

C1: Vegetation Associations Surveyed in 2007

Appendix C Vegetation

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Survey Site	Surveyed Vegetation Association	Mapped Vegetation Association
1	Sw/Fm	Sw/Fm
2	W/B	W/B
3	Sw/W	Sw/W
4	Sw/W	Sw/W
5	B/L/Fa	~
6	W/Sw	W/Sw
7	B/L/Fa	~
8	Sw/W	Sw/W
9	W/S	W/S
10	B/L/Fa	B/L/Fa
11	B/L/Fa	B/L/Fa
12	W/S	Sw/W
13	B/L/Fa	~
14	B/Fa	~
15	S/W	W/S
16	W/S	W/S
17	W/S	W/S
18	SW/W	B/L/Fa
19	B/Fa	B/L/Fa
20	B/L/Fa	B/L/Fa
21	W/S	~
22	Sw/W	~
23	B/Fa	~
24	B/Fa	B/W
25	B/Fa	~
26	S/W	S/W
27	S/W	Sw/W
28	Mx	~
29	B/W	B/W
30	B/Fa	~
31	B/L/Fa	B/Fa
32	S/W	S/W
33	B/Fa	~
34	W/SW	~
35	W/S	~
36	Sw/Fm	Sw/Fm
37	W/SW	W/SW
38	Sw/Fm	Sw/Fm
39	S/W	S/W
40	B/W	B/W
41	Mx	Mx
42	Mx	Mx
43	W/S	W/S
44	Mx	Mx
45	Sw/W	Sw/W
46	PI	PI
47	Dd	Dd
48	W/Sw	Footprint
49	W/S	W/S
50	S/W	W/S
51	B/Fa	B/Fa
52	B/L/Fa	Mx

C1: Vegetation Associations Surveyed in 2007

Survey Site	Surveyed Vegetation Association	Mapped Vegetation Association
53	B/W	B/W
54	B/L/Fa	B/L/Fa
55	Sw/W	Sw/W
56	B/L/Fa	~
57	Sw/W	~
58	Sw/W	~
59	Dd	Dd
60	W/S	W/S
61	B/Fa	B/L/Fa
62	B/L/Fa	B/L/Fa
63	Sw/W	Sw/W
64	Sw/W	Sw/W
65	W/S	~
66	Sw/W	Sw/W
67	Mx	Mx
68	Pl	Pl
69	Dd	Dd
70	Sw/Fm	Sw/W
71	Sw/W	Sw/W
72	Sw/W	Sw/W
73	Sw/W	Sw/W
74	Sw/W	Sw/W
75	W/S	W/S
76	W/S	Footprint

‘~’ indicates that the survey site was outside of the LSA and therefore was not mapped.

There may be discrepancies between the site call for the vegetation association and the polygon label on the map. Often, many associations were too small to map so were labeled the same as the surrounding homogeneous vegetation association.

**C2: Vegetation Association Descriptions for the Faro Local
Study Area**

Appendix C Vegetation

C2. Vegetation Association Descriptions for the Faro, Local Study Area

C2: Vegetation Association Descriptions for the Faro Local Study Area

Vegetation Association Descriptions for the Faro, Local Study Area

Sedge/Willow (S/W)

This wetland association is common in both the boreal and subalpine zone and occurs in (moist/wet) depression or complex glaciofluvial drainage areas where water collects either above or below the ground, due to alluvial and organic deposits, till blankets and colluvium veneers. Wetlands are defined as being “waterlogged soils where in some cases the production of plant materials exceeds the rate of decomposition” (National Wetlands Working Group, 1988). Soils are saturated for enough time that excess water and low soil oxygen levels are the main determinants of soil and vegetation development (MacKenzie and Moran 2004). Wetlands, including streams and fens, are common in low gradient valleys and catchment basins in the Faro LSA (Oswald et. al, 1983). A mixture of sedge and graminoid species dominates the area, with water sedge (*Carex aquatilis*) being most common. Shrubs such as willows (*Salix spp.*), dwarf birch (*Betula glandulosa*) and some white spruce (*Picea glauca*) are also present around the edges of the wetland. Wetland mosses such as sphagnum (*Sphagnum spp.*) are also abundant.

