

ECOSYSTEM ASSOCIATIONS OF THE BWBSa1

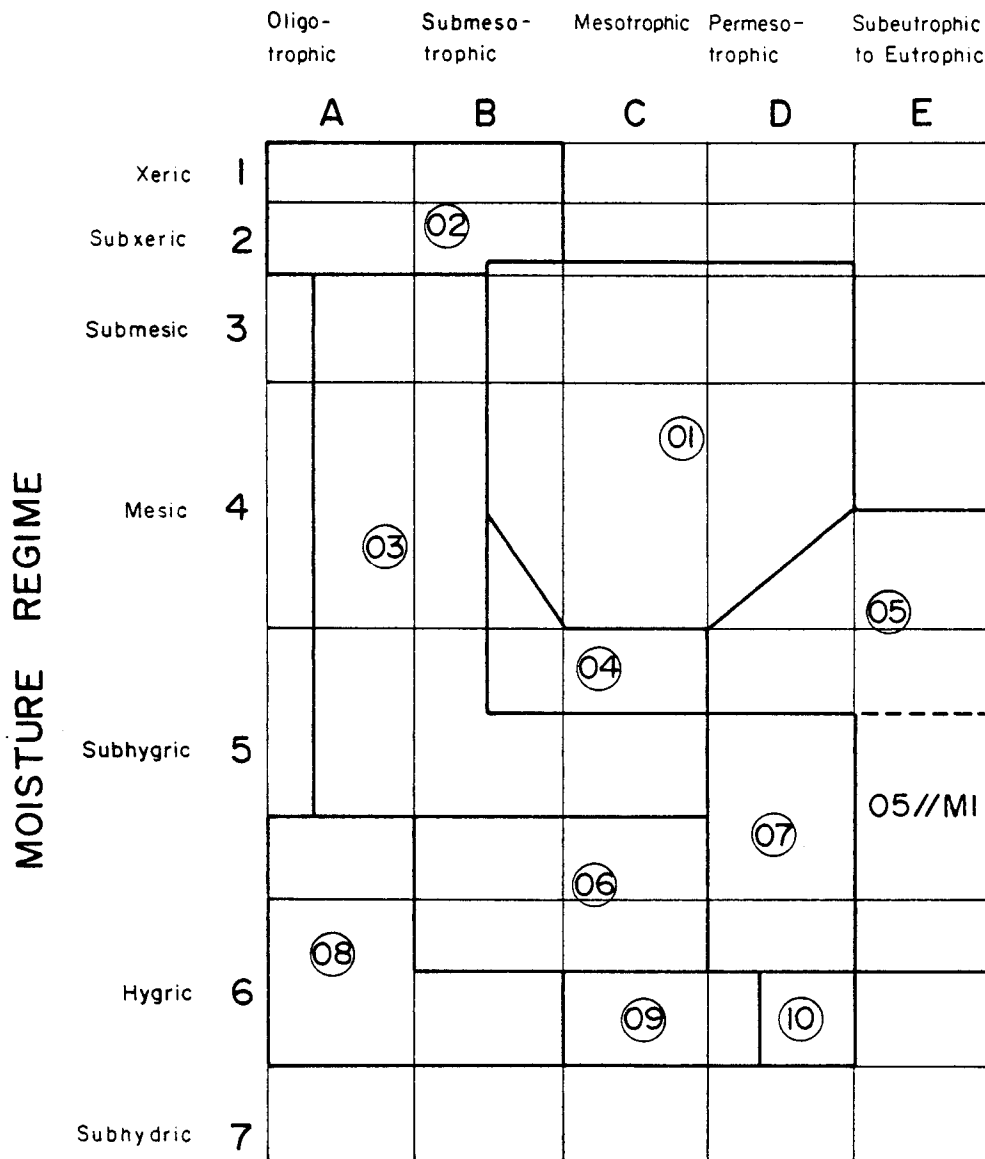
Fort Nelson Lowland variant of the Boreal White and  
Black Spruce Biogeoclimatic Zone

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# Edatopic Grid of Ecological Moisture and Nutrient Regime - BWBSal

## NUTRIENT REGIME



### BWBSal Associations

- |                         |                             |
|-------------------------|-----------------------------|
| 01 Aspen - White Spruce | 06 Black Spruce - Horsetail |
| 02 Pine - Lichen        | 07 Tamarack - Horsetail     |
| 03 Pine - Black Spruce  | 08 Black Spruce - Sphagnum  |
| 04 Pine - Club-moss     | 09 Black Spruce - Willow    |
| 05 Spruce - Horsetail   | 10 Tamarack - Buckbean      |

KEY TO ECOSYSTEMS OF THE BWBSa1

1a. Site occurs on level to gently sloping river terraces.

2a Canopy dominated by white spruce; high cover of Equisetum spp.  
(horsetails).

BWBSa1/05

2b Canopy dominated by balsam poplar.

BWBSa1/05//M1

1b. Site occurs on level to moderately sloping uplands.

3a. Canopy dominated by white spruce and/or trembling aspen; soils  
moderately fine-textured.

4a. White spruce dominant.

BWBSa1/01

4b. Trembling aspen dominant.

BWBSa1/01//M1

3b. Canopy dominated by lodgepole pine.

5a. High cover of lichens; soils coarse-textured.

BWBSa1/02

5b. moderate cover (~7%) of Lycopodium annotinum (stiff club-moss);  
soils fine-textured.

