TFL 14

Terrestrial Ecosystem Mapping (T.E.M.) Project

Volume I: **Expanded Legend to Ecosystem Units**

for

Brenda Hopkin
Crestbrook Forest Industries Ltd.
Box 4600
Cranbrook, B.C.
V1C 4J7
Phone (250) 426-6421
fax (250) 426-5372

Submitted by:

Gareth Kernaghan Forest Tech.
Keyes Lessard Env. Tech.
Bruce Sinclair B.Sc.
Rayanne McKay B.Sc.
Grant Burns
Maureen V. Ketcheson MSc. RPBio.

JMJ Holdings Inc.
#208 - 507 Baker Street
Nelson, BC V1L 4J2
phone (250) 354-4913 fax (250) 354-1162
e-mail: jmj@netidea.com

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-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 1 Overview of the Spillimacheen Valley

-looking east from Jubilee Mountain

1.0 INTRODUCTION

Crestbrook Forest Industries Ltd (CFI) of Cranbrook, BC issued a Request For Proposals for Terrestrial Ecosystem Mapping (TEM) of their Tree Farm License 14 (TFL 14) in August of 1997. The objective for TEM in TFL 14 was to provide an ecological classification from which interpretations about a variety of forest management issues could be generated.

TEM at the scale of 1:20,000 was initiated. The initial contract ,which ran from November 1997 to March 1998, supported ecosystem pre-typing and digitization of those polygons, an initial working legend and sampling plan. The subsequent contract, which ran from July 1998 to March 1999 supported field sampling, data synthesis and entry, and final ecosystem mapping. Mapping is done to RIC (1998) standards and quality assurance procedures.

Interpretations to be generated from this mapping included Site Index by Biogeoclimatic Ecosystem Classification (SIBEC), wildlife habitat suitability, biodiversity, coarse woody

debris, epiphytes, and forest health relationships to the site series classification which forms the basis of the ecosystem map units.

TEM mapping of the TFL will facilitate both immediate and long term planning needs. Extra data collected for the SIBEC project will affect the analysis of timber supply in the TFL. The TEM map provides a long term, permanent ecological inventory which can be utilized for a variety of purposes.

1.1 LOCATION

The study area covers all of CFI's Tree Farm Licence (TFL) 14, and is located just east of Parson, B.C. and south of Golden, BC (see Figure 1). It is approximately 151,000 ha. in size and includes all of the Spillimacheen River drainage, including Bobbie Burns and Vowell Creeks, as well as the benchlands adjacent to the Columbia River wetlands. It ranges from the Columbia River wetlands in the east to the height of the Purcell Mountains in the west, to the Glacier National Park boundary in the northwest, and to the Bugaboo Alpine Recreation Area boundary in the southwest.

Figure 1 TFL 14 Location

Figure 2 TFL 14 Boundaries

TFL 14 is situated on the following 1:20,000 TRIM map sheets: (see figure 5)

82N004, 82N005, 82N006, 82N007, 82N008, 82N014, 82N015, 82N016, 82N017, 82N024, 82N025, 82K085, 82K086, 82K087, 82K088, 82K089, 82K095, 82K096, 82K097, 82K098.

1.2 GEOLOGY AND GLACIAL HISTORY

1.2.1 THE PREGLACIAL LANDSCAPE

The area that is known today as the Purcell Mountains was once a large cratonic basin, where a vast thickness of Middle Proterozoic sediments accumulated. A portion of this basin was broken away during a rifting event (750-650 Ma), and resulted in a passive margin forming on the western edge of North America. Late Proterozoic sediments (Windermere Supergroup) reflect deposition during the rifting event and subsequent passive margin deposition. This passive margin sedimentation continued at least into the Paleozoic and early Cambrian. Compression associated with subduction and terrane accretion (i.e., plate tectonics) along the western margin of North America during the Mesozoic and early Tertiary (about 220-50 Ma) caused major deformation and mountian-building. In the Purcells this deformation took the form of large thrust sheets which are dominantly southwest-dipping. Within the thrust sheets the sedimentary and meta-sedimentary units have in many places been deformed into large fold structures and internally broken by minor faults (pers. com. Mustard)

1.2.2 THE EFFECTS OF GLACIATION

During the Pleistocene Epoch (2,000,000 to 10,000 years before present BP), this area was subjected to multiple episodes of glaciation. Most of the landscape features visible today are the result of the most recent (Fraser) glaciation and the subsequent alpine glaciations.

In the first stage of Fraser Glaciation, alpine glaciers advanced out of high mountain cirques and ice fields and progressed down tributary valleys such as, Bobbie Burns, Vowell, McMurdo, Warren and Malachite. These smaller side valley glaciers linked up with a larger glacier advancing down the Spillimacheen River Valley, which in turn coalesced with another large glacier moving down the Columbia River Valley. The linking of these tributary and major valley glaciers led to the development of the Cordilleran Ice Sheet, which covered all of TFL 14, except the highest peaks along the Spillimacheen River Valley. At the glacial maximum the ice level in TFL 14 was approximetely 2400 m.

These large glaciers and ice fields, that dominated the land for thousands of years at a time, are responsible for both larger and small-scale landscape features seen today. These include hanging valleys, U-shaped valleys, and glacially oversteepened mountainsides. However, in TFL 14, some of the most obvious effects are the result of the alpine glaciation that has been on-going, to a greater or lesser extent, since the end of Fraser Glaciation. This has maintained steep slopes around cirques, aretes and horns, and resulted in the deposition of the recent (from about 550 to 150 years before present) Little Ice Age moraines (Plate 2). Where mountainous topography was overridden by ice,

glacial erosion produced typically rounded summits and ridge crests that may have a thin covering of till.

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Plate 2 Upper elevations dominated by steep slopes and glaciers.

1.2.3 POSTGLACIAL LANDSCAPE EVOLUTION

Since the end of Fraser Glaciation, further alteration of the landscape has occurred as a result of the ongoing processes that remove, transport, and re-deposit materials. These include mass movement (slope processes) and fluvial (stream) activity. The resulting sediments contribute to the load of the rivers, and together with runoff from snow melt and glaciers, bring about significant fluvial deposition and erosion. In general, this area has been significantly altered since the end of the Fraser Glaciation.

Mass movements (gravitational slope processes) such as rockfall, debris flow, debris slide, earthflow and soil creep, lead to the accumulation of colluvium. Some colluvium is derived directly from bedrock while some is derived from surficial materials. Since deglaciation, mass movement processes have formed colluvial veneers, blankets, fans, cones, talus slopes, and slide and flow deposits. Patches of colluvium overlie both bedrock and glacial drift throughout TFL 14.

Modern streams have also significantly modified the postglacial landscape. They have eroded into bedrock and glacial deposits to form scarps, gullies, and terraces in many of the tributary valleys and along sections of the larger U-shaped valleys such as, Vowell, Bobbie Burns, and the Spillimacheen River Valley. A striking feature of the floodplains associated with these U-shaped valleys, are their wide meandering pattern, with accompanying oxbow lakes, ponds, and sandbars. This represents a dynamic equilibrium between erosion by tributary creeks and streams and deposition of glacial and erosional sediments in the aforementioned U-shaped valleys (Plate 2). Along the major reaches of Vowell, Bobbie Burns, and the Spillimacheen waterways the gradient is gentle. The Spillimacheen is the dominant river in TFL 14, and most tributaries flow into it before it flows into the Columbia River.

1.2.4 TERRAIN AND SURFICIAL GEOLOGY

The Spillimacheen River Valley is found within the Purcell Mountains and, more specifically, alongside the Dogtooth and Spillimacheen Ranges.

The Spillimacheen River Valley is characterized by glacially scoured mountain tops to the east and south. Mountainous terrain to the west and northeast of the Spillimacheen is characterized by classic glacial landforms, and large glaciers and icefields to the southwest. The Spillimacheen River and Vowell Creek Valleys are U-shaped in profile, while smaller side valleys have been glacially oversteepened. Precipitation is the largest source feeding the Spillimacheen River, followed by melting snow from mountains along its flanks, and melting ice from the Spillimacheen Glacier at the head of McMurdo Creek. Vowell Creek, which feeds into Bobbie Burns Creek, on the otherhand, is fed by melting snow and ice by the Conrad Icefield and surrounding peaks. Thus, flow in the Spillimacheen River, Vowell and Bobbie Burns Creeks is strongly linked to the snowmelt freshet in the spring and precipitation freshet in the fall. Large amounts of sediment are carried down tributaries during these periods and deposited in the main U-shaped valleys. TFL 14 ranges from elevations over 3000 m along the drainage divide to the west to under 800 m where the Spillimacheen joins with the Columbia River in the south. For a description of the genetic materials mentioned below, see Howes and Kenk (1997).

The alpine and high sub-alpine landscape consists of ice fields, rocky mountain horns, peaks and ridges, alpine and cirque glaciers, rock glaciers, hanging valleys, and tarns (lakes in cirque basins) (Plate 3). Here the materials are mainly rock, ice, colluvium, and till from the Little Ice Age advance (from about 550 to 150 BP). At middle elevations, moderate to steep mountain slopes are blanketed by till and colluvium, with scattered outcrops of rock. In side valleys, where mountain slopes tend to be steeper, avalanche tracks, gullies, slide paths, and colluvial cones and fans are abundant. In the larger U-shaped valleys, such as Vowell and the Spillimacheen, slopes tend to be more uniformed from the valley floor to mountain summits, and thus geomorphologic processes are less active.

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Plate 3 Spillimacheen Glacier showing high subalpine and alpine landscape.

The lower slopes along the Spillimacheen River Valley are blanketed with thick deposits of till, and from the northern end of TFL 14 to the area around the confluence of Bobbie Burns Creek and the Spillimacheen River, the valley floor is dominated by glaciofluvial and fluvial terraces, and till. The southern portion of the Spillimacheen valley floor is a complex mixture of deposits due to multiple episodes of glaciation. With the onset of each new glacial event, glaciofluvial, glaciolacustrine, till, and fluvial deposits laid down from prior glacial episodes became overridden by advancing glaciers. In this manner, previous glacial deposits can become entrained and shifted by the moving ice. As with any glacial episode, new deposits are formed and lain down in front, flanks, and beneath the glacier during both its advance and retreat. The end result, in the Spillimacheen valley, is small complex pockets of deformation till, glaciofluvial and glaciolacustrine materials juxtaposed to each other. In this project, terrain mapping of this mixture of deposits is referred to as “M1” and is commonly mapped at lower elevations in major valleys throughout TFL 14.