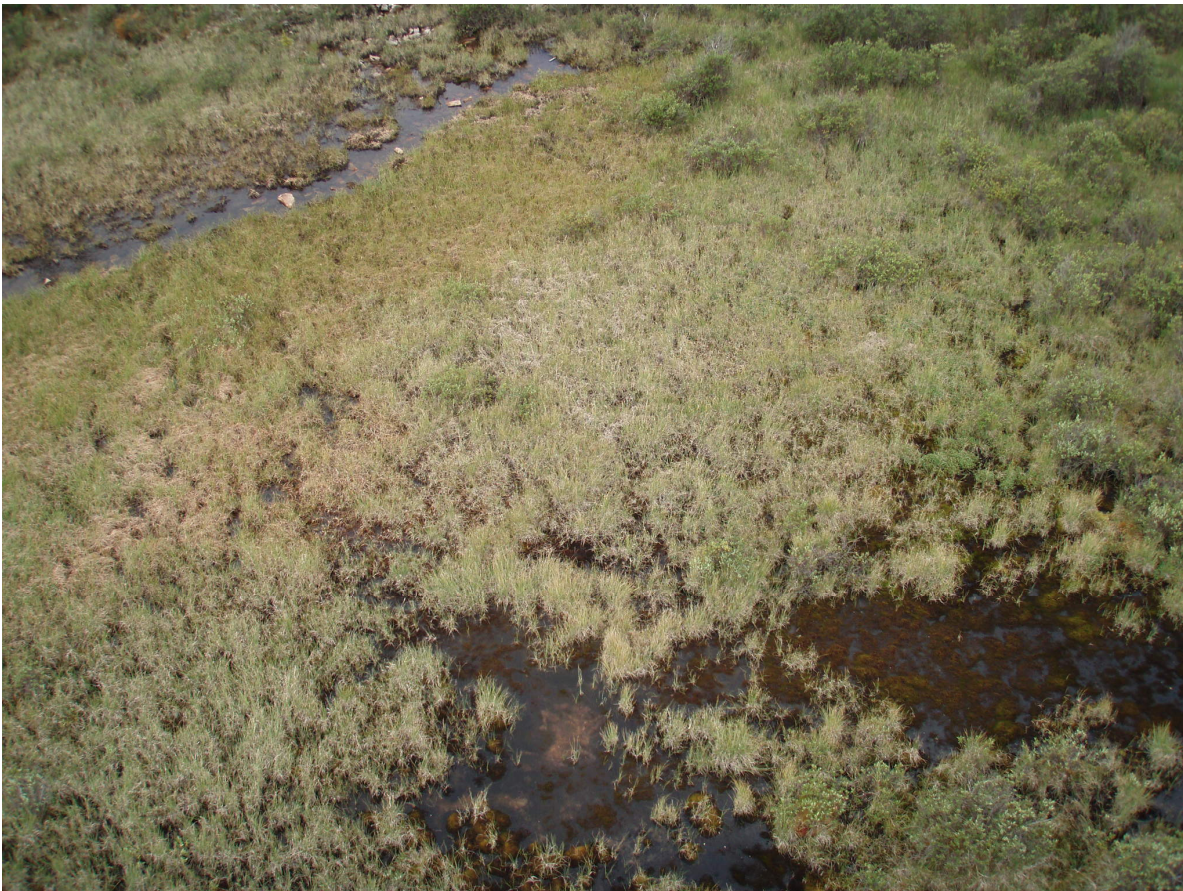


Photo 1. Sedge/Willow association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Willow/Sedge (W/S)

The willow/sedge association is linked with standing or flowing water, usually along lakes, ponds and creek drainages. A common riparian vegetation association found over a wide elevation range throughout the study area, this association is often found on alluvial plains or complexes over organic materials and sometimes on glacio-fluvial terraces. Various willow species including tea-leaved willow (*Salix planifolia*) and Athabasca willow (*Salix athabascensis*) are dominant in the shrub layer though dwarf birch and shrubby cinquefoil (*Potentilla fruticosa*) may also be present. Shrub heights vary depending on water availability and exposure to wind and snow, but are generally 0.5 to 1 m tall. Sedge species (*Carex spp.*) such as water sedge are common below the shrub layer along with various wetland mosses (*Sphagnum spp.*).