BWBSa1/04

5c. Black spruce is present in the canopy and is the dominant regeneration; low cover of lichens; stiff club-moss very low cover (< 1%) or absent).

BWBSal/03

3c. Canopy dominated by black spruce with an admixture of lodgepole pine.

6a. high cover (> 10%) of horsetails; feather mosses dominant.

BWBSal/06

6b. low cover (< 1%) or lack of horsetails; feather mosses dominant.

BWBSal/03

1c. Site occurs on level to depressional wetlands.

7a. Canopy dominated by black spruce.

8a. Shrub layer dominated by Ledum groenlandicum (Labrador tea); moss layer dominated by Sphagnum fuscum (common brown sphagnum).

BWBSal/08

8b. Salix spp. (willows) dominate the shrub layer; moss layer dominated by Aulacomnium palustre (ribbed bog moss).

BWBSal/09

7b. Canopy dominated by tamarack.

9a. Moderate to high cover (> 10%) of horsetails.

BWBSal/07

9b. Shrub layer dominated by Betula glandulosa (scrub birch);  
horsetails very low cover (< 1%) or absent.

BWBSa1/10

BWBSa<sub>1</sub>/01 ASPEN - WHITE SPRUCE

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/01; Populus tremuloides - Picea glauca - Viburnum edule - Aralia nudicaulis - Linnaea borealis - Hylocomium splendens;  
BWBSa<sub>1</sub>/01: Aspen - white spruce association.

ECOLOGICAL MOISTURE REGIME: submesic - mesic

ECOLOGICAL NUTRIENT REGIME: submesotrophic - permesotrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	level, upper to mid
Slope Gradient (%):	5 (0-22)
Soil Drainage:	moderately well

DISTRIBUTION: very common

BWBSa<sub>1</sub>/01 ASPEN - WHITE SPRUCE

VEGETATION:

Tree Layer: 70% cover

<u>Picea glauca</u>	(white spruce)
<u>Populus tremuloides</u>	(trembling aspen)
<u>Picea mariana</u>	(black spruce)

Shrub Layer: 20% cover; poorly to moderately well developed

<u>Viburnum edule</u>	(highbush-cranberry)
<u>Rosa acicularis</u>	(prickly rose)
[ <u>Shepherdia canadensis</u>	(soopolallie)]
[ <u>Alnus viridis</u> ssp. <u>fruticosa</u>	(green alder)]
[ <u>Ledum groenlandicum</u>	(Labrador tea)]

Herb Layer: 20% cover; poorly developed

<u>Linnaea borealis</u>	(twinflower)
<u>Cornus canadensis</u>	(bunchberry)
<u>Rubus pubescens</u>	(trailing raspberry)
<u>Orthilia secunda</u>	(one-sided wintergreen)
<u>Mertensia paniculata</u>	(tall bluebell)
<u>Mitella nuda</u>	(common mitrewort)
<u>Viola renifolia</u>	(kidney-leaved violet)
<u>Vaccinium vitis-idaea</u>	(lingonberry)
[ <u>Aralia nudicaulis</u>	(false sarsaparilla)] - usually present

Moss Layer: 60% cover; moderately well to well developed

<u>Hylocomium splendens</u>	(step moss)
<u>Ptilium crista-castrensis</u>	(knight's plume)
<u>Pleurozium schreberi</u>	(red-stemmed feather moss)

SOIL AND SITE:

Slope Gradient (%):	5(0-22)
Parent Material:	morainal, glaciofluvial, glaciolacustrine
Soil Classification:	Orthic Gray Luvisol, some Eluviated Brunisols
Coarse Fragments:	few
Soil Texture:	moderately fine
Rooting Depth (cm):	34
Humus Form:	Mormoder
Humus Thickness (cm):	10 (4-14)
pH Humus:	5.2
pH Mineral:	5.3

BWBSa<sub>1</sub>/01//M<sub>1</sub> ASPEN - WHITE SPRUCE (aspen seral association)

VEGETATION:

Tree Layer: 60% cover

<u>Populus tremuloides</u>	(trembling aspen)	
<u>Picea glauca</u>	(white spruce)	)- mostly in lower canopy
[ <u>Betula papyrifera</u>	(paper birch)]	)
[ <u>Betula neoalaskana</u>	(Alaska paper birch)]	)

Shrub Layer: 75% cover; moderately well to well developed

<u>Picea glauca</u>	(white spruce)	- regeneration
<u>Alnus viridis</u> ssp. <u>fruticosa</u>	(green alder)	
<u>Viburnum edule</u>	(highbush-cranberry)	)- usually high cover
<u>Rosa acicularis</u>	(prickly rose)	)
<u>Salix bebbiana</u>	(Bebb's willow)	
<u>Shepherdia canadensis</u>	(soopolallie)	
<u>Cornus sericea</u>	(red-osier dogwood)	
[ <u>Amelanchier alnifolia</u>	(Saskatoon)]	- good indicator