In addition to the complex deposits mentioned above, valley bottoms are occupied by river terraces, fans, and floodplains including the wide, active floodplains of the Spillimacheen River, Vowell and Bobbie Burns Creeks, which is made up of fluvial terraces, meandering channels, back waters, and organic plains. In the narrow side valleys, colluvial cones and fans comprise a large portion of the valley deposits followed by till of variable thickness and organic deposits.

1.2.5 BEDROCK GEOLOGY

Bedrock in TFL 14 is a complex succession of Proterozoic and early Cambrian sedimentary and meta-sedimentary rocks. The older Proterozoic rocks dominate a large portion of TFL 14, especially to the west of the Spillimacheen, with minor amounts of early Cambrian rocks. These earlier Cambrian rocks are found amongst an extensive thrust-fault system that is oriented NNW to SSE along the Spillimacheen River Valley (Wheeler, and McFeely, 1991). Main bedrock types, in TFL 14, include siltstone, shale, schist, phyllite, limestone, gritstone and may include smaller amounts of sandstone, conglomerate and quartzite (Wheeler, and McFeely, 1991). Large scale antisynclines, thrust planes, and bedding is visible in many of the steep to moderate rocky exposures, and this, together with well-developed jointing, have contributed to weathering and loosening of bedrock, giving rise to rockfalls, rock slumps, and topples that have built talus cones, colluvial slopes and rubble (Plate 4).

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Plate 4 Upper Spillimacheen showing bedrock folding, faulting and talus slopes.

Many of the slope processes are influenced by bedrock type. Shale, schist and phyllite weather to predominantly silty materials that contribute to the occurrence of debris flows and torrents, rock creep, and rock glaciers. In contrast, quartzite, a more resistant rock, produces mainly sandy residues, which form more stable deposits of angular rock fragments in cones, blankets and talus slopes.

1.2.6 SOILS

Soils in TFL 14 have formed under the influence of several climatic conditions, ranging from moist and cold in the Alpine Tundra Biogeoclimatic Zone, through moist and cool in the Engelmann Spruce - Subalpine Fir Zone, wet and cool in the Interior Cedar Hemlock Zone, to dry, and warm in the Interior Douglas-fir Zone. These varied climatic conditions combined with diverse geomorphic and biological environments, have resulted in the development of a variety of different soils.

The majority of TFL 14 is dominated by mid-slope coniferous forests that overlie a medium to coarse-textured parent material. Lower valley slopes and bottoms are comprised mainly of coniferous forests also, but with a transition, in the southern portion of TFL 14, to drier, more open forest stands. Parent materials associated with these areas have soil textures that range from coarse to fine. In alpine and sub-alpine areas there is a transition from alpine tundra to krummholtz to coniferous stands that overlie coarse to medium-textured soils that are well drained.

Moist climatic conditions associated with mid to upper elevations, tend to facilitate the development of Podzolic soils. These soils are characterized by eluviated Ae horizons, that are light gray, found overlying enriched B horizons that range from orange-red to dark brown. The diagnostic podzolic B horizon is enriched with varying amounts of amorphous aluminum and iron as well as organic material leached from the Ae horizon above. Within TFL 14 Humo-Ferric Podzols with their diagnostic Bf horizon, are found at mid-elevations and in the subalpine on cooler, more humid aspects. Ferro-Humic Podzols are found in moister toe slope positions and in higher elevation ridges and cirques (MOE 1980). These soils have a Bhf horizon that is enriched with significant amounts of organic matter as well as Al and Fe (as defined in the Canadian System of Soil Classification (1987)) (Figure 3).

Where soils have had less time to form, they show poor to very poor horizon development which results in the formation of Regosols and Brunisols (Figure 3). These occur in young materials such as river gravels, fresh colluvium and recently deglaciated soils, or in disturbed materials subject to flooding or slope processes.

Brunisolic soils can be distinguished from Regosolics soils based on their diagnostic Bm horizon. This horizon exhibits the development of soil structure and removal, by leaching, of soluble salts and carbonates from the A horizon. In the field it is recognizable by its browner to redder colour when compared with the underlying parent material (Valentine and Lavkulich, 1978). Brunisolic soils are undergoing similar processes to Podzolic soils, but because of relative youth, or because of development in a drier environment, do not meet the criteria for Podzolic B horizons. Eutric and Dystric Brunisols are commonly found complexed with Podzolic soils on steep valley sides and are typical soils on coarser soil parent materials on drier sites. At lower elevations Eutirc Brunisols are common.

Figure 3 Common soil profiles in TFL 14.

(Agriculture Canada Expert Committee on Soil Survey. 1987)

Luvisolic soils are common under the mixed deciduous-coniferous forest stands at mid-elevations along the Columbia River. The development of these soils is facilitated by heavy amounts of precipitation, common in zones such as the ICH. However, soils of this order are also common in finer textured soil parent materials in the IDF. Soils associated with this order are recognizable by their diagnostic Bt horizon. At lower elevations, Orthic Gray Luvisols have a relatively deep light gray Ae horizon that overlies a clay enriched B horizon. At higher elevations, and on moister, cooler sites, Brunisolic Gray Luvisols with Brunisolic Bm horizons may occur. Near the mountain summits Podzolic Gray Luvisols, or Luvisolic Podzols may occur (Figure 3).

Where drainage is imperfect to very poor, Gleysolic and Organic soils have developed. These soils are found at mid-elevations along floodplains and in depressions where periodic to prolonged saturation occurs. Gleysols can also be found at toe slopes which receive significant amounts of runoff from the slope above (Figure 3).

1.3 ECOSECTION AND BIOGEOCLIMATIC CLASSIFICATION OF TFL 14

Figure 4 Ecoregions and Ecosections of S.E. British Columbia.

Ecoregions are large regional-sized, ecological land units that have similar macroclimate, physiography, vegetation and wildlife potential. Five levels of Ecoregion Classification are recognized including Ecodomain, Ecodivision, Ecoprovince, Ecoregion and Ecosection. Following the ecological land classification hierarchy set forth by Demarchi (1996), TFL 14 is located within the Humid Temperate Ecodomain, the Humid Continental Highlands Ecodivision, the Southern Interior Mountains Ecoprovince, and in both the Columbia Mountains & Highlands Ecoregion and the Southern Rocky Mountain Trench Ecoregion.

Ecosections are subregional units within ecoregions that are similar in climate, landforms, bedrock geology, soils, and plant and animal distributions. Demarchi (1996) classifies TFL 14 as being located within both the Eastern Purcell Mountains (EPM) and the East Kootenay Trench (EKT) Ecosections. (see Figure 4)

The Eastern Purcell Mountains (EPM) Ecosection lies in the rainshadow on the east side of the Purcell Mountains with Montane Spruce forests in the eastern valleys but otherwise dominated by rugged subalpine forests and alpine vegetation.

The East Kootenay Trench (EKT) is a broad,flat glacial plain with a distinctive rainshadow and dominated by Douglas-fir and lodgepole pine forests.

Biogeoclimatic Zones, Subzones and Variants occur within each Ecosection and are classified using the Ministry of Forests Biogeoclimatic Ecosystem (BEC) system (Braumandl and Curran 1992). These units represent groups of ecosystems under the influence of the same regional climate. TFL 14 straddles the Dry Cimate Region(IDFdm2, MSdk, ESSFdk, ESSFdku, ESSFdkp) and Moist Cimate Region (ICHmk1, ICHmw1, ESSFwm, ESSFwmu, ESSFwmp) and thus exibits some characteristics of both regions. There are eleven biogeoclimatic subzones represented in TFL 14 (Figure 5) that are briefly described below.

1).**ICHmw1** - The Golden Moist Warm Interior Cedar - Hemlock Variant occurs almost entirely on cool aspects between approx. 1000m up to 1500m in elevation above the ICHmk1 along the Columbia River from Parson to the north (North Bench). This zone is characterized by hot, moist summers and mild winters with light snowfall. Mature zonal sites (Braumandl and Curran 1992) support stands of western redcedar and western hemlock; however, due to frequent wildfires, mixed seral stands of hybrid white spruce, subalpine fir and Douglas-fir are common. There is presently limited wildlife use in this subzone due to its steeper slopes and thick seral stands.

2) **ICHmk1** The Kootenay Moist Cool Interior Cedar - Hemlock Variant occurs almost entirely on cool aspects between approx. 800m up to 1000m in elevation below the ICHmk1 along the Columbia River from Parson to the north (North Bench). This zone is characterized by warm, moist summers and cool winters with light snowfall. Mature zonal sites (Braumandl and Curran 1992) support stands of western redcedar, hybid white spruce and subalpine fir; however, due to frequent wildfires and mountain pine

Figure 5 Biogeoclimatic Subzones within TFL 14

beetle outbreaks, mixed seral stands of lodgepole pine and Douglas-fir are more common. This subzone is utilized during summer and fall by moose and deer and, on sites adjacent to the Columbia River, are important winter range for moose and elk. Pockets of old growth are important for maintaining insect-feeding, cavity-nesting birds such as Williamson's sapsucker and blackbacked woodpecker. These species help control forest pests.

3) **IDFdm2** - The Kootenay Dry, Mild Interior Douglas-fir Variant occurs generally between 800-1200 m in elevation on warm aspects and between 800 and 1100 m on cool aspects. It is found in TFL 14 at the lower elevations to the southeast in TFL 14. This zone is characterized by hot, very dry summers and cool winters with very light snowfall. Mature zonal sites (Braumandl and Curran 1992) support stands of Douglas-fir; however, due to frequent wildfires, mixed seral stands of Douglas-fir and lodgepole pine are more common. Within TFL 14 western larch and ponderosa pine are absent. TFL 14 is in a transition from the drier IDFdm2 to the moister ICH subzones occuring to the north. Cool aspect slopes and moister site series in the IDFdm2 may exibit characteristics of the ICH. The appearence of western redcedar is one characteristic of this transition. Past frequent wildfires have kept these species from developing into mature stands. This subzone supports a wide variety of wildlife species dependent on open forests and is an especially important winter range for mule deer, white-tailed deer and elk.

4) **MSdk** -The Dry Cool Montane Spruce Subzone occurs between 1200 and 1650 elevation on warm aspects and between 1100 and 1550 elevation on cool aspects. It is found at the upper elevations of Jubilee Mountain, mid way up the Spillimacheen and along the lower portion of Bobbie Burns Creek. This zone is characterized by warm, dry summers and cold winters with light snowfall (Braumandl and Curran 1992). Mature zonal sites support stands of hybrid white spruce and subalpine fir with minor amounts of Douglas-fir; however, due to widespread wildfires, extensive stands of lodgepole pine exist today. In TFL 14 the MSdk is transitional to moister subzones to the north. This transition is especially apparent with the appearence of western redcedar and western hemlock on cool aspect slopes and moist sites. Past frequent wildfires have kept these tree species from developing into mature stands. This subzone is important autumn and early winter range for deer, elk and moose. It is an important habitat for grizzly bear and the remaining old-growth pockets are key to the maintenance of insect-feeding, cavity-nesting bird populations which, in turn, aid in control of forest insect pests.