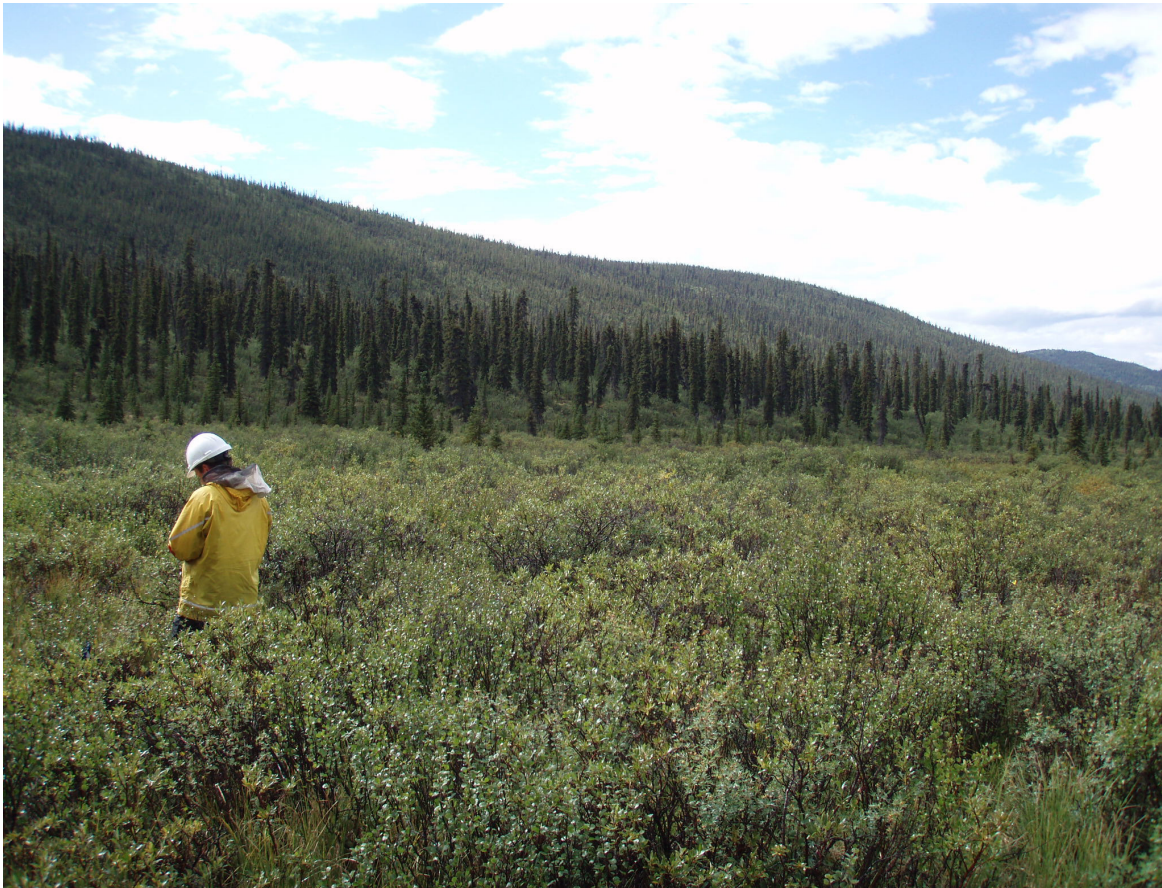


Photo 2. Willow/Sedge association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Willow/White Spruce (W/Sw)

The willow/white spruce vegetation is often found in a riparian drainage or draw, along creeks or rivers primarily in the boreal zone. It is associated with a variety of surficial geology including, till veneers and blankets, colluvial veneers, alluvial and glacio-fluvial plains and till and colluvium bedrock. An open canopy of mature white spruce is scattered among a well-developed shrub layer dominated by various willow species and dwarf birch. Ground cover is often a combination of ericaceous shrubs, sedge species, lichens and mosses. Such species include arctic bearberry (*Arctostaphylos rubra*), net-veined willow (*Salix reticulata*), common horsetail (*Equisetum arvense*) and bluegrasses (*Poa spp.*).