Herb Layer: 40% cover; moderately well to well developed

<u>Linnaea borealis</u>	(twinline)	
<u>Cornus canadensis</u>	(bunchberry)	
<u>Rubus pubescens</u>	(trailing raspberry)	
<u>Aralia nudicaulis</u>	(wild sarsaparilla)	- good indicator
<u>Mertensia paniculata</u>	(tall bluebell)	
<u>Lathyrus ochroleucus</u>	(creamy peavine)	
<u>Pyrola asarifolia</u>	(pink wintergreen)	
<u>Maianthemum canadense</u>	(wild lily-of-the-valley)	
<u>Epilobium angustifolium</u>	(fireweed)	
<u>Galium boreale</u>	(northern bedstraw)	
[ <u>Orthilia secunda</u>	(one-sided wintergreen)]	
[ <u>Mitella nuda</u>	(common mitrewort)]	

Moss Layer: 0-35% cover; poorly developed

<u>Hylocomium splendens</u>	(step moss)	
[ <u>Ptilium crista-castrensis</u>	(knight's plume)]	



BWBSa<sub>1</sub>/01//M<sub>1</sub> ASPEN - WHITE SPRUCE (aspen seral association)

SOIL AND SITE:

Slope Gradient (%):	5 (0-22)
Parent Material:	morainal, glaciofluvial, glaciolacustrine
Soil Classification:	mostly Orthic Gray Luvisol, some Eluviated Brunisols
Coarse Fragments:	few
Soil Texture:	moderately fine
Rooting Depth (cm):	34
Humus Form:	Moder
Humus Thickness (cm):	9 (5-16)
pH Humus:	5.6 (4.5-6.3)
pH Mineral:	5.7 (4.6-6.3)

BWBSa<sub>1</sub>/02 PINE - LICHEN

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/02; Pinus contorta - Arctostaphylos uva-ursi -  
Pleurozium schreberi - Peltigera aphthosa - Cladina mitis; BWBSa<sub>1</sub>/02:  
Pine - lichen association.

ECOLOGICAL MOISTURE REGIME: xeric - subxeric

ECOLOGICAL NUTRIENT REGIME: oligotrophic - submesotrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	shedding
Soil Texture:	moderately coarse to coarse

DISTRIBUTION: rare

BWBSa<sub>1</sub>/02 PINE - LICHEN

VEGETATION:

Tree Layer: 40% cover

<u>Pinus contorta</u>	(lodgepole pine)	- dominant
<u>Populus tremuloides</u>	(trembling aspen)	
<u>Pinus banksiana</u>	(jackpine)	
[ <u>Picea mariana</u>	(black spruce)]	
[ <u>Picea glauca</u>	(white spruce)]	

Shrub Layer: 30% cover; poorly to moderately well developed

<u>Picea mariana</u>		) - regeneration
<u>Picea glauca</u>		)
<u>Rosa acicularis</u>	(prickly rose)	
<u>Ledum groenlandicum</u>	(Labrador tea)	
<u>Shepherdia canadensis</u>	(soopolallie)	
<u>Alnus viridis ssp. fruticosa</u>	(green alder)	
<u>Viburnum edule</u>	(highbush-cranberry)	
<u>Vaccinium myrtilloides</u>	(velvet-leaved blueberry)	
- good indicator		

Herb Layer: 50% cover; poorly to well developed

<u>Vaccinium vitis-idaea</u>	(lingonberry)	
<u>Arctostaphylos uva-ursi</u>	(kinnikinnick)	- good indicator
<u>Linnaea borealis</u>	(twinflower)	
<u>Cornus canadensis</u>	(bunchberry)	
<u>Geocaulon lividum</u>	(bastard toad-flax)	
<u>Epilobium angustifolium</u>	(fireweed)	
<u>Pyrola asarifolia</u>	(pink wintergreen)	
<u>Equisetum arvense</u>	(common horsetail)	
<u>Orthilia secunda</u>	(one-sided wintergreen)	
<u>Maianthemum canadense</u>	(wild lily-of-the-valley)	
<u>Pyrola chlorantha</u>	(green wintergreen)	
[ <u>Lycopodium obscurum</u>	(ground-pine)]	

Moss Layer: 50% cover; poorly to well developed

<u>Cladina mitis</u>		
<u>Pleurozium schreberi</u>	(red-stemmed feathermoss)	
<u>Hylocomium splendens</u>	(step moss)	
<u>Cladina alpestris</u>		- good indicator
<u>Cladina rangiferina</u>	(reindeer lichen)	
<u>Peltigera apthosa</u>		
[ <u>Cladonia gracilis</u>		) - low cover
[ <u>Cladonia uncialis</u>		)
[ <u>Peltigera canina</u>	(dog lichen)]	)
[ <u>Polytrichum juniperinum</u>	(juniper hair-cap moss)]	- good indicator; low cover
[ <u>Cladina arbuscula</u>		) - low cover
[ <u>Cephaloziella divaricata</u>		)
[ <u>Cetraria nivalis</u>		)
[ <u>Dicranum polysetum</u>		)
[ <u>Pohlia nutans</u>		)
[ <u>Ptilidium pulcherrimum</u>		)

BWBSa/02 PINE - LICHEN

SOIL AND SITE:

Slope Gradient (%):	0 (level)
Parent Material:	fluvial, eolian
Soil Classification:	Eluviated Brunisol
Soil Drainage:	well
Rooting Depth (cm):	12
Humus Form:	Xeromor
Humus Thickness (cm):	2 (1-3)
pH Humus:	4.4 (3.9-5.0)
pH Mineral:	5.6 (4.8-5.8)

BWBSa<sub>1</sub>/03 PINE - BLACK SPRUCE

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/03; Picea mariana - Pleurozium schreberi - Hylocomium splendens - Ptilium crista-castrensis; BWBSa<sub>1</sub>/03: Pine - black spruce association.

