly.

In addition to the above referenced 32 species, eight species recorded during the vegetation survey are not currently ranked by ACCDC (SNA or SNR). For these species the General Status Ranks (NGSWG 2012) were consulted. These include Pointed Broom Sedge (*Carex scoparia*; NGSWG Rank 4), Deep-root Clubmoss (*Diphasiastrum tristachyum*; NGSWG Rank 4), Lesser Duckweed (*Lemna minor*; NGSWG Rank 6), Running Pine (*Lycopodium clavatum*; NGSWG Rank 5), Fowl Bluegrass (*Poa palustris*; NGSWG Rank 7), Common cinquefoil (*Potentilla simplex*; NGSWG Rank 7), Swamp Dewberry (*Rubus Hispidus*; NGSWG Rank 5) and Meadow Willow (*Salix petiolaris* NGSWG Rank 6). None of these species are listed under SARA or NLESA or designated by COSEWIC. The General Status Ranks, prepared by the National General Status Working Group (NGSWG 2012), indicate that Pointed Broom Sedge and Deep-rooted Clubmoss (Rank 4) are secure in Newfoundland and Labrador. Lesser Duckweed and Meadow Willow both have a General Status Rank of 6 for Newfoundland and Labrador which indicate that these species are known to occur in the geographic area but have not yet been assessed. Running Pine and Swamp Dewberry both have a General Status Rank of 5 for Newfoundland and Labrador indicating that data is insufficient for which to reliably evaluate the general status. Fowl Bluegrass and Common Cinquefoil are both listed as exotic to the Province of Newfoundland and Labrador and have been subsequently introduced to the Study Area.





**NOTES**

1. ALL DIMENSIONS ARE IN METRES.
2. DO NOT SCALE FROM DRAWING.
3. THIS DRAWING IS INTENDED TO SHOW RELATIVE LOCATIONS AND CONFIGURATION OF THE STUDY AREA IN SUPPORT OF THIS REPORT.
4. ALL LOCATIONS, DIMENSIONS, AND ORIENTATIONS ARE APPROXIMATE.
5. ALL DATA IN NAD27 UTM ZONE 19.

No.	Date	Description	Drawn	Chk'd	App'd

**LEGEND**

- Study Area
- Rare Plant Survey Location
- Water
- Alpine Shrub
- Black Spruce/Lichen Forest
- Conifer Forest
- Hardwood
- Low Alpine Herb
- Mixedwood
- Non-Uniform Herb Fen
- Non-Uniform Shrub Fen
- Open Conifer
- Rock Outcrop
- Uniform Herb Fen



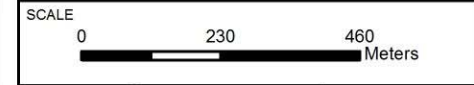
AMEC Environment & Infrastructure  
AMEC Americas Limited