5) **ESSFdk** - The Dry Cool Engelmann Spruce Subalpine Fir Subzone occurs between 1650 and 2020 elevation on warm aspects and between 1550 and 1920 on cool aspects. In some valleys such as the Spillimacheen and Bobbie Burns, this subzone extends to lower elevations. It is the most common forested subzone on the Dogtooth Ridge and in the southern part of TFL14 in Warren and upper Vowell Creeks. (see Figure 3) This zone is characterized by cool, moist summers and very cold winters with moderately heavy snowfall (Braumandl and Curran 1992). Mature zonal sites support stands of subalpine fir and Engelmann spruce. There are some relationships between the ESSFdk and the ESSFwm as you go north inTFL 14. This transition is especially apparent with the

appearance of western hemlock, western redcedar and the dominance of white rhododendron on cool aspect slopes and moist sites. Old growth stands in this subzone are important for the maintenance of wildlife populations while seral stages provide highly productive deer, elk and moose summer range. Avalanche and riparian areas provide good habitat for grizzly bear.

6) **ESSFdku** - The Upper Dry Cool Engelmann Spruce Subalpine Fir Subzone (Kernaghan et al.1997,1998) occurs between 2020 and 2220 m elevation on warm aspects and between 1920 and 2120 m on cool aspects. It is located above the ESSFdk on the highest forested slopes of Dogtooth Ridge, Warren and upper Vowell Creeks. This zone is characterized by cool, dry summers and very cold winters with heavy snowfall. Mature zonal sites support stands of subalpine fir, Engelmann spruce and subalpine larch. Late lying snow and frost pocketing create a mosaic of forest and permanent meadows. This newly described subzone is not documented in Braumandl and Curran (1992) and has been described by Kernaghan et al (1997, 1998). The map units that are used in this study are interim units pending final approval by the Nelson Regional Ecologist and provincial MOELP correlators. Old growth stands in this subzone are important for the maintenance of wildlife populations, while seral stages provide highly productive deer, elk and moose summer range. Avalanche and riparian areas provide good habitat for grizzly bear.

7) **ESSFdkp** - The Dry Cool Engelmann Spruce Subalpine Fir Parkland Subzone occurs between 2220 and 2440 m elevation on warm aspects and between 2120 and 2340 m on cool aspects. It is a transition above the continous forest and the alpine tundra of the high Purcells. This zone is characterized by short,cool and dry summers and very cold winters with heavy snowfall. Mature zonal sites support patchy stands of krummholtz subalpine fir, Engelmann spruce and , near Warren Creek, subalpine larch. Late lying snow and frost pocketing create a landscape of scattered tree islands and permanent meadows.

8) **ESSFwm** - The Wet Mild Engelmann Spruce - Subalpine Fir Subzone occurs between 1600 to 2000 m on warm aspects and 1500 to 1950 m on cool aspects. In some valleys such as the Spillimacheen and Bobbie Burns, this subzone extends to lower elevations. This subzone extends over much of the mountainous areas to the west of TFL 14 including Vowell, upper Bobbie Burns, McMurdo and Caribou Creeks. This zone is characterized by a warmer, moister climate than the ESSFdk. (Braumandl and Curran 1992). Mature zonal sites support stands of subalpine fir and Engelmann spruce. This subzone is not well described in Braumandl and Curran (1992) . Since the ESSFwm in TFL 14 is a transitional phase to the ESSFdk and our data does not reflect the ecosystems for all of the subzone, the Nelson Regional Ecologist has designated interim map units for use in TFL14 only. The fire cycle is much longer than in the ESSFdk, especially on cool aspect slopes. The greater abundance of older structural stages provide more coarse woody debris for fur bearing animals. Extensive avalanche areas provide good grizzly bear habitat.

9) **ESSFwmu** - The Upper Wet Mild Engelmann Spruce - Subalpine Fir Subzone occurs above the ESSFwm between 2000 to 2260 m on warm aspects and 1950 to 2160 m on cool aspects. This zone is characterized by cool, moist summers and cold winters with

heavy snowfall. Mature zonal sites support stands of subalpine fir and Engelmann spruce. Late lying snow and frost pocketing create a mosaic of forest and permanent meadows. This newly described subzone is not documented in Braumandl and Curran (1992). As with the ESSFwm, this subzone is described for TFL 14 only and does not reflect all of the ESSFwmu.The ESSFwmu provides good summer habitat for ungulates and grizzly bear.

10) **ESSFwmp** - The Wet Mild Engelmann Spruce - Subalpine Fir Parkland Subzone occurs above the ESSFwmu between 2260 to 2440 m on warm aspects and 2160 to 2340 m on cool aspects. This zone is characterized by cool, moist summers and cold winters with heavy snowfall. Mature zonal sites support stands of subalpine fir and Engelmann spruce It is a transition above the continous forest and the alpine tundra of the high Purcells. This zone is characterized by short,cool and dry summers and very cold winters with heavy snowfall. Much of the subzone is non-vegetated. Mature zonal sites support patchy stands of krummholtz subalpine fir and Engelmann spruce. Late lying snow and frost pocketing create a landscape of scattered tree islands and permanent meadows.

11) **AT** - Alpine Tundra biogeoclimatic zone occurs at elevations above 2440 m elevation on warm aspects and above 2340 m on cool aspects. It encompasses the high, treeless peaks of the Purcells at the western edge of TFL 14. This zone is characterized by short, cool and dry summers and very cold winters with heavy snowfall. Much of the subzone is non-vegetated and zonal vegetated sites are characterized by mountain avens and arctic willow with no conifers.

1.4 CONTRACT TIMING

Field work was completed between June and October 1998. The final mapping and report were submitted in March 1999.

1.5 PREVIOUS STUDIES

Several previous TEM projects in the vicinity of TFL 14 were used as references for vegetation and wildlife assessments. These projects inched Steamboat Mountain TEM (Kernaghan et al. 1998), Brewer TEM (Kernaghan et al.1997), Stoddard TEM (Marcoux et al. 1997), Kootenay National Park (Achuff et al.1984), TFL 14 Ungulate Winter Range Inventory (Ehlers et al.1998) and Terrain, Soil and Vegetation Survey of TFL 14 (Walmsley and Utzig. 1981). An ecosystem correlation table to some of these projects can be found in Appendix II. Further references can be found in Wildlife Species Accounts (Appendix VIII) and Plant Species Lists (Appendix I).

2.0 OBJECTIVES

The objectives of this study are as follows:

Using regular consultation from the appropriate technical expert -

1. **to pre-stratify the ecosystem map units of TFL 14 using the bioterrain approach** on the appropriate scale of air photos using the methods of the Resource Inventory Committee (1998).

2. **to collate existing mapping and data** for TFL 14

3. **to develop a sampling plan** that optimized use of personnel and opportunities for access to visit as many ecosystems, seral and structural stages as possible

4. **to "truth" at least 20% of the polygons** within TFL 14 and to photograph and collect site, vegetation, soil, wildlife tree, coarse woody debris and wildlife data on detailed (Ecosystem Field Form) plots and on Ground Inspection Forms (GIF) plots using the methods of Field Manual for Describing Ecosystems (1998).

5. **to produce a working legend, an abbreviated map legend, and an expanded legend** describing the nature of terrain, soils, humus form, directional exposure and structural stages of ecosystem units within the subzone variants in a format standard suggested by the RIC (1998).

6. **to map ecosystem polygons** using 1998 RIC methodology and nomenclature that are contiguous with bioterrain polygons on mylar registered to the appropriate 1:20,000 TRIM bases.

7. **to enter, by polygon number, in an EXCEL data base**, bioterrain and ecosystem data using the appropriate codes as specified by the RIC (1998) methodology

8. **to produce wildlife capability and suitability models** by subzone variant, ecosystem and structural stage in conjunction with the Wildlife Correlator and Regional Wildlife personnel for various wildlife species potentially occurring in TFL 14.

9. **to produce a reliability map**, showing the locations of sampling transects and numbered plot locations

10. **to produce a report** describing TFL 14, objectives, methods, and each ecosystem unit in terms of vegetation, structural stages, seral associations, topography, surficial materials and important site/soils characteristics in an expanded legend, and typed map legend on disk in WORD 6.0 format.

3.0 METHODS

3.1 PRE-STRATIFICATION OF ECOSYSTEMS USING THE BIOTERRAIN APPROACH

Bioterrain mapping is based on primary terrain and soil mapping standards, it includes any ecologically significant feature which is thought to influence the function of an ecosystem (RIC, 1998).

The first step was to map terrain according to the Terrain Classification System for British Columbia (Howes and Kenk, 1997). These surficial units were subdivided by features such as directional exposure, depth to water table, avalanche zones, vegetated rock and very thin rubble surfaces, talus, cliffs, and significant changes in bedrock. The features considered important for this study area were agreed upon with the client, technical experts and the consultant's team. These subdivisions attempt to identify and classify as many habitats and sensitive site conditions as possible for the bases for the ecosystem map. (RIC, 1998)

These units of bioterrain were mapped as solid lines in ink on air photos using a number 2 size pen. They were sent to the appropriate technical expert (Larry Lacelle, MOELP, Resources Inventory Branch) for approval. Comments were incorporated into final mapping. Original typed air photos can be found in Appendix XII.

3.1.1 AIR PHOTO INTERPRETATION

Air photo interpretation was accomplished using 1:20 000 scale , 1997, black & white air photos and with checks of more recent structural stage and resource development using CFI 1:20 000 1998 forest cover maps. Due to the nature of black and white photography, the presence of alpine vegetation and the difference between herb and between low (3a) and tall (3b) shrubby structural stages was sometimes difficult to interpret. For polygons that were indicated as being logged on the forest cover map after the date the air photos were taken, the logging was deemed to be clearcut even though there may have been some partial cuts.

3.2 SAMPLING

Ecosystem data was collected to the standards set forth the Field Manual for Describing Terrestrial Ecosystems (1998). Sample plots were chosen subjectively to best represent the distribution of ecosystems and structural stages within each biogeoclimatic unit. Plot location maps can be found in Appendix XVI

3.2.1 DATA FORMS

Detailed data for vegetation, site, soil, and wildlife was collected on “Ecosystem Field Forms” (revised FS882) and Ground Inspections and Visual plot data was collected on “Ground Inspection Forms” all according to the standards set forth in the “Field Manual for Describing Ecosystems” (1998). This original plot data can be found in Appendix X.