ECOLOGICAL MOISTURE REGIME: submesic - subhygric

ECOLOGICAL NUTRIENT REGIME: oligotrophic - mesotrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	lower, toe
Slope Gradient (%):	4 (0-12)
Soil Drainage:	imperfectly (- moderately well)

DISTRIBUTION: very common

BWBSa<sub>1</sub>/03 PINE - BLACK SPRUCE

VEGETATION:

Tree Layer: 65% cover

Picea mariana (black spruce)  
Pinus contorta (lodgepole pine)

Shrub Layer: 8% cover; poorly developed

Picea mariana )- regeneration  
[Abies lasiocarpa (subalpine fir)] )  
Ledum groenlandicum (Labrador tea)  
[Rosa acicularis (prickly rose)]

Herb Layer: 15% cover; poorly to moderately well developed

Cornus canadensis (bunchberry)  
Vaccinium vitis-idaea (lingonberry)

Moss Layer: 75% cover; well developed

Pleurozium schreberi (red-stemmed feather moss)  
Hylocomium splendens (step moss)  
Ptilium crista-castrensis (knight's plume)  
Peltigera apthosa

SOIL AND SITE:

Slope Gradient (%): 4 (0-12)  
Parent Material: morainal, glaciolacustrine, glaciofluvial  
Soil Classification: Gleyed Luvisol, Eluviated Dystric Brunisol  
Soil Texture: variable  
Soil Drainage: moderately well to imperfectly  
Rooting Depth (cm):  
Humus Form: Hemimor  
Humus Thickness (cm): 10 (5-13)  
pH Humus: 3.9 (3.5-5.5)  
pH Mineral: 5.7 (3.7-7.7)

BWBSa<sub>1</sub>/04 PINE - CLUBMOSS

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/04; Pinus contorta - (Picea glauca) - (Picea mariana) - Ledum groenlandicum - Lycopodium annotinum - Hylocomium splendens - Pleurozium schreberi; BWBSa<sub>1</sub>/04: Pine - clubmoss association.

ECOLOGICAL MOISTURE REGIME: mesic - subhygric

ECOLOGICAL NUTRIENT REGIME: submesotrophic - mesotrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	crest to upper, level
Slope Gradient (%):	3 (0-5)
Soil Texture:	fine to moderately fine
Soil Drainage:	imperfectly

DISTRIBUTION: uncommon

VEGETATION:

Tree Layer: 40% cover

<u>Pinus contorta</u>	(lodgepole pine)	
<u>Populus tremuloides</u>	(trembling aspen)	
[ <u>Picea glauca</u>	(white spruce)]	
[ <u>Betula neoalaskana</u>	(Alaska paper birch)]	

Shrub Layer: 50% cover; moderately to well developed

<u>Picea mariana</u>	(black spruce)	
<u>Picea glauca</u>		- regeneration
<u>Ledum groenlandicum</u>	(Labrador tea)	
<u>Viburnum edule</u>	(highbush-cranberry)	
<u>Rosa acicularis</u>	(prickly rose)	
<u>Populus tremuloides</u>	(trembling aspen)	
<u>Salix bebbiana</u>	(Bebb's willow)	
<u>Salix scouleriana</u>	(Scouler's willow)	- good indicator
<u>Shepherdia canadensis</u>	(soopolallie)	
[ <u>Alnus viridis</u> ssp. <u>fruticosa</u>	(green alder)]	

Herb Layer: 60% cover

<u>Cornus canadensis</u>	(bunchberry)	
<u>Vaccinium vitis-idaea</u>	(lingonberry)	
<u>Epilobium angustifolium</u>	(fireweed)	
<u>Lycopodium annotinum</u>	(stiff club-moss)	)- good indicator
<u>Elymus innovatus</u>	(fuzzy-spiked wild rye)	)
<u>Linnaea borealis</u>	(twinline)	
<u>Lathyrus ochroleucus</u>	(creamy peavine)	
<u>Orthilia secunda</u>	(one-sided wintergreen)	
<u>Maianthemum canadense</u>	(wild lily-of-the-valley)	
<u>Equisetum sylvaticum</u>	(wood horsetail)	
<u>Viola renifolia</u>	(kidney-leaved violet)	
<u>Lycopodium complanatum</u>	(ground-cedar)	
<u>Pyrola asarifolia</u>	(pink wintergreen)	
<u>Equisetum arvense</u>	(common horsetail)	
<u>Galium boreale</u>	(northern bedstraw)	
<u>Equisetum pratense</u>	(meadow horsetail)	
[ <u>Geocaulon lividum</u>	(bastard toad-flax)]	- low cover
[ <u>Petasites palmatus</u>	(palmate colt's-foot)]	- high cover when present

Moss Layer: 70% cover

<u>Hylocomium splendens</u>	(step moss)
<u>Pleurozium schreberi</u>	(red-stemmed feather moss)
<u>Peltigera apthosa</u>	
[ <u>Ptilium crista-castrensis</u>	(knight's plume)]



BWBSa/04 PINE - CLUBMOSS

SOIL AND SITE:

Slope Gradient (%):	3 (0-5)
Parent Material:	morainal, some eolian
Soil Classification:	Gleyed Luvisol
Rooting Depth (cm):	30
Humus Form:	Mor
Humus Thickness (cm):	(7-18)
pH Humus:	5.1 (4.5-5.6)
pH Mineral:	4.6 (4.2-4.8)

BWBSa<sub>1</sub>/05 SPRUCE - HORSETAIL

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/05; Picea glauca - Viburnum edule - Equisetum  
pratense - Mitella nuda - Hylocomium splendens; BWBSa<sub>1</sub>/05:  
BWBSa<sub>1</sub>/05: Spruce - horsetail association.