CLIENT  
**Rio Tinto  
Iron Ore Company of Canada**

PROJECT DESCRIPTION  
**2012 Vegetation Baseline Survey**

DRAWING TITLE  
**Rare Plant Locations at  
Wabush 3**

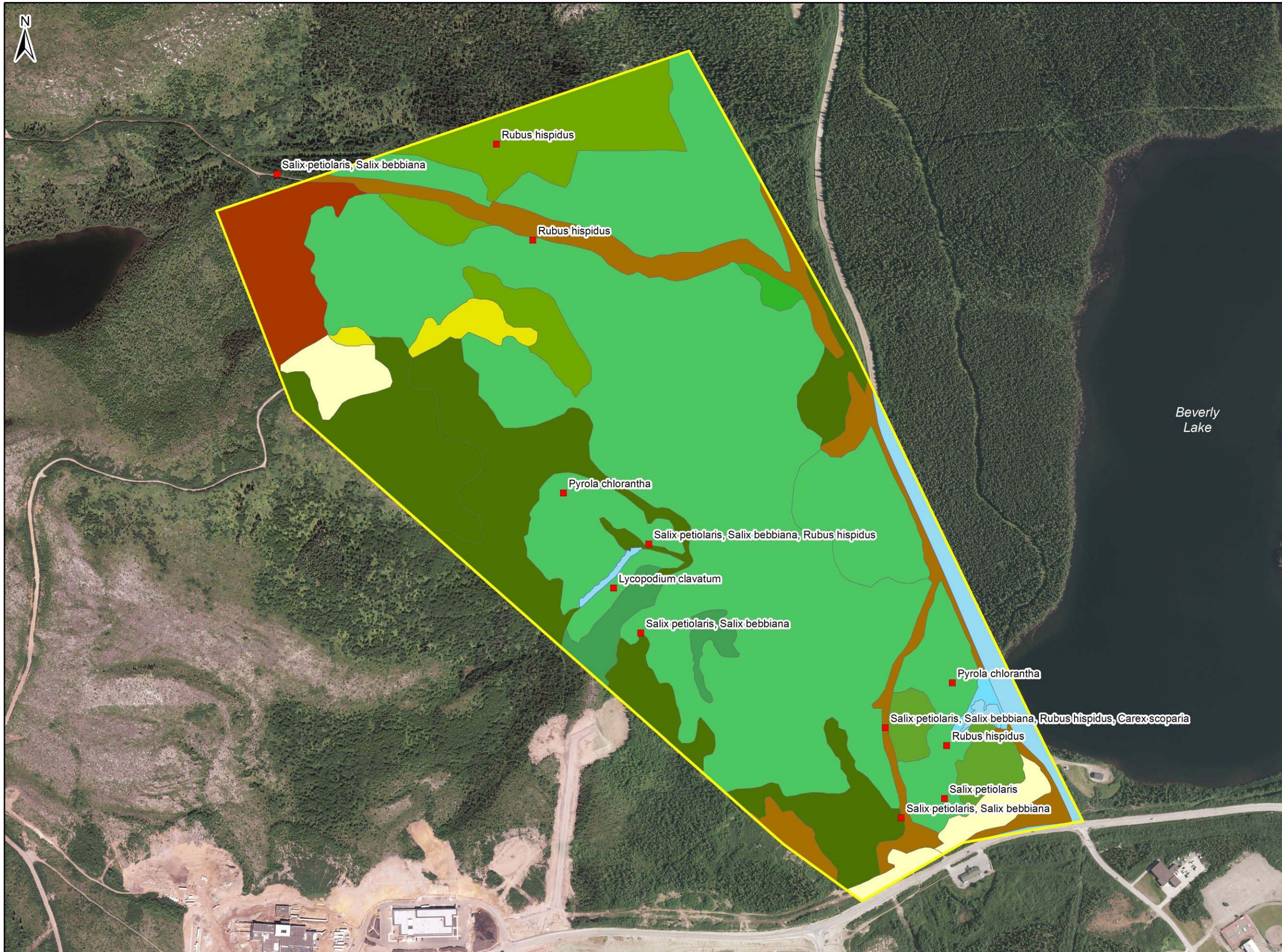
PROJECT NUMBER  
**TF1243033.2006**



DRAWN BY <b>JA</b>	APPROVED BY <b>SB</b>	REVIEWED BY <b>BP</b>
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FIGURE NO. <b>3.1</b>	DATE <b>October 2012</b>	REV <b>0</b>
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**NOTES**

1. ALL DIMENSIONS ARE IN METRES.
2. DO NOT SCALE FROM DRAWING.
3. THIS DRAWING IS INTENDED TO SHOW RELATIVE LOCATIONS AND CONFIGURATION OF THE STUDY AREA IN SUPPORT OF THIS REPORT.
4. ALL LOCATIONS, DIMENSIONS, AND ORIENTATIONS ARE APPROXIMATE.
5. ALL DATA IN NAD27 UTM ZONE 19.

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No.	Date	Description	Drawn	Chk'd	App'd
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**LEGEND**

- Study Area
- Rare Plant Survey Location
- Water
- Alpine Shrub
- Black Spruce/Lichen Forest
- Burn Habitat
- Conifer Forest
- Cutover
- Exposed Earth
- Hardwood
- Low Alpine Herb
- Mixedwood
- Non-Uniform Herb Fen
- Open Conifer



AMEC Environment & Infrastructure  
AMEC Americas Limited

**CLIENT**

Rio Tinto  
Iron Ore Company of Canada

**PROJECT DESCRIPTION**

2012 Vegetation Baseline Survey

**DRAWING TITLE**

Rare Plant Locations at  
Wabush 4 Ski Hill

**PROJECT NUMBER**

TF1243033.9000

**SCALE**



<b>DRAWN BY</b> JA	<b>APPROVED BY</b> SB	<b>REVIEWED BY</b> BP
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<b>DRAWING NO.</b> 3-2	<b>DATE</b> October 2012	<b>REV</b> 0
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#### 4.0 SUMMARY AND CONCLUSIONS

A total of 111 plant species were recorded during the 2012 vegetation baseline studies. No plant species listed (and therefore protected) under SARA (Schedule 1) or NL ESA were found during the survey. One species, Greenish-flowered wintergreen (*Pyrola chlorantha*; ACCDC Ranked - S2S3) is considered sensitive in Newfoundland and Labrador by the National General Status Working Group. This species was recorded in the Coniferous Forest ecotype at Wabush 3 and Wabush 4.

## 5.0 REFERENCES

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**APPENDIX A**  
**SPECIES INVENTORY**



**Appendix A: Combined List of Plant Species Recorded at Wabush 3 and Wabush 4 Study Sites**

<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>	<b>GRANK</b>	<b>NRANK</b>	<b>PROVISIONAL 2010 SRANK FOR LABRADOR</b>	<b>GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR</b>
Balsam Fir	<i>Abies balsamea</i>	G5	N5	S5	4 - Secure
Common Yarrow	<i>Achillea millefolium</i>	G5	N5	S3S4	4 - Secure
Red Baneberry	<i>Actaea rubra</i>	G5	NNR	S3S4	4 - Secure
Speckled Alder	<i>Alnus incana</i>	G5	N5	S4S5	4 - Secure
Bartram Shadbush	<i>Amelanchier bartramiana</i>	G5	NNR	S3S5	4 - Secure
Bog Rosemary	<i>Andromeda polifolia</i>	G5	NNR	S4S5	4 - Secure
Alpine Bearberry	<i>Arctostaphylos alpina</i>	G5	NNR	S5	4 - Secure
Lady Fern	<i>Athyrium filix-femina var. angustum</i>	G5T5	N5	S4S5	4 - Secure
Tundra Dwarf Birch	<i>Betula glandulosa</i>	G5	N5	S5	4 - Secure
Dwarf White Birch	<i>Betula minor</i>	G4Q	N4	S4S5	4 - Secure
Paper Birch	<i>Betula papyrifera</i>	G5	N5	S5	4 - Secure
Heart-Leaved Paper Birch	<i>Betula papyrifera var. cordifolia</i>	G5T5	NNR	S4S5	4 - Secure
Fringed Brome	<i>Bromus ciliatus var. ciliatus</i>	G5T5	N5	S3S5	4 - Secure
Blue-Joint Reedgrass	<i>Calamagrostis canadensis</i>	G5	N5	S5	4 - Secure
Brownish Sedge	<i>Carex brunnescens ssp. brunnescens</i>	G5T5	N5	S3S5	4 - Secure
Hair-Like Sedge	<i>Carex capillaris</i>	G5	N5	S3S5	4 - Secure
Little Prickly Sedge	<i>Carex echinata ssp. echinata</i>	G5T5	N5	S3S5	4 - Secure
Coast Sedge	<i>Carex exilis</i>	G5	N5	S3S5	4 - Secure
Mud Sedge	<i>Carex limosa</i>	G5	N5	S5	4 - Secure
Boreal Bog Sedge	<i>Carex magellanica subsp. irrigua</i>	G5T5	N5	S4S5	4 - Secure
Black Sedge	<i>Carex nigra</i>	G5	N5	S3S5	4 - Secure
Few-Flowered Sedge	<i>Carex pauciflora</i>	G5	N5	S4S5	4 - Secure
Pointed Broom Sedge	<i>Carex scoparia</i>	G5	N5	SNA	4 - Secure
Three-Seed Sedge	<i>Carex trisperma</i>	G5	N5	S4S5	4 - Secure
Inflated Sedge	<i>Carex vesicaria</i>	G5	N5	S4S5	4 - Secure

COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR
Alpine Chickweed	<i>Cerastium alpinum</i>	G5?	NNR	S4S5	4 - Secure
Leatherleaf	<i>Chamaedaphne calyculata</i>	G5	N5	S5	4 - Secure
Fireweed	<i>Chamerion angustifolium</i>	G5	NNR	S5	4 - Secure
Clinton Lily	<i>Clintonia borealis</i>	G5	N5	S5	4 - Secure
Marsh Cinquefoil	<i>Comarum palustre</i>	G5	NNR	S3S5	4 - Secure
Goldthread	<i>Coptis trifolia</i>	G5	N5	S5	4 - Secure
Bunch Berry	<i>Cornus canadensis</i>	G5	N5	S5	4 - Secure
Red-Osier Dogwood	<i>Cornus sericea subsp. sericea</i>	G5T5	NNR	S5	4 - Secure
Tickle Grass	<i>Deschampsia cespitosa</i>	G5	N5	S3S5	4 - Secure
Trailing Clubmoss	<i>Diphasiastrum complanatum</i>	G5	N5	S5	4 - Secure
Deep-Root Clubmoss	<i>Diphasiastrum tristachyum</i>	G5	N5	SNA	4 - Secure
Roundleaf Sundew	<i>Drosera rotundifolia</i>	G5	N5	S5	4 - Secure
Mountain Wood-Fern	<i>Dryopteris campyloptera</i>	G5	NNR	S4	4 - Secure
Spinulose Shield Fern	<i>Dryopteris carthusiana</i>	G5	N5	S4	4 - Secure
Black Crowberry	<i>Empetrum nigrum</i>	G5	NNR	S5	4 - Secure
Hairy Willow-Herb	<i>Epilobium ciliatum</i>	G5	NNR	S5	4 - Secure
Hornemann's Willow-Herb	<i>Epilobium hornemannii</i>	G5	NNR	S3S4	4 - Secure
Water Horsetail	<i>Equisetum fluviatile</i>	G5	N5	S3S4	4 - Secure
Woodland Horsetail	<i>Equisetum sylvaticum</i>	G5	N5	S5	4 - Secure
Cotton Grass	<i>Eriophorum angustifolium ssp. angustifolium</i>	G5T5	NNR	S4S5	4 - Secure
Russet Cotton-Grass	<i>Eriophorum chamissonis</i>	G5	N5	S3S5	4 - Secure
Tussock Cotton-Grass	<i>Eriophorum vaginatum</i>	G5	N5	S5	4 - Secure
Rough-Leaved Aster	<i>Eurybia radula</i>	G5	NNR	S4S5	4 - Secure
Sweet-Scent Bedstraw	<i>Galium triflorum</i>	G5	NNR	S3S4	4 - Secure
Creeping Snowberry	<i>Gaultheria hispidula</i>	G5	NNR	S5	4 - Secure
Northern Comandra	<i>Geocaulon lividum</i>	G5	NNR	S5	4 - Secure

COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR
Fowl Mana-grass	<i>Glyceria striata</i>	G5	N5	S3S5	4 - Secure
Northern Oak Fern	<i>Gymnocarpium dryopteris</i>	G5	N5	S5	4 - Secure
Narrow-Paniced Rush	<i>Juncus brevicaudatus</i>	G5	N5	S3S4	4 - Secure
Thread Rush	<i>Juncus filiformis</i>	G5	NNR	S4S5	4 - Secure
Pale Laurel	<i>Kalmia polifolia</i>	G5	NNR	S5	4 - Secure
Larch	<i>Larix laricina</i>	G5	N5	S5	4 - Secure
Lesser Duckweed	<i>Lemna minor</i>	G5	N5	SNA	6 - Not Assessed
Twinflower	<i>Linnaea borealis</i>	G5	NNR	S5	4 - Secure
Heartleaf Twayblade	<i>Listera cordata var. cordata</i>	G5T5	N5	S3S5	4 - Secure
Alpine Azalea	<i>Loiseleuria procumbens</i>	G5	NNR	S4S5	4 - Secure
Small-Flowered Wood-Rush	<i>Luzula parviflora</i>	G5	N5	S4S5	4 - Secure
Running Pine	<i>Lycopodium clavatum</i>	G5	N5	SNR	5 - Undetermined
Stiff Clubmoss	<i>Lycopodium annotinum</i>	G5	N5	S5	4 - Secure
Wild Lily of the Valley	<i>Maianthemum canadensis</i>	G5	N5	S5	4 - Secure
Three-Leaf Solomon's-Plume	<i>Maianthemum trifolium</i>	G5	N5	S5	4 - Secure
Bog Buckbean	<i>Menyanthes trifoliata</i>	G5	NNR	S5	4 - Secure
Mountain Sandwort	<i>Minuartia groenlandica</i>	G5	NNR	S3S4	4 - Secure
Naked Miterwort	<i>Mitella nuda</i>	G5	NNR	S3S4	4 - Secure
One-Flower Wintergreen	<i>Moneses uniflora</i>	G5	NNR	S4S5	4 - Secure
Sweet Coltsfoot	<i>Petasites frigidus var. palmatus</i>	G5T5	N5	S4S5	4 - Secure
Northern Beech Fern	<i>Phegopteris connectilis</i>	G5	N5	S5	4 - Secure
White Spruce	<i>Picea glauca</i>	G5	N5	S5	4 - Secure
Black Spruce	<i>Picea mariana</i>	G5	N5	S5	4 - Secure
Leafy White Orchid	<i>Platanthera dilatata var. dilatata</i>	G5	N5	S4S5	4 - Secure
Small Northern Bog-Orchid	<i>Platanthera obtusata</i>	G5	N5	S3S4	4 - Secure
Fowl Bluegrass	<i>Poa palustris</i>	G5	N5	SNA	7 - Exotic/Alien

COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR
Common cinquefoil	<i>Potentilla simplex</i>	G5	N5	SNA	7 - Exotic/Alien
Greenish-Flowered Wintergreen	<i>Pyrola chlorantha</i>	G5	N5?	S2S3	3 - Sensitive
Lesser Wintergreen	<i>Pyrola minor</i>	G5	NNR	S4	4 - Secure
Common Labrador Tea	<i>Rhododendron groenlandicum</i>	G5	N5	S5	4 - Secure
Bristly Black Currant	<i>Ribes lacustre</i>	G5	NNR	S3S4	4 - Secure
Swamp Red Currant	<i>Ribes triste</i>	G5	NNR	S3S4	4 - Secure
Cloudberry	<i>Rubus chamaemorus</i>	G5	NNR	S5	4 - Secure
Swamp Dewberry	<i>Rubus hispidus</i>	G5	NNR	SNR	5 - Undetermined
Red Raspberry	<i>Rubus idaeus</i>	G5	N5	S4S5	4 - Secure
Dwarf Red Raspberry	<i>Rubus pubescens</i>	G5	NNR	S4S5	4 - Secure
Bebb's Willow	<i>Salix bebbiana</i>	G5	NNR	S2S4	5 - Undetermined
Pussy Willow	<i>Salix discolor</i>	G5	NNR	S3S4	4 - Secure
New England Dwarf Willow	<i>Salix herbacea</i>	G5	NNR	S4S5	4 - Secure
Prairie Willow	<i>Salix humilis</i>	G5	NNR	S3S5	4 - Secure
Meadow Willow	<i>Salix petiolaris</i>	G5	N5?	SNR	6 - Not Assessed
Rock Willow	<i>Salix vestita</i>	G5	NNR	S3S4	4 - Secure
Canada Burnet	<i>Sanguisorba canadensis</i>	G5	NNR	S3S5	4 - Secure
Pod Grass	<i>Scheuchzeria palustris</i>	G5	NNR	S3S5	4 - Secure
Large-Leaf Goldenrod	<i>Solidago macrophylla</i>	G5	NNR	S5	4 - Secure
Bog goldenrod	<i>Solidago uliginosa</i>	G4G5	N5	S5	4 - Secure
Northern Mountain-Ash	<i>Sorbus decora</i>	G4G5	NNR	S3S5	4 - Secure
Hooded Ladies'-Tresses	<i>Spiranthes romanzoffiana</i>	G5	N5	S3S4	4 - Secure
Clasping Twisted-Stalk	<i>Streptopus amplexifolius</i>	G5	NNR	S5	4 - Secure
Swamp Aster	<i>Symphotrichum puniceum var. puniceum</i>	G5T5	N5	S4	4 - Secure
Seven-Angled Pipewort	<i>Trichophorum cespitosum</i>	G5	N5	S5	4 - Secure
Northern Starflower	<i>Trientalis borealis</i>	G5	NNR	S5	4 - Secure
Common Bog Arrow-Grass	<i>Triglochin maritima</i>	G5	N5	S4S5	4 - Secure



<b>COMMON NAME</b>	<b>SCIENTIFIC NAME</b>	<b>GRANK</b>	<b>NRANK</b>	<b>PROVISIONAL 2010 SRANK FOR LABRADOR</b>	<b>GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR</b>
Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>	G5	N5	S5	4 - Secure
Velvetleaf Blueberry	<i>Vaccinium myrtilloides</i>	G5	N5	S4	4 - Secure
Small Cranberry	<i>Vaccinium oxycoccos</i>	G5	N5	S5	4 - Secure
Alpine Bilberry	<i>Vaccinium uliginosum</i>	G5	NNR	S5	4 - Secure
Mountain Cranberry	<i>Vaccinium vitis-idaea</i>	G5	NNR	S5	4 - Secure
Squashberry	<i>Viburnum edule</i>	G5	NNR	S5	4 - Secure
a Violet	<i>Viola sp.</i>				