Plots were subjectively located in homogenous areas representing a spectrum of site series and structural stages, and were 0.04 ha in area. The standard size for a sample plot is 20 x 20 m, but the shape of the plot was varied according to the spatial distribution of the ecosystem unit. A plot sampling a narrow riparian site may be 10 x 40m in size.

3.3 BIOTERRAIN ATTRIBUTES

Bioterrain attributes were typed following the standards of Howes and Kenk (1997) and RIC (1998). Symbology follows the system of Howes and Kenk (1997). Complex polygons can have up to three terrain units within a single polygon. Percentage distribution of terrain units was represented by deciles from 1 to 10 (1=10% and 10=100%).

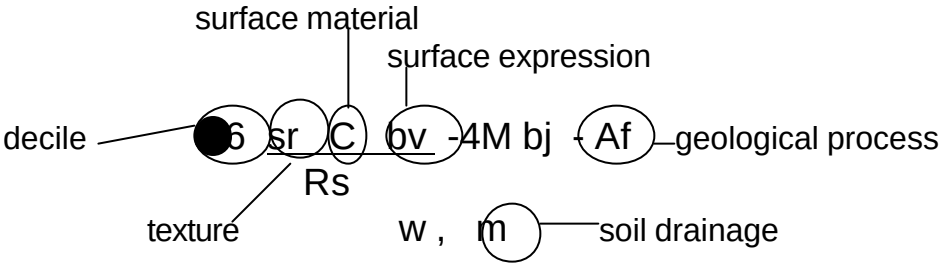
TEXTURE	SURFICIAL MATERIAL	SURFACE EXPRESSION	GEOLOGICAL PROCESS	SOIL DRAINAGE
a=blocks b=boulders c=clay d=mixed fragments e=fibric g=gravel h=humic k=cobbles m=mud p=pebbles r=rubble s=sand u=mesic x=angular fragments z=silt	A= anthropogenic material C=colluvial D=weathered bedrock E=eolian F=fluvial FG= glacial fluvial I=ice L=lacustrine LG=glaciolacustrine M=morainal M1=ablation/deformation till N=aquatic O=organic R=bedrock U=undifferentiated material	a=moderate slope (25-50%) b=blanket (>1m thick) c=cone d=depression f=fan h=hummocky j=gentle slope (,<25%) k=moderately steep m=rolling p=plain r=ridged s=steep (>70%) t=terrace u=undulating v=veneer (20-100cm thick) w=mantle of varing thickness x=thin veneer (2-20cm thick)	A=avalanches B=braided channel C=cryoturbation D=deflation E=channelled F=slow mass movement H=kettled I=irregular channel J=anastamosing channel K=karst processes M=meandering channel N=nivation P=piping R=rapid mass movement S=solifluction U=inundation V=gully erosion W=washing X=permafrost Z=periglacial processes ^{A} = active process ^{I} = inactive process	r = rapid w = well m =moderately well I = imperfect p = poor v = very poor

Note: M1 is used to describe ablation till at upper elevations and also deformation till (with glaciofluvial and glaciolacustrine deposits in small complex pockets)in the trench.

Table 1 Bioterrain Unit Letter Notation

(from Howes and Kenk, 1997)

EXAMPLE TERRAIN POLYGON NOTATION



This polygon label would be read as:

60% sandy, rubbly Colluvial blanket-veneer, overlying steep rock;well drained and
40% Morainal blanket, gently sloping,with freqent avalanching; moderately well drained

3.4 ECOSYSTEM UNIT MAPPING

An ecosystem map unit incorporates site series,site modifiers and structural stage into a label. Ecosystem units were mapped using airphoto interpretation and sample plot data according to the standards set forth in Standard for Terrestrial Ecosystem Mapping in BC (RIC 1998). Ecosystem units were mapped within the boundaries of the pre-stratified bioterrain polygons. Bioterrain polygons were split when natural disturbances, such as fire, or cultural disturbances such as logging, resulted in two strongly contrasting structural stages. Pre-stratified bioterrain polygons were also subdivided by biogeoclimatic subzone boundaries.

Sample plots were classified to site series for the ICHmk1, ICHmw1, IDFdm2, MSdk and ESSFdk using Braumandl and Curran (1992); for the ESSFwm, ESSFwmu, ESSFwmp to site series developed by M.V. Ketcheson of JMJ Holdings Inc.and approved by the MOF Regional Ecologist; and for the ESSFdku, ESSFdkp, and AT to site series used by Kernaghan et al (1998).

Polygons with sample plots were used as mapping control points for site series and structural stage classification and terrain relationships. Site series were identified within each unsampled polygon using the algorithms set forth in the working legend (see Appendix IV). The characteristics of the terrain unit, sample plots that occurred within similar polygons, and structural stages from differences in air photo textures and age class information from forest cover maps were utilized to map unsampled polygons. Up to three site series were mapped within each polygon.

Site modifying codes were used with a site series designation when it differed from what is described as typical for that site series (see Appendix III). When specific features of the site significantly altered the nature of the floristics of an ecosystem unit, that unit received a separate description in the expanded legend. Modifiers increase the resolution of the mapping. Braumandl and Curran (1992) site series were described in more general terms based on forest management objectives (see 3.4.2).

Percentage distribution of ecosystem units was represented by deciles from 1 to 10 (1=10% 9=90% and 10=100%). Two letter codes are followed by structural stage designations 1-7 (non-vegetated - old forest) (see section 3.41). In addition, up to two site modifiers may be present (in lower case) that represent different site conditions than the typical defined for the site series.

3.4.1 SITE SERIES MODIFIERS

a - active floodplain
c - coarse textured soils (loamy sand, sand)
d - deep soil (>100cm)
f - fine textured soils (heavy clay, silty clay, silt clay loam)
g - gullied
h - hummocky
j - gently sloping (< 25%)
k - cool, northerly or easterly aspect (>25% slope, 285 - 135 degrees)
m - medium textured soils
n - fluvial fan or cone
p - peaty material
q - very steep(>100 % slope) cool aspect (285 - 135 degrees)
r - ridged
s - shallow soil (20 - 100cm deep)
t - terraced
v - very shallow soil (< 20 cm deep)
w - warm,southerly or westerly aspect (>25% slope 135 - 285 degrees)
x - drier than average
y - wetter than average
z - very steep (>100 % slope) warm aspect (135 - 285 degrees)

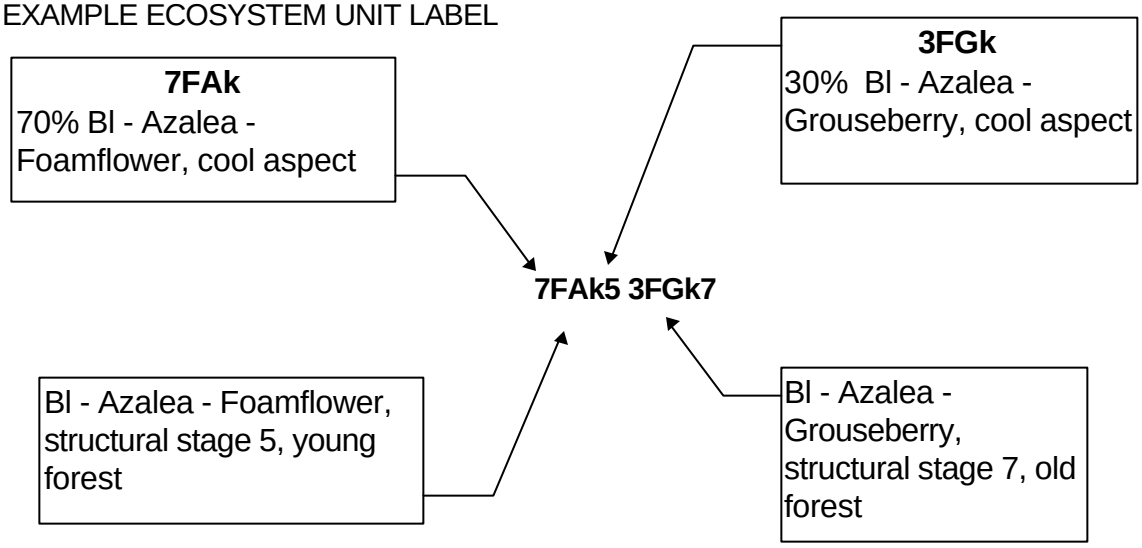
3.4.2 STRUCTURAL STAGES

1 - Non-Vegetated/Sparsely Vegetated (<20% herb and shrubs, <10% trees)
2 - Herb (<10% trees,<20% shrubs, >20% herbs)
3 - Shrub/Herb (<10% trees,>20% shrubs, under 10m tall)[1]
3a - Low Shrub (generally < 20 yrs and under 2m tall)[1]
3b - Tall Shrub (generally < 40 yrs and 2-10m tall)[1]
4 - Pole/Sapling (generally 20-40 yrs, >10m tall)
5 - Young Forest (40-80 yrs)
6 - Mature Forest (80-140 yrs), (80-250yrs in IDFdm2, ICHmw1 ESSFwm, ESSFwmu, ESSFwmp zones)
7 - Old Forest (> 140 yrs), (>250 yrs in IDFdm2,ICHmw1, ESSFwm, ESSFwmu, ESSFwmp zones)

[1] Age only applies to units succeding to trees

Detailed descriptions of structural stages can be found on page 21 of the RIC (1998) TEM Methodology.

EXAMPLE ECOSYSTEM UNIT LABEL



3.4.2 NAMING OF ECOSYSTEM MAP UNITS

Ecosystem units are defined as occurring in a typical situation which is described by MOELP provincial site series coding standards (RIC 1998)(see Appendix III). Where an ecosystem unit is mapped as occuring on the typical site it is followed by the qualifier 'typic'. For example, the Bl - Azalea - Foamflower (FA) typically is found on gently to moderately sloping sites with deep medium textured soils. When it is mapped on these sites it is called the Bl - Azalea - Foamflower; typic ecosystem unit (FA). However, if this unit were sampled and that plant community were found to also occur on steep cool aspects, the name in these situations would be modified to be called Bl - Azalea - Foamflower; cool aspect ecosystem unit (FAk) to reflect the the fact that it is a local occurence and not typical for that unit, but no other unit is appropriate to describe it.

3.4.3 SITE SERIES MAPS

Site series maps can be found in Appendix XIV. They were generated using GIS and the methods described in section 4.2.1.

3.5 WORKING LEGEND AND EXPANDED LEGEND DEVELOPMENT

While in the field, a working legend was developed to assist tracking the frequency with which combinations of bioterrain and site series were sampled. The working legend is then used as a basis for algorithm development to define the observed relationships between terrain,slope,aspect and site series based on sample plots (see Appendix IV).