ECOLOGICAL MOISTURE REGIME: mesic - subhygric

ECOLOGICAL NUTRIENT REGIME: subeutrophic - eutrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	upper
Slope Gradient (%):	1 (1-2), level
Soil Texture:	medium (moderately fine to moderately coarse)
Parent Material	fluvial terrace

DISTRIBUTION: common along the major rivers

BWBSa<sub>1</sub>/05 SPRUCE - HORSETAIL

VEGETATION:

Tree Layer: 45% cover

<u>Picea glauca</u>	(white spruce)	
<u>Betula papyrifera</u>	(paper birch)	- usually in lower canopy

Shrub Layer: 35% cover; moderately to well developed

<u>Picea glauca</u>		- regeneration
<u>Alnus incana</u>	(mountain alder)	
<u>Rosa acicularis</u>	(prickly rose)	
<u>Viburnum edule</u>	(highbush-cranberry)	
<u>Ribes oxycanthoides</u>	(northern smooth gooseberry)	
<u>Cornus sericea</u>	(red-osier dogwood)	
<u>Ribes triste</u>	(red swamp currant)	

Herb Layer: 70% cover

<u>Cornus canadensis</u>	(bunchberry)	
<u>Mitella nuda</u>	(common mitrewort)	
<u>Equisetum pratense</u>	(meadow horsetail)	- usually high cover
<u>Rubus pubescens</u>	(trailing raspberry)	
<u>Goodyera repens</u>	(dwarf rattlesnake orchid)	
<u>Pyrola asarifolia</u>	(pink wintergreen)	
<u>Linnaea borealis</u>	(twinline)	
<u>Mertensia paniculata</u>	(tall bluebell)	
<u>Equisetum scirpoides</u>	(dwarf scouring-rush)	
<u>Viola renifolia</u>	(kidney-leaved violet)	
<u>Galium triflorum</u>	(sweet-scented bedstraw)	
<u>Calamagrostis canadensis</u>	(bluejoint)	
[ <u>Circaea alpina</u>	(enchanter's nightshade)]	
[ <u>Matteuccia struthiopteris</u>	(ostrich fern)]	
[ <u>Cinna latifolia</u>	(nodding wood-reed)]	

Moss Layer: 3-75% cover; poorly to well developed depending on time since last flooding.

<u>Hylocomium splendens</u>	(step moss)	- dominant
<u>Ptilium crista-castrensis</u>	(knight's plume)	
<u>Mnium spp.</u>	(leafy mosses)	
[ <u>Pleurozium schreberi</u>	(red-stemmed feather moss)]	
[ <u>Rhytidiadelphus triquetrus</u>	(electrified cat's-tail moss)]	

BWBSa<sub>1</sub>/05 SPRUCE - HORSETAIL

SOIL AND SITE:

Slope Gradient (%):	1 (1-2), level
Parent Material:	fluvial
Soil Classification:	Cumulic Regosol or Rego Gleysol
Soil Drainage:	imperfectly
Rooting Depth (cm):	61
Humus Form:	Moder
Humus Thickness (cm):	0-30, depending on time since last flood
pH Humus:	6.1 (6.0-6.2)
pH Mineral:	7.0 (6.2-7.9)

BWBSa<sub>1</sub>/05//M<sub>1</sub> BALSAM POPLAR - HORSETAIL (seral association)

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/05//M<sub>1</sub>; Populus balsamifera - Alnus incana -  
Cornus sericea - Pyrola asarifolia - Equisetum pratense;  
BWBSa<sub>1</sub>/05//M<sub>1</sub>: Balsam poplar - horsetail association.

ECOLOGICAL MOISTURE REGIME: subhygric - hygric

ECOLOGICAL NUTRIENT REGIME: eutrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	middle terrace
Slope Gradient (%):	0 (0-1), level
Soil Texture:	medium to moderately coarse

DISTRIBUTION: common along the major rivers

BWBSa<sub>1</sub>/05//M<sub>1</sub> BALSAM POPLAR - HORSETAIL

VEGETATION:

Tree Layer: 75% cover

<u>Populus balsamifera</u>	(balsam poplar)	
<u>Picea glauca</u>	(white spruce)	- lower canopy

Shrub Layer: 50% cover; moderately well developed

<u>Picea glauca</u>		- regeneration
<u>Cornus sericea</u>	(red-osier dogwood)	
<u>Viburnum edule</u>	(highbush-cranberry)	
<u>Alnus incana</u>	(mountain alder)	- dominant
<u>Rosa acicularis</u>	(prickly rose)	

Herb Layer: 10% cover; poorly developed

<u>Pyrola asarifolia</u>	(pink wintergreen)
<u>Equisetum pratense</u>	(meadow horsetail)
<u>Equisetum hyemale</u>	(common scouring-rush)
<u>Rubus pubescens</u>	(trailing raspberry)
<u>Vicia americana</u>	(American vetch)
<u>[Equisetum arvense</u>	(common horsetail)]