Photo 3. Willow/White Spruce association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Willow/Dwarf Birch (W/B)

This riparian vegetation association is widespread at lower elevations, occurring on gentle to steep slopes on till blankets and till veneer over bedrock and also near drainages or open water found on alluvial plains in the boreal zone. Willow species and dwarf birch are codominant in a well-developed shrub layer wherein willows can reach up to 4 m. Scattered young white spruce trees are common, along with low shrubs such as Labrador tea (*Ledum groenlandicum*), as well as sparse grasses and forbs. Moss and lichen cover varies depending on water and nutrient availability.



Photo 4. Willow/Dwarf Birch association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Dwarf Birch/Willow (B/W)

The birch/willow vegetation association is characteristic of slopes of blanketed till and veneers of colluvium and till at higher elevations in the subalpine zone throughout the study area. Dwarf birch is the dominant shrub, however willow species, Labrador tea, shrubby cinquefoil and bog bilberry (*Vaccinium uliginosum*) are also present. A variety of ground shrubs such as crowberry (*Empetrum nigrum*), mountain cranberry (*Vaccinium vitis-idaea*) and alpine bearberry are found in the understory, however lichens (*Flavocetraria spp.*, *Cladina spp.* and *Stereocaulom spp.*) tend to dominate the groundcover. Krummholtz subalpine fir (*Abies lasiocarpa*) and white spruce occur occasionally.



Photo 5. Dwarf Birch/Willow association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Dwarf Birch/Lichen/Subalpine Fir (B/L/Fa)

This vegetation association is a subalpine/alpine community characterized by bedrock outcrops, windswept ridges of colluvium veneer and plains at higher elevations. Dwarf birch is the dominant cover species at a height of 0.5 m tall, followed by a high cover of lichen species (*Cladina spp.*, *Stereocaulon spp.*, *Flavocetraria spp.*) intermixed with rocky outcrops. Krumholtz subalpine fir is the dominant tree species scattered throughout the vegetation association, although white spruce may also be present. Arctic bearberry, crowberry, bog bilberry and mountain avens (*Dryas spp.*) are also present.



Photo 6. Dwarf Birch/Lichen/Subalpine Fir association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Dwarf Birch/Subalpine Fir (B/Fa)

The birch/fir vegetation association is a subalpine community occurring on well-drained soils and slopes of till blankets, till and colluvium veneers over bedrock. Dwarf birch is the dominant cover species at a height of 0.5 to 1 m tall with scattered subalpine fir as the dominant tree species at 2 – 6 m tall. Willow species, Labrador tea, mountain juniper (*Juniper communis*) and white spruce may also be present. Low growing shrubs include bog bilberry, arctic bearberry, crowberry and mountain cranberry. Graminoid species are present in the ground cover along with various lichen species (*Cladina spp.*, *Stereocolun spp.*, *Peltigera spp.*).