The expanded legend (Section 8.0) describes the floristics of each unit, through all potential structural stages. It is based on sample plot data, on existing descriptions of the units in the adjacent Steamboat Mountain TEM (Kernaghan et al 1997), and on Braumandl and Curran (1992). Some species were extrapolated from other better sampled structural stages and from knowledge of the ecosystem. Dominant vegetation in the tables include species that dominated a site (generally >5% of total cover), while associates are species

that are generally <5% total cover. Most of the higher structural stages (4-7) that were sampled, reflect successional sequences that are a consequence of disturbance by wildfires and some old logging; however, most of the shrubby sites (structural stage 3) sampled are a consequence of forest harvesting.

3.6 PLANT IDENTIFICATION

Unknown plants were collected, pressed and labelled in the field. Identification was completed between January and March, 1999. Botanical nomenclature is according to Douglas, Straley and Meidinger Vascular Plants of British Columbia, Parts 1-4. Some plant materials were sent to provincial specialists for verification. A list of species noted in TFL 14 is included in Appendix I

3.7 DATA ANALYSIS

Each plot was allocated to an existing MOF site series by using the keys provided in Braumandl and Curran (1992), and Kernaghan et al (1997,1998). In the newly described ESSFwm, ESSFwmu and ESSFwmp subzone variants, plot data was entered into VENUS (Vegetation Environment Nexus) format and site series proposed for mapping were submitted to the Regional Ecologist (Tom Braumandl, MOF Nelson). Proposed site series were grouped by structural stage within the VENUS tabling program by similarities of floristics and related site, terrain and soil moisture characteristics. For the undescribed subzones ESSFdku, ESSFdkp and AT, site series were based on adjacent the TEM projects- Steamboat(Kernaghan et al. 1998) with the approval of the Regional Ecologist.

4.0 DATABASES

4.1 PLOT DATABASE

4.1.1 IN-HOUSE PLOT DATABASE

An in-house plot database describing the attributes of each detailed, ground inspection, and visual sample plot was developed in EXCEL 5.0. This can be found in Appendix V. Attributes entered for each plot includes the following:

plot number
biogeoclimatic subzone and variant
site series number
ecosystem code
site modifiers
structural stage

4.1.2 VENUS DATABASE

VENUS (Vegetation and Environment NexUS) is a database created by the Ministries of Forests and Environment in Victoria that houses a provincial database for vegetation, site,

soil, wildlife from Ecosystem Field Forms (FS882). The program can also sort and summarize vegetation and environmental data used to aid in the classification and correlation efforts in T.E.M. and other vegetation mapping projects. VENUS was used in this project to correlate vegetation data by subzone, site series, modifier, and structural stage. The correlation tables can be found in Appendix X and a list of plots in Appendix V.

4.2 BIOTERRAIN AND ECOSYSTEM DATABASE

R.I.C.(1998) standard EXCEL 5.0 spread sheets were used to record bioterrain and ecosystem attributes for each polygon. Each row describes a polygon number with up to three terrain and ecosystem attributes. The content of each column follows the format suggested by the technical coordinator. The bioterrain and ecosystem database is found in Appendix VI. Standards follow RIC (1998).

4.2.1 ARC/INFO Spatial and Database Files

Bioterrain polygons were digitized from typed 1:20,000 air photos using monorestitution with TRIM 1 - Z axis control points. These polygons were presented in draft format on TRIM base maps. After field sampling. polygons were refined and numbered. Polygon numbers were added to the spatial files.

ARC/INFO GIS version 7.2.1 was used as the processing system for the spatial component of the TEM database. In accordance to the RIC standards manual, (Standard for Terrestrial Ecosystem Mapping (TEM) Data Capture in BC.1998), polygons representing ecosystem units were delineated by a contiguous ARC/INFO coverage for the study area. Each polygon within the coverage is assigned a unique number which corresponds to a record within the ecosystem database.

The non-spatial component of the TEM database is a table representing the ecosystem and terrain attributes of mapped polygons. Each record in the table describes a single ecosystem unit. A unique number for each record links to a single polygon in the spatial data (polygons) and the TEM attributes (table). The tabular database is structured as per RIC standards, in an ASCII Comma Separated Value (CSV) file.

4.3 WILDLIFE SPECIES ACCOUNTS

For each of the wildlife species listed, assumptions were developed describing species ecology and life requisites. The assumptions outline the rational behind suitability ratings and were checked by the provincial wildlife coordinator. They can be found in Appendix VIII.

4.4 WILDLIFE SUITABILITY/CAPABILITY RATINGS

The client has identified important, present or potentially present, wildlife species in TFL 14. These were rated by ecosystem unit and structural stage for habitat suitability to support seasonal feeding and reproductive activities of that species. Capability is defined as the highest suitability rating for an activity and seasonal use over all of the structural

stages for that ecosystem. Structural stage modifiers were also considered but do not affect the ratings and, therefore, were not included in the ratings table. These ratings and a complete “how to generate suitability look-up tables“ guide are listed in Appendix IX . Suitability ratings by site series and structural stage can be used with TEM database stand spatial files to generate thematic maps for each species, life requisite and season of use. These can be used to incorporate critical wildlife habitat into forest development plans or habitat management scenerios.

The following species were rated:

Moose	*Alces alces*
Mule Deer	*Odocoileus hemionus*
White-tailed Deer	*Odocoileus virginianus*
Rocky Mountain Elk	*Cervus elaphus nelsoni*
Mountain Goat	*Oreamnos americanus*
Grizzly Bear	*Ursus arctos*
Wolverine	*Gulo gulo luscus*
Fisher	*Martes pennanti columbiana*
Marten	*Martes americanus*
Bobcat	*Lynx rufus*
Lynx	*Lynx canadensis*
Marmot	*Marmota caligata okanagana*
Flying Squirrel	*Glaucomy sabrinus*
Little brown Myosis	*Myotis lucifugus*
Flammulated Owl	*Otus flammeolus*
Barred Owl	*Strix varia*
Boreal Owl	*Aegolius funerius*
Pileated Woodpecker	*Dryocopus pileatus*
Northern Goshawk	*Accipiter gentiis*
Black-capped chickadee	*Parus atricapillus*
Rubber Boa	*Charina bottae*

A list of all wildlife species observed during fieldwork can be found in Appendix VIII.

5.0 SIBEC

5.1 INTRODUCTION

During the summer of 1998 JMJ Holdings Inc. personnel sampled 118 SIBEC (Site Index/Biogeoclimatic Ecosystem Classification) plots in TFL 14. The original plan was to measure SIBEC trees while sampling TEM plots. However, choosing TEM plots that met SIBEC standards (Nigh, et al., 1998) proved to be very time consuming and exacting work. Shortly after the beginning of the field season we decided to send a two person SIBEC crew ahead of the TEM crews. The TEM crews then sampled SIBEC plots as they were completed.

SIBEC plots were sampled in the following subzones: MSdk, IDFdm2, ESSFdk, ESSFwm, and ICHmk1. Plot distribution within subzones is described in Table 1. Factors such as access, stand age, disturbance, presence or absence of a certain sites series, made sampling target site series difficult (see section 5.3 Plot Selection).

Subzone /Site Series# - Site Series Code	**Species** Bl #of plots	Pl #of plots	Sx #of plots	Se #of plots	Fd #of plots
ESSFdk /03 - FG	2	1		2	
ESSFdk /04 - FS	1	1		1	
* **ESSFwm** /00 - FV	1	2		1	
ICHmk1 /01 - RF					1
ICHmk1 /05 - SG			1		1
IDFdm2 /01 - DT		10	1		12
IDFdm2 /03 - DS					1
IDFdm2 /04 - SP		7	3		9
IDFdm2 /05 - SS			3		
MSdk /01 - SG		9	4	1	6
MSdk /03 - LJ		1			1
MSdk /04 - LP		11			14
MSdk /05 - SS		2	4		1
MSdk /06 - SH			3		

* site series specific to TFL 14

Table 2 SIBEC Plot Distribution within Subzones.

In the ESSFdk, eight plots were sampled within site series 03 and 04.

Because the ESSFwm is not well described in the MOF field guide, temporary site series were assigned for TFL 14, in consultation with the MOF Regional Ecologist. Due to low

fire frequency, most ESSFwm stands were too old to sample for SIBEC, although four SIBEC plots were established in this subzone.
In the ICHmk1, three SIBEC plots were sampled, two with Douglas-fir and one with hybrid white spruce.

The IDFdm2 was well sampled for SIBEC because of excellent access and abundance of younger stands. Forty six plots were established. We attempted to sample site series 03. However, because TFL 14 is at the northern range of this subzone, site series 03 was quite rare and only one SIBEC plot was established.

The MSdk was also well sampled due to the abundance of young stands and easy access. Fifty seven SIBEC plots were established. Of those, three were in site series 06 and twenty-two were in Douglas-fir leading stands.

5.2 ACCESS

Access to SIBEC plots was by road only. We found this the preferred method of transportation because it provided the option of visiting many potential sites in the same day. For example, in some stands most 'Top Height' trees had broken tops so we would have to investigate several potential plots before we found one that met SIBEC standards (Nigh, et al., 1998).

5.3 PLOT SELECTION

The methods used for plot selection are outlined in "SIBEC - Sampling and Data Standards" (Nigh, et al., 1998). Potential sites were identified by noting areas with appropriate age classes (3-5) on Forest Cover maps. Approximately 700 sites throughout the TFL were visited for SIBEC but did not meet requirements. Sites were rejected due to combinations of the following factors:

- bad tops, scars, forks, etc.
- veteran trees close by
- Top Height trees too old
- suppression
- openings close by
- sites not heterogeneous
- old logging
- uneven aged
- very old stands in the ESSFwm (long fire cycle)
- old roads within stands
- slow leader growth
- frequent low intensity fires on drier sites
- older stands on wetter sites (less frequent fire cycle)
- hitting pith on larger trees problematic

5.4 SAMPLING METHODS

The methods used for data sampling are outlined in "SIBEC - Sampling and Data Standards" (Nigh, et al., 1998). Some of the equipment used included Hypsometer lasers, for measuring tree heights, and steel diameter tapes. Cores were extracted using increment borers, stored in plastic straws, and counted in the office under magnification of a 10x lens or a dissecting microscope.

5.5 DATA ENTRY

The Ecosystem Field Form plot data was entered into the Ministry of Forests, Research Branch **V**egetation **E**nvironment **N**ex**US** (VENUS) program and the Ground Inspection Form plot data was entered into **GR**ound **A**nd **V**isual **I**nspection **T**EM **I**nterface (GRAVITI) program. An Excel spreadsheet was created with the mensuration data required in the spreadsheet that can be found in Appendix Vi.