Moss Layer: usually absent

SOIL AND SITE:

Slope Gradient (%)	0-1
Parent Material:	fluvial
Soil Classification:	Cumulic Regosol
Soil Drainage:	moderately well drained
Rooting Depth (cm):	60
Humus Form:	Mor (slightly decomposed litter of leaves and horsetail)
Humus Thickness (cm):	0-1
pH Humus:	
pH Mineral:	7.0 (7.0-7.5)

BWBSa<sub>1</sub>/06 BLACK SPRUCE - HORSETAIL

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/06; Picea mariana - Equisetum sylvaticum - Pleurozium schreberi - Hylocomium splendens; BWBSa<sub>1</sub>/06: Black spruce - horsetail association.

ECOLOGICAL MOISTURE REGIME: subhygric - hygric

ECOLOGICAL NUTRIENT REGIME: submesotrophic - mesotrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	lower
Slope Gradient (%):	3 (0-12)
Soil Texture:	fine to moderately fine; fibric (organic soil)
Soil Drainage:	imperfectly to poorly

DISTRIBUTION: common

BWBSa1/06 BLACK SPRUCE - HORSETAIL

VEGETATION:

Tree Layer: 50% cover

<u>Picea mariana</u>	(black spruce)	- dominant
[ <u>Larix laricina</u> ]	(tamarack)]	

Shrub Layer: 35% cover; poorly to moderately well developed

<u>Picea mariana</u>		- regeneration
<u>Betula neoalaskana</u>	(Alaska paper birch)	
<u>Rosa acicularis</u>	(prickly rose)	
<u>Ledum groenlandicum</u>	(Labrador tea)	

Herb Layer: 40% cover; moderately well developed

<u>Equisetum sylvaticum</u>	(wood horsetail)	
<u>Cornus canadensis</u>	(bunchberry)	
<u>Vaccinium vitis-idaea</u>	(lingonberry)	
<u>Rubus chamaemorus</u>	(cloudberry)	
<u>Orthilia secunda</u>	(one-sided wintergreen)	
<u>Petasites palmatus</u>	(palmate colt's-foot)	
<u>Smilacina trifolia</u>	(three-leaved false Solomon's-seal)	
<u>Equisetum arvense</u>	(common horsetail)	
<u>Listera cordata</u>	(heart-leaved twayblade)	
[ <u>Carex disperma</u> ]	(soft-leaved sedge)]	

Moss Layer: 90% cover; well developed

<u>Pleurozium schreberi</u>	(red-stemmed feather moss)	
<u>Hylocomium splendens</u>	(step moss)	
<u>Ptilium crista-castrensis</u>	(knight's plume)	
<u>Sphagnum girgensohnii</u>	(common green sphagnum)	
[ <u>Peltigera apthosa</u> ]		
[ <u>Aulacomnium palustre</u> ]	(ribbed bog moss)	)- low cover
[ <u>Philonotis fontana</u> ]		)
[ <u>Pohlia nutans</u> ]		)

SOIL AND SITE:

Slope Gradient (%):	3 (0-12)
Parent Material:	morainal, lacustrine, organic
Soil Classification:	Gleyed Luvisol, Gleysol, Organic
Rooting Depth (cm):	
Humus Form:	Mor
Humus Thickness (cm):	(6-66)
pH Humus:	4.6 (3.8-5.9)
pH Mineral:	5.0 (4.0-6.0)



BWBSa<sub>1</sub>/07 TAMARACK - HORSETAIL

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/07; Larix laricina - Picea mariana - Ledum groenlandicum - Equisetum arvense - Pleurozium schreberi - Ptilium crista-castrensis - Hylocomium splendens; BWBSa<sub>1</sub>/07: Tamarack - horsetail association.

ECOLOGICAL MOISTURE REGIME: hygric

ECOLOGICAL NUTRIENT REGIME: subeutrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	level
Slope Gradient (%):	1 (0-3)
Soil Texture:	medium to coarse (mineral soil), mesic to humic (organic soil)

DISTRIBUTION: common

BWBSa<sub>1</sub>/07 TAMARACK - HORSETAIL

VEGETATION:

Tree Layer: 65% cover

<u>Picea mariana</u>	(black spruce)
<u>Larix laricina</u>	(tamarack)
<u>Picea glauca</u>	(white spruce)

Shrub Layer: 25% cover

<u>Picea mariana</u>		- regeneration
<u>Salix bebbiana</u>	(Bebb's willow)	
<u>Alnus incana</u>	(mountain alder)	
<u>Ledum groenlandicum</u>	(Labrador tea)	
<u>Viburnum edule</u>	(highbush-cranberry)	
<u>Rosa acicularis</u>	(prickly rose)	
<u>Ribes triste</u>	(red swamp currant)	
<u>Ribes oxycanthoides</u>	(northern gooseberry)	