**APPENDIX B**

**PLANT SPECIES BY HABITAT AND STUDY AREA**

**Appendix B.1: List of Plant Species Recorded at Wabush 3 with Associated Habitat**

COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR	Alpine Shrub	Black Spruce/ Lichen	Conifer Forest	Open Conifer Forest	Deciduous Forest	Mixed Wood	Low Alpine Herb	Fen	Rock Outcrop	Riparian
Balsam Fir	<i>Abies balsamea</i>	G5	N5	S5	4 - Secure	x	x	x	x	x	x		x		x
Common Yarrow	<i>Achillea millefolium</i>	G5	N5	S3S4	4 - Secure										
Red Baneberry	<i>Actaea rubra</i>	G5	NNR	S3S4	4 - Secure	x									
Speckled Alder	<i>Alnus incana</i>	G5	N5	S4S5	4 - Secure										x
Bartram Shadbush	<i>Amelanchier bartramiana</i>	G5	NNR	S3S5	4 - Secure						x		x		
Bog Rosemary	<i>Andromeda polifolia</i>	G5	NNR	S4S5	4 - Secure								x		
Alpine Bearberry	<i>Arctostaphylos alpina</i>	G5	NNR	S5	4 - Secure							x		x	
Tundra Dwarf Birch	<i>Betula glandulosa</i>	G5	N5	S5	4 - Secure	x	x	x	x	x		x	x	x	x
Dwarf White Birch	<i>Betula minor</i>	G4Q	N4	S4S5	4 - Secure							x		x	
Paper Birch	<i>Betula papyrifera</i>	G5	N5	S5	4 - Secure		x	x	x	x	x				
Heart-Leaved Paper Birch	<i>Betula papyrifera var. cordifolia</i>	G5T5	NNR	S4S5	4 - Secure			x		x	x				
Blue-Joint Reedgrass	<i>Calamagrostis canadensis</i>	G5	N5	S5	4 - Secure	x						x	x		x
Brownish Sedge	<i>Carex brunnescens ssp. brunnescens</i>	G5T5	N5	S3S5	4 - Secure								x		x
Little Prickly Sedge	<i>Carex echinata subsp. echinata</i>	G5T5	N5	S3S5	4 - Secure	x							x		
Coast Sedge	<i>Carex exilis</i>	G5	N5	S3S5	4 - Secure								x		
Mud Sedge	<i>Carex limosa</i>	G5	N5	S5	4 - Secure								x		
Boreal Bog Sedge	<i>Carex magellanica ssp. irrigua</i>	G5T5	N5	S4S5	4 - Secure	x							x		
Black Sedge	<i>Carex nigra</i>	G5	N5	S3S5	4 - Secure	x						x	x	x	
Few-Flowered Sedge	<i>Carex pauciflora</i>	G5	N5	S4S5	4 - Secure								x		
Three-Seed Sedge	<i>Carex trisperma</i>	G5	N5	S4S5	4 - Secure								x		
Inflated Sedge	<i>Carex vesicaria</i>	G5	N5	S4S5	4 - Secure								x		
Alpine Chickweed	<i>Cerastium alpinum</i>	G5?	NNR	S4S5	4 - Secure									x	
Leatherleaf	<i>Chamaedaphne calyculata</i>	G5	N5	S5	4 - Secure								x		
Fireweed	<i>Chamerion angustifolium</i>	G5	NNR	S5	4 - Secure	x				x		x			
Clinton Lily	<i>Clintonia borealis</i>	G5	N5	S5	4 - Secure	x	x	x	x	x	x	x			
Marsh Cinquefoil	<i>Comarum palustre</i>	G5	NNR	S3S5	4 - Secure								x		
Goldthread	<i>Coptis trifolia</i>	G5	N5	S5	4 - Secure		x	x			x	x	x		x
Bunch Berry	<i>Cornus canadensis</i>	G5	N5	S5	4 - Secure	x	x	x	x	x	x	x	x	x	x
Tickle Grass	<i>Deschampsia cespitosa</i>	G5	N5	S3S5	4 - Secure	x	x	x	x	x		x	x		x
Deep-Root Clubmoss	<i>Diphasiastrum tristachyum</i>	G5	N5	SNA	4 - Secure	x			x						
Roundleaf Sundew	<i>Drosera rotundifolia</i>	G5	N5	S5	4 - Secure								x		
Mountain Wood-Fern	<i>Dryopteris campyloptera</i>	G5	NNR	S4	4 - Secure	x					x				
Spinulose Shield Fern	<i>Dryopteris carthusiana</i>	G5	N5	S4	4 - Secure					x					
Black Crowberry	<i>Empetrum nigrum</i>	G5	NNR	S5	4 - Secure	x	x	x	x			x	x	x	x
Hairy Willow-Herb	<i>Epilobium ciliatum</i>	G5	NNR	S5	4 - Secure								x		x
Hornemann's Willow-Herb	<i>Epilobium hornemannii</i>	G5	NNR	S3S4	4 - Secure										x
Water Horsetail	<i>Equisetum fluviatile</i>	G5	N5	S3S4	4 - Secure								x		
Woodland Horsetail	<i>Equisetum sylvaticum</i>	G5	N5	S5	4 - Secure	x		x	x				x		x



COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR	Alpine Shrub	Black Spruce/ Lichen	Conifer Forest	Open Conifer Forest	Deciduous Forest	Mixed Wood	Low Alpine Herb	Fen	Rock Outcrop	Riparian
Cotton Grass	<i>Eriophorum angustifolium ssp. angustifolium</i>	G5T5	NNR	S4S5	4 - Secure								x		
Russet Cotton-Grass	<i>Eriophorum chamissonis</i>	G5	N5	S3S5	4 - Secure								x		
Tussock Cotton-Grass	<i>Eriophorum vaginatum</i>	G5	N5	S5	4 - Secure								x		
Rough-Leaved Aster	<i>Eurybia radula</i>	G5	NNR	S4S5	4 - Secure								x		
Sweet-Scent Bedstraw	<i>Galium triflorum</i>	G5	NNR	S3S4	4 - Secure			x							x
Creeping Snowberry	<i>Gaultheria hispidula</i>	G5	NNR	S5	4 - Secure		x	x					x		
Northern Comandra	<i>Geocaulon lividum</i>	G5	NNR	S5	4 - Secure		x		x						
Northern Oak Fern	<i>Gymnocarpium dryopteris</i>	G5	N5	S5	4 - Secure	x		x		x	x				x
Narrow-Panicled Rush	<i>Juncus brevicaudatus</i>	G5	N5	S3S4	4 - Secure	x							x		x
Thread Rush	<i>Juncus filiformis</i>	G5	NNR	S4S5	4 - Secure	x							x		x
Pale Laurel	<i>Kalmia polifolia</i>	G5	NNR	S5	4 - Secure	x	x	x					x		x
Larch	<i>Larix laricina</i>	G5	N5	S5	4 - Secure		x					x	x		
Lesser Duckweed	<i>Lemna minor</i>	G5	N5	SNA	6 - Not Assessed								x		
Twinflower	<i>Linnaea borealis</i>	G5	NNR	S5	4 - Secure	x	x	x	x	x	x		x		x
Heartleaf Twayblade	<i>Listera cordata var. cordata</i>	G5T5	N5	S3S5	4 - Secure			x							
Alpine Azalea	<i>Loiseleuria procumbens</i>	G5	NNR	S4S5	4 - Secure							x		x	
Small-Flowered Wood-Rush	<i>Luzula parviflora</i>	G5	N5	S4S5	4 - Secure	x				x			x		x
Stiff Clubmoss	<i>Lycopodium annotinum</i>	G5	N5	S5	4 - Secure	x	x	x	x	x	x	x	x	x	
Wild Lily of the Valley	<i>Maianthemum canadensis</i>	G5	N5	S5	4 - Secure	x	x				x	x		x	
Three-Leaf Solomon's-Plume	<i>Maianthemum trifolium</i>	G5	N5	S5	4 - Secure								x		
Bog Buckbean	<i>Menyanthes trifoliata</i>	G5	NNR	S5	4 - Secure								x		
Mountain Sandwort	<i>Minuartia groenlandica</i>	G5	NNR	S3S4	4 - Secure									x	
Naked Miterwort	<i>Mitella nuda</i>	G5	NNR	S3S4	4 - Secure			x					x		x
One-Flower Wintergreen	<i>Moneses uniflora</i>	G5	NNR	S4S5	4 - Secure			x							
Sweet Coltsfoot	<i>Petasites frigidus var. palmatus</i>	G5T5	N5	S4S5	4 - Secure	x	x	x	x				x		x
Northern Beech Fern	<i>Phegopteris connectilis</i>	G5	N5	S5	4 - Secure						x				
White Spruce	<i>Picea glauca</i>	G5	N5	S5	4 - Secure			x	x						x
Black Spruce	<i>Picea mariana</i>	G5	N5	S5	4 - Secure	x	x	x	x		x	x	x	x	
Leafy White Orchid	<i>Platanthera dilatata var. dilatata</i>	G5	N5	S4S5	4 - Secure	x							x		
Small Northern Bog-Orchid	<i>Platanthera obtusata</i>	G5	N5	S3S4	4 - Secure			x							
Greenish-Flowered Wintergreen	<i>Pyrola chlorantha</i>	G5	N5?	S2S3	3 - Sensitive			x							
Lesser Wintergreen	<i>Pyrola minor</i>	G5	NNR	S4	4 - Secure								x		
Common Labrador Tea	<i>Rhododendron groenlandicum</i>	G5	N5	S5	4 - Secure	x	x	x		x	x	x	x	x	
Swamp Red Currant	<i>Ribes triste</i>	G5	NNR	S3S4	4 - Secure	x		x		x	x				x
Cloudberry	<i>Rubus chamaemorus</i>	G5	NNR	S5	4 - Secure	x	x	x	x			x	x	x	
Swamp Dewberry	<i>Rubus hispidus</i>	G5	NNR	SNR	5 - Undetermined			x							x
Dwarf Red Raspberry	<i>Rubus pubescens</i>	G5	NNR	S4S5	4 - Secure	x									
Bebb's Willow	<i>Salix bebbiana</i>	G5	NNR	S2S4	5 - Undetermined	x							x		



COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR	Alpine Shrub	Black Spruce/ Lichen	Conifer Forest	Open Conifer Forest	Deciduous Forest	Mixed Wood	Low Alpine Herb	Fen	Rock Outcrop	Riparian
Pussy Willow	<i>Salix discolor</i>	G5	NNR	S3S4	4 - Secure		x					x			
New England Dwarf Willow	<i>Salix herbacea</i>	G5	NNR	S4S5	4 - Secure									x	
Prairie Willow	<i>Salix humilis</i>	G5	NNR	S3S5	4 - Secure								x		
Meadow Willow	<i>Salix petiolaris</i>	G5	N5?	SNR	6 - Not Assessed	x		x					x	x	x
Rock Willow	<i>Salix vestita</i>	G5	NNR	S3S4	4 - Secure			x							x
Canada Burnet	<i>Sanguisorba canadensis</i>	G5	NNR	S3S5	4 - Secure	x							x		x
Pod Grass	<i>Scheuchzeria palustris</i>	G5	NNR	S3S5	4 - Secure								x		
Large-Leaf Goldenrod	<i>Solidago macrophylla</i>	G5	NNR	S5	4 - Secure	x	x	x	x	x	x		x		x
Bog goldenrod	<i>Solidago uliginosa</i>	G4G5	N5	S5	4 - Secure								x		
Northern Mountain-Ash	<i>Sorbus decora</i>	G4G5	NNR	S3S5	4 - Secure						x				
Hooded Ladies'-Tresses	<i>Spiranthes romanzoffiana</i>	G5	N5	S3S4	4 - Secure								x		
Clasping Twisted-Stalk	<i>Streptopus amplexifolius</i>	G5	NNR	S5	4 - Secure			x					x		x
Swamp Aster	<i>Symphyotrichum puniceum var. puniceum</i>	G5T5	N5	S4	4 - Secure	x							x		x
Seven-Angled Pipewort	<i>Trichophorum cespitosum</i>	G5	N5	S5	4 - Secure								x		
Northern Starflower	<i>Trientalis borealis</i>	G5	NNR	S5	4 - Secure	x	x	x	x	x	x	x	x	x	
Common Bog Arrow-Grass	<i>Triglochin maritima</i>	G5	N5	S4S5	4 - Secure								x		
Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>	G5	N5	S5	4 - Secure	x	x	x	x		x	x			
Small Cranberry	<i>Vaccinium oxycoccos</i>	G5	N5	S5	4 - Secure								x		
Alpine Bilberry	<i>Vaccinium uliginosum</i>	G5	NNR	S5	4 - Secure	x	x	x	x	x		x	x	x	x
Mountain Cranberry	<i>Vaccinium vitis-idaea</i>	G5	NNR	S5	4 - Secure	x	x	x	x	x		x	x	x	
Squashberry	<i>Viburnum edule</i>	G5	NNR	S5	4 - Secure		x	x				x	x		x
a Violet	<i>Viola sp.</i>					x							x		x