5.6 QUALITY ASSURANCE

A portion of the plots were checked for quality assurance. The quality of mensuration was checked by inventory staff from the Nelson Region Ministry of Forests. The ecological classification of the plots was checked by Jan Teversham (of Forestec) in conjunction with the TEM quality assurance.

6.0 PERMANENT GROWTH SAMPLE PLOTS

A series of thirty Permanent Growth Sample Plots (PSPs) were revisited and classified using Ecosystem Field Forms(EFF) (detailed) or Ground Inspection Forms (GI). The results of this sampling can be found in the table 3 below.

PSP #	TEM plot#	Type of plot	Subzone	Site series #	Map Unit	Structural Stage
1	T1682	G.I.	IDFdm2	'04	SPm	5
2	T1683	G.I.	IDFdm2	'01	DT	5
3	98-00800	E.F.F.	IDFdm2	'01	DT	5
4	T1684	G.I.	IDFdm2	'01	DT	4
5	T1685	G.I.	IDFdm2	'01	DT	4
6	T1686	G.I.	IDFdm2	'01	DT	4
10	T1700	G.I.	MSdk	'04	LPk	5
11	T1697	G.I.	MSdk	'04	LPk	5
12	T1699	G.I.	MSdk	'04	LPv	5
13	T1537	G.I.	MSdk	'04	LPw	5
14	T1538	G.I.	MSdk	'04	LPsw	5
15	T1539	G.I.	MSdk	'04	LP	5
16	T1540	G.I.	IDFdm2	'01	DT	4
17	T1541	G.I.	IDFdm2	'01	DT	4
18	T1542	G.I.	IDFdm2	'01	DTs	4
19	T1690	G.I.	MSdk	'04	LP	5
20	T1691	G.I.	MSdk	'04	LPsw	5
21	T1692	G.I.	MSdk	'04	LPw	5
22	98-00802	E.F.F.	MSdk	'01	SGfk	5
23	T1531	G.I.	MSdk	'01	SGk	6
24	T1532	G.I.	MSdk	'01	SGk	6
25	T1693	G.I.	MSdk	'01	SGks	5
26	T1694	G.I.	MSdk	'01	SGk	5
27	98-00801	E.F.F.	MSdk	'01	SGk	5
28	T1688	G.I.	MSdk	'04	LP	5
29	T1687	G.I.	MSdk	'04	LP	5
30	T1689	G.I.	MSdk	'04	LP	5
31	T1478	G.I.	IDFdm2	'01	DT	5
32	T1476	G.I.	IDFdm2	'01	DT	5
33	T1477	G.I.	IDFdm2	'01	DT	5

Table 3 Permanent Sample Plot Classification

7.0 RESULTS

7.1 SURVEY INTENSITY

About 24% of the total polygons mapped in TFL 14 were sampled - for a survey intensity level 4,(10%-25% of total polygons inspected, RIC, 1998). JMJ worked in conjunction with an avalanche research crew from the University of Calgary (UofC). JMJ completed 90 Ecosystem Field Forms (detailed plots), 450 Ground Inspections and 1350 visual plots; the U of C completed 5, 55 and 150 respectively. See plot location maps in Appendix XVI.

7.2 CORRELATION OF ECOSYSTEM MAP UNITS TO MOF SITE SERIES UNITS

Each ecosystem unit description, described by Ministry of Forests site series classification, is noted at the top right corner of each table in section 6.0 . For example, the label MSdk/01 indicates that that ecosystem description belongs to the '01' site series of the MSdk found in Braumandl and Curran (1992). Ecosystem units that have not formally been described by the MoF are allocated to a '00' site series. These units are not finalized pending a formal classification by the Ministry of Forests. A table correlating map units used in this project with MoF classification as well as other projects is found in Appendix II. When a subzone has site series numbered “00”, it is important to keep units separated via their two letter ecosystem (or map) unit code for any analysis.

7.3 RARE ELEMENTS

The B.C. Conservation Data Centre (CDC) maintains Tracking Lists for rare vascular plants, plant communities and vertebrate animals for all Forest Districts in the province. The Tracking Lists for the Invermere Forest District, in which the TFL 14 is located, were used to determine which species observed during the course of field work were classified as rare.

7.3.1 RARE VERTEBRATES

There have been no previous rare vertebrate observations recorded with the B.C. Conservation Data Centre for TFL 14. Table 4 lists the rare vertebrate observations that were made during the course of field work.

SPECIES	PLOT NO.	TYPE OF OBSERVATION		SUBZONE/ SITE SERIES	ECO-UNIT	MAP NO./ GENERAL LOCATION
		Sighting - quantity	Sign - type			
Woodland Caribou, southern population - *Rangifer tarandus pop. 1* (blue listed)	9800008		EX	ESSFwm/00	FV	82N.005 McMurdo Cr. - side valley
Least Chipmunk, selkirki subspecies - *Tamias minimus selkirki* (red-listed)	9800002	1 individual		ESSFdk/03	FG	82N.006 Bobbie Burns Cr.
	T363	1 individual		MSdk/00	WS	82N.006
Bald Eagle - *Haliaeetus leucocephalus* (yellow-listed)	T277	1 individual		MSdk/00	PD/SM	82N.006 Loon Lake
Great Blue Heron - *Ardea herodias* (blue-listed)	T870	1 individual		MSdk/00	SM	82N.007 17.5 km Rd., N. Fork

Table 4 Rare Vertebrate Observations in TFL 14

7.3.2 RARE VASCULAR PLANTS

There have been no previous observations of rare vascular plants recorded with the B.C. Conservation Data Centre for TFL 14. Table 5 lists the rare vascular plant observations that were made during the course of field work.

COMMON NAME	SCIENTIFIC NAME	PLOT NO.	SUBZONE/ SITE SERIES	ECO-UNIT	MAP NO./ GENERAL LOCATION
foxtail muhly (red-listed)	*Muhlenbergia andina*	9800869	IDFdm2/00	BH	82K.098 Spillimacheen
marsh muhly (blue-listed)	*Muhlenbergia glomerata*	T1104	IDFdm2/00	SM	82K098

Table 5 Rare Vascular Plant Observations in TFL 14

7.3.3 RARE PLANT COMMUNITIES

There have been no previous rare plant community observations recorded with the B.C. Conservation Data Centre for the TFL 14 Study Area. Table 6 lists the rare plant communities observations that were made during the course of field work.

SCIENTIFIC NAME	COMMON NAME	SITE SERIES	ECO UNIT	PROV. LIST
Anemone occidentalis - Carex nigricans	Western pasqueflower - black alpine sedge	AT ESSFdkp/00 ESSFdku/00 ESSFwmp/00	BP YW,DV PW FM	Red
Betula glandulosa - Equisetum	Scrub birch - horsetail	IDFdm2/06	BH	Blue
Picea engelmannii x glauca - Betula glandulosa - Carex	Hybrid white spruce - Scrub birch - Sedge	MSdk/07	SB	*not ranked
Picea engelmanii xglauca - Ribes lacustre - Aralia nudicaulis	Hybrid white spruce - gooseberry - sarsaparilla	ICHmk1/03	DT	Blue
Pseudotsuga menziesii - Symphoricarpos albus - Basamorhiza sagittata	Douglas-fir - snowberry - balsamroot	IDFdm2/03	DS	Red
Carex utriculata - Carex aquatilis marsh	Beaked sedge - water sedge marsh	ESSFwm/00 IDFdm2/00 MSdk/00	SM SM SM	*not ranked
Scirpus validus marsh	Great bulrush Marsh	IDFdm2/00	BU	*not ranked
Typha latifolia marsh	Cattail Marsh	IDFdm2/00	CT	*not ranked

*these communities are not provincially ranked, but probably deserve to be designated as rare

Table 6 Rare Plant Community Observations in TFL 14

7.4 Coarse Woody Debris

Coarse woody debris (CWD) is dead, down woody material which is larger than 7.5cm in diameter and is in various stages of decomposition. For a more detailled definition of CWD, refer to the Field Manual for Describing Terrestrial Ecosystems (MELP, 1998). Data on CWD was collected for detailed plots and Ground Inspection plots. CWD was not recorded on visual plots.

CWD was sampled using two methods - detailed CWD and simple CWD. A detailed CWD form (FS 882-7) was used for Ecosystem Field Plots and a combination of full CWD and simple CWD forms (section Wildlife Habitat Assessment form, FS 882-5) were used for Ground Inspection plots.

Detailed CWD was sampled along two 24m lines which followed random bearings from plot center. These lines were measured in horizontal distance and are at 90° from each

other. If the line fell on heavy or very heavy accumulations of CWD, the length of the line was shortened. When a piece of CWD was encountered along the line, the following were recorded: tree species (when identifiable), diameter, decay class, tilt angle, length, and angle of ground. When the end of a piece was suspended above ground the height of end was recorded.

The simple CWD was sampled along one 30m line following a random bearing from plot center. This line was measured in horizontal distance. If the CWD was heavy along the line, a maximum of 22 pieces were measured and the length of the line to that point was noted. When a piece of CWD intercepted the line, the decay class and diameter class were recorded. For a detailed description of both methodologies used when collecting CWD data, refer to the Field Manual for Describing Terrestrial Ecosystems (MELP, 1998).

This data is summarized by subzone, site series and structural stage below.

TABLE TO FOLLOW WHEN MOF PROVIDES SUMMARIES

Table 7 CWD Summary by Subzone and Map Unit

7.5 Epiphytes

Epiphytes were classified to class (1-5) according to classes outlined in Armleder et al (1992). Class 1 is the lowest cover, class 6 the highest. The results, by plot, can be found in Appendix Vii. A synthesis of this data is listed in Table 7 below.