Herb Layer: 75% cover; well developed

<u>Equisetum arvense</u>	(common horsetail)
<u>Cornus canadensis</u>	(bunchberry)
<u>Mitella nuda</u>	(common mitrewort)
<u>Carex disperma</u>	(soft-leaved sedge)
<u>Vaccinium vitis-idaea</u>	(lingonberry)
<u>Smilacina trifolia</u>	(three-leaved false Solomon's-seal)
<u>Moneses uniflora</u>	(single delight)
<u>Orthilia secunda</u>	(one-sided wintergreen)
<u>Equisetum pratense</u>	(meadow horsetail)
<u>Equisetum sylvaticum</u>	(wood horsetail)
<u>Linnaea borealis</u>	(twinflower)
<u>Rubus pubescens</u>	(trailing raspberry)
<u>Mertensia paniculata</u>	(tall bluebell)
<u>Equisetum scirpoides</u>	(dwarf scouring-rush)
<u>Calamagrostis canadensis</u>	(bluejoint)
<u>Aralia nudicaulis</u>	(wild sarsaparilla)
<u>Petasites saggitatus</u>	(arrow-leaved colt's-foot)
<u>Viola renifolia</u>	(kidney-leaved violet)
<u>Rubus chamaemorus</u>	(cloudberry)
<u>Epilobium angustifolium</u>	(fireweed)
<u>Pyrola chlorantha</u>	(green wintergreen)
[ <u>Goodyera repens</u>	(dwarf rattlesnake orchid)] )- low cover
[ <u>Platanthera orbiculata</u>	(round-leaved rein-orchid)] )

Moss Layer: 80% cover

<u>Hylocomium splendens</u>	(step moss)
<u>Ptilium crista-castrensis</u>	(knight's plume)
<u>Pleurozium schreberi</u>	(red-stemmed feather moss)
<u>Aulacomnium palustre</u>	(ribbed bog moss)
<u>Peltigera apthosa</u>	
[ <u>Dicranum acutifolium</u> ]	
[ <u>Sphagnum capillaceum</u> ]	(common red sphagnum)]

BWBSa/07 TAMARACK - HORSETAIL

SOIL AND SITE:

Slope Gradient (%):	1 (0-3)
Parent Material:	morainal, fluvial, organic
Soil Classification:	Rego Humic Gleysol, Terric Humisol, Terric Mesisol
Soil Drainage:	very poor
Rooting Depth:	in humus only
Humus Form:	Mor
Humus Thickness (cm):	55 (38-85)
pH Humus:	5.7 (4.5-6.3)
pH Mineral:	6.2 (5.5-6.8)

COMMENTS: These sites are reasonably productive due to nutrient rich water rapidly flowing through these sites,

BWBSa<sub>1</sub>/08 BLACK SPRUCE - SPHAGNUM

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/08; Picea mariana - Ledum groenlandicum - Vaccinium microcarpum - Rubus chamaemorus - Sphagnum fuscum; BWBSa<sub>1</sub>/08: Black spruce - sphagnum association.

ECOLOGICAL MOISTURE REGIME: hygric

ECOLOGICAL NUTRIENT REGIME: oligotrophic (- submesotrophic)

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position	level
Soil Texture:	fibric
Soil Drainage:	very poor

DISTRIBUTION: very common

BWBSa<sub>1</sub>/08 BLACK SPRUCE - SPHAGNUM

VEGETATION:

Tree Layer: 0-20% cover; poorly developed

Picea mariana (black spruce)  
[Larix laricina] (tamarack)]

Shrub Layer: 65% cover; poorly to well developed

Picea mariana - dominant  
Larix laricina - minor component  
Ledum groenlandicum (Labrador tea)  
Chamaedaphne calyculata (leatherleaf)

Herb Layer: 25% cover

Vaccinium vitis-idaea (lingonberry)  
Rubus chamaemorus (cloudberry)  
Vaccinium microcarpum (dwarf bog cranberry)  
Drosera rotundifolia (round-leaved sundew)  
Andromeda polifolia (bog rosemary)

Moss Layer: 95% cover; well developed

Sphagnum fuscum (common brown sphagnum)  
Cladina mitis  
Pleurozium schreberi (red-stemmed feather moss)  
Cladonia cornuta  
Dicranum undulatum  
Icmadophila ericetorum  
Cladina rangiferina (reindeer lichen)  
Mylia anomala  
Peltigera canina (dog lichen)  
Calyptogeja sphagnicola  
Cephalozia connivens  
Cladonia gonecha  
Hylocomium splendens (step moss)  
Aulacomnium palustre  
Cetraria nivalis  
Polytrichum strictum

SOIL AND SITE:

Slope Gradient (%): 0  
 Parent Material: Organic  
 Soil Classification: Fibric Organic Cryosol, Fibrisol  
 Rooting Depth (cm):  
 Humus Form: Histomor  
 Humus Thickness (cm): 56  
 pH Humus: 4.4 (3.7 - 5.7)  
 pH Mineral: 6.6 (6.3-6.9)

BWBSa<sub>1</sub>/09 BLACK SPRUCE - WILLOW

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/09; Picea mariana - Salix novae-angliae - Ledum groenlandicum - Equisetum scirpoides - Aulacomnium palustre - Tomenthyllum nitens; BWBSa<sub>1</sub>/09: Black spruce - willow association.