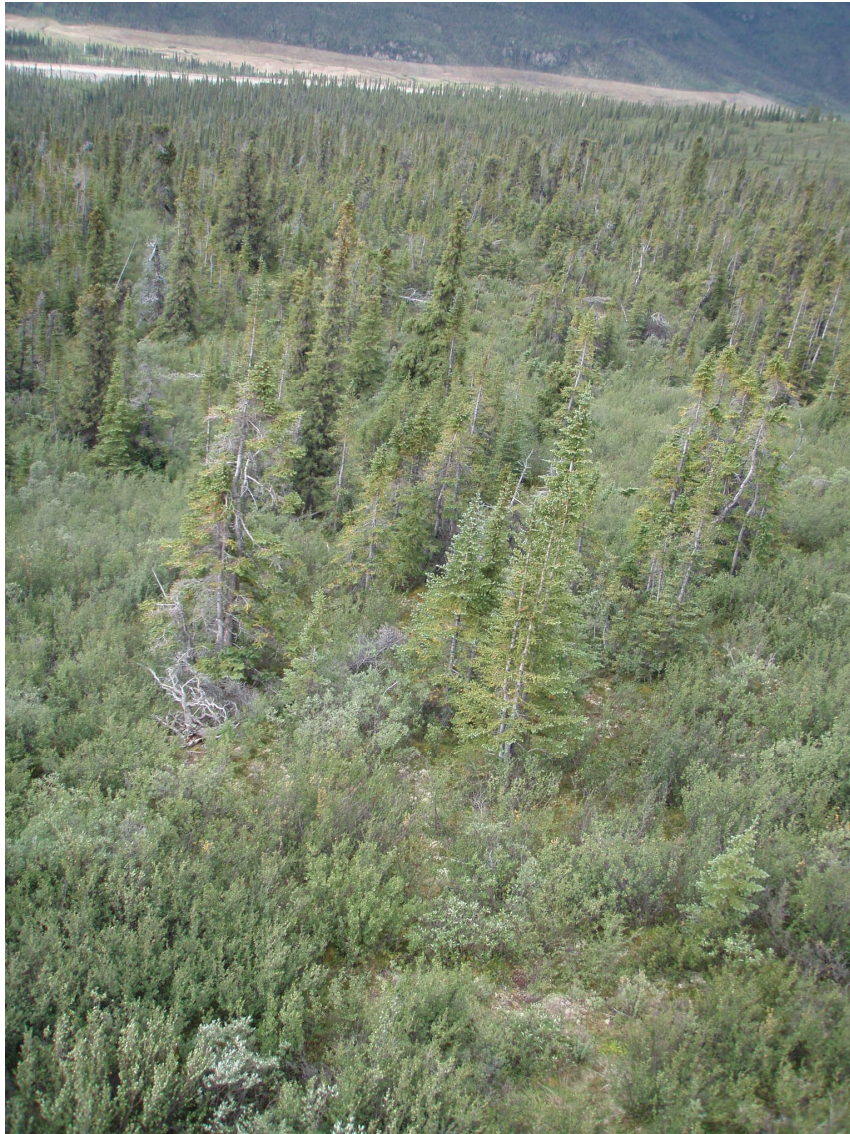


Photo 7. Dwarf Birch/Subalpine Fir association

C2: Vegetation Association Descriptions for the Faro Local Study Area

White Spruce/Willow (Sw/W)

The white spruce/willow association is the most frequent vegetation association within the study area, occurring in both the boreal and the subalpine zones on various upland and lowland slopes of till and colluvium veneer over bedrock. White spruce dominates the tree canopy, though subalpine fir may also be present. A well-developed shrub layer is dominated by a high cover of 1 m tall willow species, along with a lower percent of dwarf birch, Labrador tea and shrubby cinquefoil. Dwarf shrubs in the ground cover layer include bog billberry, common bearberry (*Arctostaphylos uva-ursi*), net-veined willow and crowberry. Common horsetail and bluegrass species are also frequent. Stair step moss (*Hylocomium splendens*), reindeer lichens (*Cladina rangifera*) and pelt lichens (*Peltigera spp.*) are common throughout the vegetation association.



Photo 8. White Spruce/Willow association

C2: Vegetation Association Descriptions for the Faro Local Study Area

White Spruce/Feather moss (Sw/Fm)

This vegetation association occurs most frequently on well-drained mesic sites in lowland areas throughout the boreal zone. The terrain is a combination of till blankets and veneers over bedrock, as well as colluvium veneers conforming to bedrock. The tree canopy is comprised of dense white spruce trees with a sparse shrub understory. Tall shrubs consist of willow species, dwarf birch and shrubby cinquefoil whereas low growing shrubs consist of mountain cranberry, bog bilberry, alpine bearberry and crowberry. Vegetation in the herbaceous layer includes arctic lupine (*Lupinus arcticus*), alpine sweet vetch (*Hedysarum alpinum*), purple-leaved willow-herb (*Epilobium ciliatum*) and bluegrass species. A thick carpet of feathermosses such as stair step moss is also present.