There is a trend for epiphyte cover to peak in structural stage six, mature forest. In order to get replication, and to generate summary statistics for average cover, the epiphyte data was lumped by subzones and structural stage.

subzone	Structural Stage	Mean Epiphyte Class	Min Epiphyte Class	Max Epiphyte Class	Standard Deviation	# of plots sampled
ESSFdk	4	3.0	3	3	0.0	1
ESSFdk	5	1.6	1	3	1.4	10
ESSFdk	6	2.3	1	3	1.4	6
ESSFdk	7	1.3	1	2	0.7	3
ESSFdku	6	3.0	3	3	0.0	1
ESSFwm	3	0.5	0	1	0.7	2
ESSFwm	5	1.7	1	3	1.4	3
ESSFwm	6	3.1	3	4	0.7	7
ESSFwm	7	2.8	1	4	2.1	4
ESSFwmp	3	2.0	2	2	0.0	1
ESSFwmp	6	1.0	1	1	1.0	1
ESSFwmu	6	4.5	4	5	0.7	2
ESSFwmu	7	3.0	3	3	0.0	1
ICHmk1	5	1.3	1	2	0.7	3
ICHmk1	6	2.0	2	2	0.0	1
ICHmk1	7	1.0	1	1	0.0	1
ICHmw1	5	1.6	1	2	0.7	5
ICHmw1	6	2.0	2	2	0.0	1
IDFdm2	3	0.0	0	0	0.0	1
IDFdm2	4	1.6	1	3	1.4	9
IDFdm2	5	1.5	0	3	2.1	50
IDFdm2	6	2.4	1	4	2.1	8
MSdk	3	0.0	0	0	0.0	3
MSdk	4	1.0	1	1	0.0	3
MSdk	5	1.5	1	4	2.1	38
MSdk	6	2.1	0	4	2.8	14
MSdk	7	1.0	1	1	0.0	2

Table 8 Epiphyte Classification in TFL 14

7.6 Forest Health

Armillaria Root Rot, Mountain Pine Beetle, and White Pine Blister Rust were observed within TFL 14. Forest disease and pest were recorded as a note when apparent within a plot. The results can be seen in Table 8. Generally, stands seemed to be more susceptible to disease and pests in structural stages 5 - 7.

Plot	Subzone	Site series	Structural Stage	Disease / Pest
T345	ESSFwmu	WH	3	White pine blister rust
T714	ICHmk1	RF	5	Mountain pine beetle
98-00865	IDFdm2	SP	5	Mountain pine beetle?
T358	ESSFdk	FG	6	diseased Bl
T332	ESSFwm	FV	6	brown rot
T234	ESSFwm	FP	6	Armillaria
T9	ESSFwm	FP	6	Armillaria
T185	ESSFwm	FP	6	Mountain pine beetle,Se beetle?
98-00879	ICHmk1	DT	6	Fd bark beetle
T41	ESSFdk	FM	7	Black stain rot?
T29	ESSFdk	FS	7	Armillaria
T175	ESSFdk	FG	7	Armillaria

Table 9 Forest Health Observations in TFL 14

7.7 Disturbance History

Disturbance within TFL 14 consisted mainly of wildfire, controlled burning, logging, and avalanches. There were also minor disturbances from mining and terrain failures.

Even aged stands, which were taken to indicate wildfire disturbance, logging, and avalanche paths were identified using TFL 14 air photos and forest cover maps prior to field sampling. These areas were mapped at 1:20,000 and submitted to TFL14 office at Parson in March 1998. Plot locations were chosen to represent a variety of disturbance regimes. During the field season, these areas were visited as part of the TEM sampling effort. Core samples were taken from trees that appeared to represent the average age of the stand. Lodgepole pine, when present, was the preferred species for aging because it is a seral tree species which usually establishes directly after disturbance. The majority of lodgepole pine cores were collected and counted in the office. These samples were used to relate stand age to air photo texture and forest cover data. Disturbance history codes used in the mapping are listed below.

L. Forest harvesting
- c. clearcut systems
  - wr with reserves
- d. seed tree system
  - un uniform
  - gr grouped
- e. selection system
  - gr group selection
  - si single tree selection
  - st strip selection

S. Soil disturbance
- m. mining effects
  - ta tailings

T. Terrain-related effects
- a. avalanche
- s. terrain failures

W. Water-related effects
- s. temporary seepage

These codes were used to generate thematic mapping. A base map was generated to illustrate first decile structural stage patterns throughout the TFL. These patterns illustrate a history of fires in the early 1890s which were most prevalent on warm aspects. This includes the southwest facing slopes of Dogtooth ridge and the west sides of Jubilee and Lead Mountains. The moist subzones ICHmw1 and ICHmk1 also have large areas showing evidence of past wildfires. These maps can be found in Appendix XV.

Disturbance history codes for each decile are depicted on three acetate overlays registered to the paper structural stage in decile one, base map. Polygons affected by recent wildlife are coloured red. Cutblocks are coloured brown on these acetates and avalanche chutes appear green. The sub-divisions of these disturbance history codes and labelled within the polygon on the acetate.

These maps illustrate historical disturbance patterns due to wildlife on the base maps an present day disturbance on the overlays. They can assist in the determination of proportional relationships of seral stages within the TFL. They illustrate disturbance patterns by drainage. Analysis of these disturbance patterns within the GIS data base can assist in planning processes.

7.8 Avalanche Units

Avalanche sampling and classification in TFL 14 was undertaken by a University of Calgary avalanche research team. However, at the time of mapping, no classification was yet available. In order to complete our mapping in a timely fashion , we have used existing temporary units from adjacent TEM projects and, for newly described subzones, similar basic map units.. These basic temporary units are then further classified by aspect, structural stage, soil depth, and dominant stand composition (coniferous, deciduous, or mixed) Structural stages of 2 (herb) and 3(shrub) were generally mapped due to the difficulty in interpreting shrub heights on 1 : 20,000 air photos; however, where plot data existed, 3a (low shrub) and 3b (tall shrub) structural stage modifiers were used. When the classification of mappable avalanche units becomes available, these units should be able to be updated into the new units. The table below summarizes the units that were used for our initial mapping.

Subzone	Map unit	Name	Description
ICH mw1	AC	Avalanche chute	avalanche chute
MSdk	AC	Avalanche chute	avalanche chute
MSdk	ACjy	Avalanche chute - gentle slope, moist	avalanche runout zone
ESSFdk	AC	Avalanche chute	avalanche chute
ESSFdk	ACjy	Avalanche chute - gentle slope, moist	avalanche runout zone
ESSFdku	FS	Subalpine fir - Engelmann spruce	avalanche chute
ESSFdku	FA	Subalpine fir - Sitka alder	avalanche runout zone
ESSFdku	PV	Western pasqueflower - Sitka valerian	avalanche chute
ESSFdku	CH	Cow-parsnip - Indian hellebore	avalanche runout zone
ESSFwm	AC	Avalanche chute	avalanche chute
ESSFwm	ACjy	Avalanche chute - gentle slope, moist	avalanche runout zone
ESSFwmu	UF	Avalanche chute	avalanche chute
ESSFwmu	UG	Avalanche chute - Runout zone	avalanche runout zone

Table 10 Avalanche Units Described in TFL 14:

8.0 ECOSYSTEM UNIT DESCRIPTIONS

8.1 ICHmk1 - Ecosystem Unit Descriptions

DT - Fd Pl - Pinegrass - Twinflower - Ecosystem Unit (03)

Map Unit	Description	BEC
DT	**Fd Pl - Pinegrass - Twinflower Ecosystem Unit** Modified units: DTck, DTk, DTkv	**ICHmk1 /03**
DT typically occurs on significant slopes with deep, medium textured soils. Sites have a subxeric to submesic moisture regime and a poor to rich nutrient regime. The following modified units are similar to the typic situation but differ in at least one aspect: DTck occurs on coarse textured soils on a cool aspect. DTk occurs on a cool aspect. DTkv occurs on a cool aspect with very shallow soils.		

Map Symbol	DT2,DTck2,DTk2, DTkv2	DT3,DTck3,DTk3, DTkv3	DT4,DTck4,DTk4, DTkv4	DT5,DTck5,DTk5, DTkv5	DT6,DTck6,DTk6, DTkv6	DT7,DTck7,DTk7, DTkv7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	pinegrass showy aster fireweed	Douglas-fir Douglas maple soopolallie birch-leaved spirea twinflower pinegrass	Douglas-fir Douglas maple red-stemmed feathermoss juniper haircap moss electrified cat's-tail moss	Douglas-fir Douglas maple red-stemmed feathermoss juniper haircap moss electrified cat's-tail moss dog pelt	Douglas-fir red-stemmed feathermoss juniper haircap moss electrified cat's-tail moss dog pelt	Douglas-fir red-stemmed feathermoss juniper haircap moss electrified cat's-tail moss dog pelt
Associates	twinflower	lodgepole pine birch-leaved spirea red-stemmed feathermoss juniper haircap moss electrified cat's-tail moss	lodgepole pine hybrid white spruce soopolallie birch-leaved spirea pinegrass twinflower dog pelt	lodgepole pine hybrid white spruce western redcedar soopolallie birch-leaved spirea pinegrass	hybrid white spruce western redcedar soopolallie Douglas maple pinegrass	hybrid white spruce western redcedar soopolallie Douglas maple pinegrass
Plots				T744,T721,T741	9800879	
Comments	Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

RF - Cw Sxw - Falsebox Ecosystem Unit (01)

Map Unit	Description	BEC
RF	**Cw Sxw - Falsebox Ecosystem Unit** Modified units: RFc,RFk, RFks,RFkv,RFs	**ICHmk1 /01**
RF typically occurs on gentle slopes with deep, medium textured soils. The soil moisture regime is generally submesic to subhygric with a poor to rich nutrient regime (often calcareous). The following modified units are similar to the typic situation but differ in at least one aspect: RFc occurs on coarse textured soils. RFk occurs on cool aspects. RFks occurs on cool aspects with shallow soils. RFkv occurs on cool aspects with very shallow soils RFs occurs on shallow soils		

Map Symbol	RF2, RFc2, RFk2, RFks2, Fkv2,RFs2	RF3, RFc3, RFk3, RFks3,RFkv3,RFs3	RF4, RFc4, RFk4, RFks4,RFkv4,RFs4	RF5, RFc5, RFk5, RFks5,RFkv5,RFs5	RF6, RFc6, RFk6, RFks6,RFkv6,RFs6	RF7, RFc7, RFk7, RFks7,RFkv7,RFs7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	pinegrass fireweed	shrubby sites of: lodgepole pine Douglas maple pinegrass twinflower red-stemmed feathermoss	lodgepole pine Douglas-fir red-stemmed feathermoss knight's plume	lodgepole pine Douglas-fir red-stemmed feathermoss knight's plume	Douglas-fir red-stemmed feathermoss knight's plume	Douglas-fir red-stemmed feathermoss knight's plume
Associates	twinflower western fescue white hawkweed	hybrid white spruce Douglas-fir falsebox birch-leaved spirea soopolallie pinegrass western fescue wild sarsaparilla	hybrid white spruce western redcedar Douglas maple falsebox pinegrass wild sarsaparilla step moss	hybrid white spruce western redcedar Douglas maple falsebox wild sarsaparilla step moss	hybrid white spruce western redcedar lodgepole pine Douglas maple falsebox wild sarsaparilla step moss	hybrid white spruce western redcedar Douglas maple falsebox pinegrass step moss
Plots		T746,T696, T1259,T1262, T1273, T1521		T714,T717,T740, T742,T1041,T1258,T 1271,T1644	T1520,T1266, T1275	
Comments	Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SC - Sedge - Cinquefoil Ecosystem Unit (08)

Map Unit	Description	BEC
SC	**Sedge - Cinquefoil Ecosystem Unit** Modified units:	**ICHmk1 /08**
SC typically occurs on organic wetlands. It has a subhydric moisture regime and poor to very rich nutrient regime.		