COMMON NAME	SCIENTIFIC NAME	GRANK	NRANK	PROVISIONAL 2010 SRANK FOR LABRADOR	GENERAL STATUS 2010 PROVISIONAL NFLD and LABRADOR	Alpine Shrub	Black Spruce/ Lichen	Conifer Forest	Open Conifer Forest	Deciduous Forest	Mixed Wood	Low Alpine Herb	Fen	Riparian	Burn	Cutover
					Assessed											
Twinflower	<i>Linnaea borealis</i>	G5	NNR	S5	4 - Secure	x		x		x	x			x	x	x
Heartleaf Twayblade	<i>Listera cordata var. cordata</i>	G5T5	N5	S3S5	4 - Secure			x			x				x	
Running Pine	<i>Lycopodium clavatum</i>	G5	N5	SNR	5 - Undetermined			x								
Stiff Clubmoss	<i>Lycopodium annotinum</i>	G5	N5	S5	4 - Secure	x	x	x	x							
Wild Lily of the Valley	<i>Maianthemum canadensis</i>	G5	N5	S5	4 - Secure			x		x						
Three-Leaf Solomon's-Plume	<i>Maianthemum trifolium</i>	G5	N5	S5	4 - Secure								x			
Naked Miterwort	<i>Mitella nuda</i>	G5	NNR	S3S4	4 - Secure			x			x	x		x		
One-Flower Wintergreen	<i>Moneses uniflora</i>	G5	NNR	S4S5	4 - Secure			x						x		
Sweet Coltsfoot	<i>Petasites frigidus var. palmatus</i>	G5T5	N5	S4S5	4 - Secure		x			x		x				
Northern Beech Fern	<i>Phegopteris connectilis</i>	G5	N5	G5	4 - Secure			x						x		
White Spruce	<i>Picea glauca</i>	G5	N5	S5	4 - Secure	x		x		x		x				
Black Spruce	<i>Picea mariana</i>	G5	N5	S5	4 - Secure		x	x	x		x		x	x		
Small Northern Bog-Orchid	<i>Platanthera obtusata</i>	G5	N5	S3S4	4 - Secure			x								
Fowl Bluegrass	<i>Poa palustris</i>	G5	N5	SNA	7 - Exotic/Alien								x			
Common cinquefoil	<i>Potentilla simplex</i>	G5	N5	SNA	7 - Exotic/Alien									x		
Greenish-Flowered Wintergreen	<i>Pyrola chlorantha</i>	G5	N5?	S2S3	3 - Sensitive			x								
Lesser Wintergreen	<i>Pyrola minor</i>	G5	NNR	S4	4 - Secure			x								
Common Labrador Tea	<i>Rhododendron groenlandicum</i>	G5	N5	S5	4 - Secure	x	x	x	x		x	x	x	x	x	
Bristly Black Currant	<i>Ribes lacustre</i>	G5	NNR	S3S4	4 - Secure										x	
Swamp Red Currant	<i>Ribes triste</i>	G5	NNR	S3S4	4 - Secure					x				x	x	
Cloudberry	<i>Rubus chamaemorus</i>	G5	NNR	S5	4 - Secure			x					x			
Swamp Dewberry	<i>Rubus hispidus</i>	G5	NNR	SNR	5 - Undetermined						x			x		x
Red Raspberry	<i>Rubus idaeus</i>	G5	N5	S4S5	4 - Secure					x				x	x	
Bebb's Willow	<i>Salix bebbiana</i>	G5	NNR	S2S4	5 - Undetermined					x			x	x		x
Pussy Willow	<i>Salix discolor</i>	G5	NNR	S3S4	4 - Secure	x	x		x				x	x		
Meadow Willow	<i>Salix petiolaris</i>	G5	N5?	SNR	6 - Not Assessed					x				x		x
Rock Willow	<i>Salix vestita</i>	G5	NNR	S3S4	4 - Secure		x				x					
Large-Leaf Goldenrod	<i>Solidago macrophylla</i>	G5	NNR	S5	4 - Secure	x	x	x		x	x	x		x	x	x
Northern Mountain-Ash	<i>Sorbus decora</i>	G4G5	NNR	S3S5	4 - Secure					x						
Clasping Twisted-Stalk	<i>Streptopus amplexifolius</i>	G5	NNR	S5	4 - Secure		x	x	x	x				x		
Swamp Aster	<i>Symphyotrichum puniceum var. puniceum</i>	G5T5	N5	S4	4 - Secure									x		
Northern Starflower	<i>Trientalis borealis</i>	G5	NNR	S5	4 - Secure						x	x		x		
Late Lowbush Blueberry	<i>Vaccinium angustifolium</i>	G5	N5	S5	4 - Secure	x	x	x	x	x		x		x	x	x
Velvetleaf Blueberry	<i>Vaccinium myrtilloides</i>	G5	N5	S4	4 - Secure	x										
Alpine Bilberry	<i>Vaccinium uliginosum</i>	G5	NNR	S5	4 - Secure		x					x				