ECOLOGICAL MOISTURE REGIME: hygric

ECOLOGICAL NUTRIENT REGIME: mesotrophic - subeutrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	level
Slope Gradient (%):	0
Soil Texture:	moderately fine to coarse (mineral soil), fibric to mesic (organic soil)

DISTRIBUTION: uncommon

BWBSa<sub>1</sub>/09 BLACK SPRUCE - WILLOW

VEGETATION:

Tree Layer: very poorly developed

[Picea mariana (black spruce)] - only occasionally present

Shrub Layer: 75% cover; moderately well to well developed

Picea mariana  
Ledum groenlandicum (Labrador tea)  
Salix novae-angliae (New England willow)  
Salix myrtilifolia (bilberry willow) - good indicator  
Salix arbusculoides (northern bush willow)

Herb Layer: 65% cover

Vaccinium vitis-idaea (lingonberry)  
Equisetum scirpoides (dwarf scouring rush)  
Equisetum arvense (common horsetail)  
Pedicularis labradorica (Labrador lousewort)  
Epilobium angustifolium (fireweed)  
Arctostaphylos rubra (red bearberry) - good indicator  
Rubus pubescens (trailing raspberry)  
Mertensia paniculata (tall bluebell)  
Senecio lugens (black-tipped groundsel) - good indicator  
Cornus canadensis (bunchberry)  
Vaccinium microcarpum (dwarf bog cranberry)  
Carex dioica (yellow bog sedge)  
Geocaulon lividum (bastard toad-flax)  
Petasites palmatus (palmate colt's-foot)  
Parnassia palustris (northern grass-of  
 -Parnassus) - good indicator  
 [ Achillea millefolium (yarrow) ) - low cover  
 [ Linnaea borealis (twinflower) )  
 [ Smilacina trifolia (three-leaved false Solomon's-seal) ] - low cover

Moss Layer: 90% cover

Aulacomnium palustre (ribbed bog moss)  
Hylocomium splendens (step moss)  
Tomenthypnum nitens (golden fuzzy fen moss)  
Peltigera apthosa  
Cladina mitis  
Cladonia gracilis  
Cladina arbuscula  
Dicranum undulatum  
Pleurozium schreberi (red-stemmed feather moss)  
 [ Cladonia cornuta ] - low cover  
 [ Pohlia nutans ] )  
 [ Peltigera polydactyla ] )  
 [ Cephaloziella subdentata ] )  
 [ Cladina rangiferina (reindeer lichen) ] )

BWBSa<sub>1</sub>/09 BLACK SPRUCE - WILLOW

SOIL AND SITE:

Slope Gradient (%):	0
Parent Material:	fluvial, organic/fluvial
Soil Classification:	Rego Gleysol, Organic Cryosol
Soil Drainage:	poor
Rooting Depth (cm):	60
Humus Form:	
Humus Thickness (cm):	10-47+
pH Humus:	5.7 (4.3-6.8)
pH Mineral:	6.8 (6.4-7.0)



BWBSa<sub>1</sub>/10 TAMARACK - BUCKBEAN

BIOGEOCLIMATIC UNIT: BWBSa<sub>1</sub>

ECOSYSTEM UNIT: BWBSa<sub>1</sub>/10; Larix laricina - Betula glandulosa  
- Vaccinium oxycoccus - Menyanthes trifoliata - Sphagnum (capillaceum,  
recurvum); BWBSa<sub>1</sub>/10: Tamarack - buckbean association.

ECOLOGICAL MOISTURE REGIME: hygric - (subhydric)

ECOLOGICAL NUTRIENT REGIME: subeutrophic

IMPORTANT ENVIRONMENTAL FEATURES:

Slope Position:	level
Soil Texture:	mesic
Soil Drainage:	very poorly

DISTRIBUTION: common

BWBSa<sub>1</sub>/10 TAMARACK - BUCKBEAN

VEGETATION:

Tree Layer: 25% cover; open canopy, poorly developed

Larix laricina (tamarack)

Shrub Layer: 85% cover; well developed

Larix laricina  
Picea mariana (black spruce)  
Betula glandulosa (scrub birch) - dominant  
Chamaedaphne calyculata (leatherleaf)  
Ledum groenlandicum (Labrador tea) - low cover  
Myrica gale (sweet gale)

Herb Layer: 70% cover

Menyanthes trifoliata (buckbean) - dominant  
Vaccinium oxycoccus (bog cranberry)  
Pyrola asarifolia (pink wintergreen)  
Carex paupercula (poor sedge)  
Carex dioica (yellow bog sedge)  
Carex aquatilis (water sedge)  
Drosera rotundifolia (round-leaved sundew)  
Carex interior (inland sedge)  
Smilacina trifolia (three-leaved false Solomon's-seal)  
Vaccinium vitis-idaea (lingonberry)  
Utricularia intermedia (flat-leaved bladderwort) - good indicator  
Platanthera dilatata (white bog-orchid)

Moss Layer: 90% cover

Sphagnum capillaceum (common red sphagnum)  
Aulacomnium palustre (ribbed bog moss) - low cover  
Calliergon stramineum (straw-colored fen moss) - good indicator  
Sphagnum recurvum  
Calliergon giganteum (large fen moss) )- good indicator  
Paludella squarrosa )  
Drepanocladus revolvens )  
Bryum pseudotriquetrum  
Meesia triquetra  
Tomenthypnum nitens (golden fuzzy fen moss)

BWBSa<sub>1</sub>/10 TAMARACK - BUCKBEAN

SOIL AND SITE:

Slope Gradient (%):	0
Parent Material:	organic
Soil Classification:	Typic Mesisol
Soil Drainage:	very poor
Humus Form:	Mor
Humus Thickness (cm):	60+
pH Humus:	6.2 (6.0-6.5)