Photo 9. White Spruce/Feather moss association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Pine (PI)

The Pine vegetation association is as its name suggests, a dominant tree canopy of lodgepole pine (*Pinus contorta*). It is found mostly on upland areas around the Grum and Vangorda pit at the SE end of the LSA in the boreal zone. These areas are identified as being till blankets of gently to moderately sloping plains controlled by bedrock or underlying surficial deposits. The average tree canopy height is 16 m, with a few white spruce trees scattered throughout the subcanopy. A tall shrub layer of Sitka alder (*Alnus crispa ssp. Sinuate*) and Scouler's willow (*Salix scouleriana*) is common and followed by a lower shrub layer of Labrador tea, prickly rose (*Rosa acicularis*) and buffaloberry (*Shepherdia canadensis*). Ground cover consisting of bog bilberry, crowberry, bunchberry (*Cornus canadensis*), common bearberry and twinflower (*Linnaea borealis*) are noted at lower cover values. Feathermosses are also a common ground cover. This vegetation association is a typical mid-successional forest following fire.



Photo 10. Pine association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Mixed Coniferous-Deciduous (Mx)

This vegetation association establishes on well drained sites over a broad elevation range. The terrain tends to consist of a combination of till veneer and till blankets as well as colluvium veneer, bedrock and glaciofluvial complexes. It is a mixture of coniferous and deciduous trees including white spruce, trembling aspen, balsam poplar (*Populus balsamifera*) and lodgepole pine. Depending on moisture and nutrients, subalpine fir and/or black spruce (*Picea mariana*) may also be present. This is often a young forest or “mid-seral community following fire” (Staniforth, 1998) whereby trees are in both the tree canopy and shrub layer. Additional shrubs include dwarf birch, willow species and Labrador tea. Bog bilberry, crowberry and mountain cranberry comprise the layer of low growing shrubs whereby stair step moss, green reindeer lichen and pelt lichens moderately cover the remainder of the ground.



Photo 11. Mixed Coniferous-Deciduous association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Deciduous (Dd)

The deciduous vegetation association often establishes on sites regenerating from a disturbance, whether it be fire or human development. Sites tend to be located on well-drained slopes of till and colluvium veneer over bedrock as well as blanketed till and glacio-fluvial complexes.. Most often located in the boreal zone, they are rich in diversity. Trembling aspen is the dominant tree species ranging in height from 2 to 8 m tall, followed by balsam poplar on moister sites. Tall shrubs include willow species, Sitka alder, shrubby cinquefoil, Labrador tea, dwarf birch, buffaloberry and prickly rose. White spruce may also be visible in the understory. Low growing shrubs include arctic bearberry, common bearberry, mountain cranberry and blueberry willow (*Salix myrtilifolia*). The herbaceous layer consists of bunchberry, bastard toad-flax (*Geocaulon lividum*), fireweed (*Epilobium angustifolium*), northern grass-of -parnassus (*Parnassia palustris*) and twin flower.



Photo 12. Deciduous association

C2: Vegetation Association Descriptions for the Faro Local Study Area

Graminoid (Gr)

The graminoid vegetation association is found in lowland areas on and around the project footprint in the boreal zone. It generally comprises an area re-established from seed mixtures of grasses and low growing forbs such as the freshwater reservoir located SE of the tailings pond along the access road. Grasses such as brome (*Bromus spp.*), reedgrass species (*Calamagrostis spp.*) and fescue species (*Festuca spp.*) dominate this vegetation association. Sedge species can occur as well as various forbs such as fireweed and wormwood (*Artemisia spp.*). These areas tend to be glaciofluvial complexes of outwash deposits and minor till deposits in ice contact environments.