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Mountain Cranberry	<i>Vaccinium vitis-idaea</i>	G5	NNR	S5	4 - Secure	x	x	x	x		x	x				
Squashberry	<i>Viburnum edule</i>	G5	NNR	S5	4 - Secure	x		x		x		x		x		
a Violet	<i>Viola sp.</i>											x		x		

**APPENDIX C**  
**PHOTOGRAPHS**



## Photographs of Typical Ecotypes



**Black Spruce/Lichen Forest**



**Conifer Forest**





**Open Conifer Forest**



**Hardwood Forest**





**Mixed Wood Forest**



**Alpine Shrub**





**Low Alpine Herb**



**Rock Outcrop**



**Wetland (Fen)**



**Riparian**





**Cut Over**



**Burn**

**APPENDIX D**  
**GPS COORDINATES**



### Appendix D.1 GPS Coordinates Recorded at Wabush 3 Study Area

Habitat	Easting	Northing	Species of Conservation Concern
Conifer Forest	637130	5871115	
Conifer Forest	637164	5871125	
Alpine Shrubs	637094	5871208	<i>Salix bebbiana</i>
WL5	636984	5871248	<i>Salix bebbiana</i>
WL5	636968	5871194	
WL5	636938	5871212	
WL5	636942	5871398	
Conifer Forest	636952	5871460	
Conifer Forest	636952	5871508	<i>Pyrola chlorantha</i>
Conifer Forest	636990	5871529	<i>Rubus hispidus</i>
WL5	637065	5871556	
WL5	637099	5871622	<i>Salix petiolaris</i>
WL5	637100	5871731	
WL5	637147	5871900	
Conifer Forest	637181	5871843	
Open Conifer Forest	638618	5872783	<i>Salix petiolaris</i>
Watercourse	638476	5872657	<i>Salix petiolaris</i>
Open Conifer Forest	638502	5872623	
Watercourse	638444	5872624	
Open Conifer Forest	638615	5872301	
Open Conifer Forest	638702	5872412	<i>Diphasiastrum tristachyum</i>
Open Conifer Forest	637976	5872013	
Deciduous Forest	638421	5873101	
Alpine Shrubs	638332	5872937	
Alpine Shrubs	637742	5872708	
Low Alpine Herb	637510	5872934	
Alpine Shrubs	637142	5872638	
Black Spruce/Lichen	637044	5872431	
Lake	637550	5872413	<i>Salix petiolaris</i>
Lake	637675	5872321	
Conifer Forest	637708	5872186	
Low Alpine Herb	637915	5871381	
Alpine Shrubs	637826	5871410	
Alpine Shrubs	637804	5871433	
Rock Outcrop	637811	5871501	
Rock Outcrop	637824	5871535	
Alpine Shrubs	637858	5871521	
Alpine Shrubs	637986	5871481	
Low Alpine Herb	638056	5871463	
Alpine Shrubs	638416	5871764	<i>Diphasiastrum tristachyum</i>
Rock Outcrop	638416	5871505	
Rock Outcrop	638512	5871692	
Rock Outcrop	637877	5871000	
Alpine Shrubs	637656	5871481	
Open Conifer Forest	637550	5871528	
WL3	637592	5871604	

Habitat	Easting	Northing	Species of Conservation Concern
WL3	637585	5871738	
WL3	637510	5871829	
Conifer Forest	637449	5871842	
Conifer Forest	637651	5871859	
Rock Outcrop	638572	5871725	
Low Alpine Herb	638706	5872170	
Alpine Shrubs	638826	5872055	
Mixed Wood	638861	5872133	
Rock Outcrop	638932	5871888	
WL4	638522	5872728	<i>Salix petiolaris, Salix bebbiana</i>
WL6	638101	5871905	<i>Salix bebbiana</i>
WL1	637932	5871379	
WL2	638154	5871438	
WL7	637995	5872160	



### Appendix D.2 GPS Coordinates Recorded at Wabush 4 Study Area

Habitat	Easting	Northing	Species of Conservation Concern
Black Spruce/Lichen	639822	5868743	
Black Spruce/Lichen	639780	5868713	
Watercourse	639731	5868684	Salix petiolaris
Conifer Forest	639714	5868678	
Conifer Forest	639707	5868698	
Watercourse	639735	5868777	Rubus hispidus
Conifer Forest	639745	5868887	Pyrola chlorantha
Open forest	639668	5868849	
Cut Over	639627	5868808	Salix petiolaris, Salix bebbiana, Rubus hispidus, Carex scoparia
Deciduous Forest	639655	5868650	Salix petiolaris, Salix bebbiana
Cut Over	639538	5868787	
Conifer Forest	639482	5868800	
Alpine shrub	639346	5868958	
Conifer Forest	639274	5869007	
Alpine shrub	639217	5869027	
Deciduous Forest	639197	5868975	Salix petiolaris, Salix bebbiana
Alpine shrub	639166	5869041	
Conifer Forest	639149	5869054	Lycopodium clavatum
Pond	639146	5869075	
Drainage Feature	639211	5869131	Salix petiolaris, Salix bebbiana, Rubus hispidus
Mixed Forest	639190	5869166	
Conifer Forest	639061	5869221	Pyrola chlorantha
Deciduous Forest	638992	5869287	
Low Alpine Herb	638983	5869502	
Low Alpine Herb	638823	5869511	
Low Alpine Herb	638679	5869487	
Burn	638625	5869494	
Burn	638611	5869526	
Burn	638562	5869714	
Cut Over	638557	5869782	Salix petiolaris, Salix bebbiana
Black Spruce/Lichen	638931	5869782	
Watercourse	638943	5869835	Rubus hispidus
Conifer Forest	638987	5869781	
Mixed Forest	639007	5869666	Rubus hispidus
Mixed Forest	639416	5869607	
Conifer forest	639570	5869294	