Photo 13. Graminoid association

C3: Species Observed During Faro Vegetation Surveys

Appendix C Vegetation

C3: Species Observed During Faro Vegetation Surveys

C3: Species Observed During Faro Vegetation Surveys

Species Observed During Faro Vegetation Surveys

Scientific Name	Common Name
<i>Abies lasiocarpa</i>	subalpine fir
<i>Alnus crispa ssp. sinuata</i>	sitka alder
<i>Arctagrostis latifolia</i>	polar grass
<i>Arctostaphylos rubra</i>	alpine bearberry
<i>Arctostaphylos uva-ursi</i>	common bearberry
<i>Aster species</i>	aster
<i>Aulocomium palustre</i>	tufted moss
<i>Barbilophozia species</i>	leafy liverwort species
<i>Betula glandulosa</i>	dwarf birch
<i>Bryoria species</i>	bryoria species
<i>Calamagrostis species</i>	reedgrass species
<i>Carex aquatilis</i>	water sedge
<i>Carex species</i>	sedge species
<i>Cassiope tetragona</i>	four-angled mountain-heather
<i>Cladina mitis</i>	green reindeer lichen
<i>Cladina rangiferina</i>	grey reindeer lichen
<i>Cladonia species</i>	cladonia species
<i>Cornus canadensis</i>	bunchberry
<i>Dryas species</i>	mountain-avens species
<i>Elymus innovatus</i>	hairy wild rye
<i>Empetrum nigrum</i>	crowberry
<i>Epilobium angustifolium</i>	fireweed
<i>Epilobium ciliatum</i>	purple-leaved willow-herb
<i>Equisetum arvense</i>	common horsetail
<i>Equisetum scirpoides</i>	dwarf scouring rush
<i>Equisetum species</i>	horsetail species
<i>Flavocetraria nivalis</i>	flattened snow lichen
<i>Geocaulon lividum</i>	bastard toad-flax
<i>Hedysarum alpinum</i>	alpine sweet-vetch
<i>Hylocomium splendens</i>	step moss
<i>Juniperus communis</i>	mountain juniper
<i>Ledum groenlandicum</i>	Labrador-tea
<i>Linnaea borealis</i>	twinline
<i>Lupinus arcticus</i>	arctic lupine
<i>Mnium species</i>	mnium species
<i>Orthilia secunda</i>	one-sided wintergreen
<i>Parnassia palustris</i>	northern grass-of-parnassus
<i>Peltigera aphthosa</i>	freckled pelt
<i>Peltigera species</i>	pelt lichens
<i>Petasites frigidus</i>	sweet coltsfoot
<i>Picea glauca</i>	white spruce
<i>Picea mariana</i>	black spruce
<i>Pinus contorta</i>	lodgepole pine
<i>Pleurozium shreberi</i>	red-stemmed feathermoss
<i>Poa species</i>	bluegrass species
<i>Polytrichum species</i>	haircap moss
<i>Populus balsamifera</i>	balsam poplar
<i>Populus tremuloides</i>	trembling aspen
<i>Potentilla fruticosa</i>	shrubby cinquefoil
<i>Rosa acicularis</i>	prickly rose
<i>Salix athabascensis</i>	Athabasca willow
<i>Salix myrtilifolia</i>	blueberry willow
<i>Salix planifolia</i>	tea-leaved willow

C3: Species Observed During Faro Vegetation Surveys

Scientific Name	Common Name
<i>Salix reticulata</i>	net-veined willow
<i>Salix scouleriana</i>	Scouler's willow
<i>Salix species</i>	willow species
<i>Senecio lugens</i>	black-tipped groundsel
<i>Shepherdia canadensis</i>	buffaloberry
<i>Sphagnum species</i>	sphagnum species
<i>Stereocaulon paschale</i>	cottontail coral
<i>Vaccinium uliginosum</i>	bog bilberry
<i>Vaccinium vitis-idea</i>	mountain cranberry

C3: Species Observed During Faro Vegetation Surveys

Appendix C Vegetation

C4: Vascular Plant Species Ranked in the Yukon Territory by the General Status of Species in Canada

C3: Species Observed During Faro Vegetation Surveys

Appendix C Vegetation

C5: Rare Vascular Plant Species Tracked by the Yukon Government

C3: Species Observed During Faro Vegetation Surveys

Appendix C Vegetation

C6: Report on Faro Minesite Rare Plant Survey