Map Symbol	SC2	SC3
Plant Species	herb	shrub/herb
Dominants	sedges	willows sedges
Associates	arrow-leaved coltsfoot bluejoint	scrub birch Labrador tea arrow-leaved coltsfoot bluejoint
Plots		T1256,T710
Comments	Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5)	

SG - Sxw Fd - Gooseberry - Sarsaparilla Ecosystem Unit (05)

Map Unit	Description	BEC
SG	**Sxw Fd - Gooseberry - Sarsaparilla Ecosystem Unit** Modified units: SGg, SGk, SGn	**ICHmk1 /05**
SG typically occurs on gentle, lower slopes in a receiving position. Soils are deep, medium textured and generally with moisture regimes of mesic to subhygric and nutrient regimes of medium to very rich. The following modified units are similar to the typic situation but differ in at least one aspect: SGg occurs in gullies. SGk occurs on cool aspects. SGn occurs on fluvial or colluvial fans.		

Map Symbol	SG2, SGg2, SGk2, SGn2	SG3, SGg3, SGk3, SGn3	SG4, SGg4, SGk4, SGn4	SG5, SGg5, SGk5, SGn5	SG6, SGg6, SGk6, SGn6	SG7, SGg7, SGk7, SGn7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed wild sarsaparilla	Douglas-fir hybrid white spruce western redcedar paper birch thimbleberry wild sarsaparilla	Douglas-fir western redcedar hybrid white spruce paper birch wild sarsaparilla	Douglas-fir western redcedar hybrid white spruce paper birch wild sarsaparilla	western redcedar Douglas-fir hybrid white spruce red-stemmed feathermoss	western redcedar Douglas-fir
Associates	bunchberry	common snowberry red-osier dogwood birch-leaved spirea bunchberry red-stemmed feathermoss	common snowberry birch-leaved spirea thimbleberry bunchberry red-stemmed feathermoss	subalpine fir birch-leaved spirea thimbleberry bunchberry red-stemmed feathermoss	paper birch subalpine fir thimbleberry bunchberry wild sarsaparilla	hybrid white spruce subalpine fir red-stemmed feathermoss
Plots		T698,T731,		T713,T751,T1501	9800005,9800847, 980880,T1040, T1351	9800881
Comments	As western redcedar dominates in the latter structural stages, the understorey often lacks cover of understorey species. Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 5 ICHmk1 - SG6

Sxw Fd - Gooseberry - Sarsaparilla Ecosystem Unit (05), mature forest structural stage Plot 98-00847

SH - Sxw - Horsetail Ecosystem Unit (07)

Map Unit	Description	BEC
SH	**Sxw - Horsetail Ecosystem Unit** Modified units: SHn, SHnp, SHp	**ICHmk1 /07**
SH typically occurs on level sites in a moisture receiving position and with deep, medium textured soils. Soil moisture is hygric and soil nutrients from poor to very rich. The following modified units are similar to the typic situation but differ in at least one aspect: SHn occurs on fluvial or colluvial fans. SHnp occurs on fluvial fans with organic deposits. SHp occurs on organic deposits.		

Map Symbol	SH2, SHn2, SHnp2, SHp2	SH3, SHn3, SHnp3, SHp3	SH4, SHn4, SHnp4, SHp4	SH5, SHn5, SHnp5, SHp5	SH6, SHn6, SHnp6, SHp6	SH7, SHn7, SHnp7, SHp7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	bluejoint common horsetail	hybrid white spruce common horsetail mountain alder bluejoint	western redcedar hybrid white spruce red-stemmed feathermoss mountain alder	western redcedar hybrid white spruce step moss red-stemmed feathermoss	western redcedar hybrid white spruce step moss red-stemmed feathermoss knight's plume	western redcedar hybrid white spruce step moss red-stemmed feathermoss knight's plume
Associates	sedge dwarf scouring-rush bunchberry	western redcedar Douglas-fir dwarf scouring-rush bunchberry sedge red-stemmed feathermoss step moss	Douglas-fir common horsetail dwarf scouring-rush bunchberry sedge step moss knight's plume	Douglas-fir mountain alder common horsetail dwarf scouring-rush bunchberry sedge knight's plume	Douglas-fir common horsetail dwarf scouring-rush bunchberry sedge	Douglas-fir common horsetail dwarf scouring-rush bunchberry sedge
Plots						T711,T729
Comments	Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

SM - Beaked sedge - Water sedge Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
SM	**Beaked sedge - Water sedge Marsh Ecosystem Unit** Modified units: SMp	**ICHmk1/00**
SM is a wetland unit that occurs in shallow, seasonally fluctuating marshes on mineral deposits. The following modified units are similar to the typic situation but differ in at least one aspect: SMp occurs in fens with organic deposits.		

Map Symbol	SM2,SMp2
Plant Species	shrub/herb
Dominants	beaked sedge water sedge
Associates	cattail
Plots	T1257
Comments	Often is surrounded by a narrow ring of BU or contains areas of open shallow water. This unit is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5)

SO - Sxw - Oak fern Ecosystem Unit (06)

Map Unit	Description	BEC
SO	**Sxw - Oak fern Ecosystem Unit** Modified units: SOf, SOg, SOn	**ICHmk1 /06**
SO typically occurs on level sites in a moisture receiving position and with deep, medium textured soils. Soil moisture is subhygric to hygric and soil nutrients from poor to very rich. The following modified units are similar to the typic situation but differ in at least one aspect: SOf occurs on fine textured soil. SOg occurs in gullies. SOn occurs on fluvial or colluvial fans.		

Map Symbol	SO2,SOf2,SOg2, SOn2	SO3,SOf3,SOg3, SOn3	SO4,SOf4,SOg4, SOn4	SO5,SOf5,SOg5, SOn5	SO6,SOf6,SOg6, SOn6	SO7,SOf7,SOg7, SOn7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	wild sarsaparilla oak fern Lindley's aster bluejoint	mountain alder western redcedar hybrid white spruce black cottonwood paper birch	western redcedar hybrid white spruce black cottonwood paper birch	western redcedar hybrid white spruce black cottonwood paper birch	western redcedar hybrid white spruce paper birch	western redcedar hybrid white spruce
Associates	sweet-scented bedstraw Indian hellebore bunchberry	Douglas-fir Douglas maple thimbleberry willow wild sarsaparilla oak fern bluejoint	Douglas-fir mountain alder Douglas maple thimbleberry wild sarsaparilla oak fern	Douglas-fir mountain alder Douglas maple thimbleberry wild sarsaparilla oak fern	Douglas-fir black cottonwood Douglas maple thimbleberry wild sarsaparilla	paper birch Douglas-fir wild sarsaparilla thimbleberry
Plots		T961		9800882	T1519,T730,T1261	
Comments	Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting					

8.2 ICHmw1 - Ecosystem Unit Descriptions

AC - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
AC	**Avalanche chute Ecosystem Unit** Modified units: ACk	**ICHmw1 /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. The following modified units are similar to the typic situation but differ in at least one aspect: ACk occurs on cool aspects.		

Map Symbol	ACk2	AC3, AC3a, AC3b
Plant Species	herb	shrub/herb
Dominants	pinegrass	Sitka alder willows
Associates	twinflower fireweed	Utah honeysuckle birch-leaved spirea prince's pine twinflower
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

DS - CwFd - Soopolallie - Douglas maple Ecosystem Unit (04)

Map Unit	Description	BEC
DS	**CwFd - Soopolallie - Douglas maple Ecosystem Unit** Modified units: DSv	**ICHmw1 /04**
DS typically occurs on significant slopes on a warm aspect with deep, medium textured soils. Soil moisture is subxeric to submesic and soil nutrients from medium to very rich. The following modified units are similar to the typic situation but differ in at least one aspect: DSv occurs on very shallow soil.		

Map Symbol	DS2,DSv2	DS3,DSv#	DS4,DSv4	DS5,DSv%	DS6,DSv6	DS7,DSv7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	lodgepole pine Douglas-fir	lodgepole pine Douglas-fir	lodgepole pine Douglas-fir	Douglas-fir	Douglas-fir
Associates	prince's pine	trembling aspen saskatoon soopolallie falsebox Douglas maple birch-leaved spirea prince's pine knight's plume	trembling aspen saskatoon soopolallie falsebox Douglas maple birch-leaved spirea prince's pine knight's plume	trembling aspen saskatoon soopolallie falsebox Douglas maple birch-leaved spirea prince's pine knight's plume	lodgepole pine trembling aspen saskatoon soopolallie falsebox Douglas maple birch-leaved spirea prince's pine knight's plume	lodgepole pine trembling aspen saskatoon soopolallie falsebox Douglas maple birch-leaved spirea prince's pine knight's plume
Plots						
Comments	Vegetation derived from the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

HF - Hw Cw - Falsebox - Feathermoss Ecosystem Unit (01)

Map Unit	Description	BEC
HF	**Hw Cw - Falsebox - Feathermoss Ecosystem Unit** Modified units: HFck, HFg, HFk, HFks, HFkv, HFs, HFv	**ICHmw1 /06**

HF typically occurs on gentle slopes with deep, medium textured soils. Soil moisture is submesic to mesic and soil nutrients from poor to very rich.
The following modified units are similar to the typic situation but differ in at least one aspect:
HFck occurs on coarse textured soils on a cool aspect.
HFg occurs in gullies.
HFk occurs on a cool aspect.
HFks occurs on shallow soils with a cool aspect.
HFkv occurs on very shallow soils with a cool aspect.
HFs occurs on shallow soils.
HFv occurs on very shallow soils .

Map Symbol	HF2,HFck2,HFg2, HFk2,HFks2,HFkv2, HFs2,HFv2,	HF3,HFck3,HFg3, HFk3,HFks3,HFkv3, HFs3,HFv3,	HF4,HFck4,HFg4, HFk4,HFks4,HFkv4, HFs4,HFv4,	HF5,HFck5,HFg5, HFk5,HFks5,HFkv5, HFs5,HFv5,	HF6,HFck6,HFg6, HFk6,HFks6,HFkv6, HFs6,HFv6,	HF7,HFck7,HFg7,HFk7,HFks7,HFkv7,HFs7,HFv7,
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	Douglas-fir lodgepole pine Utah honeysuckle birch-leaved spirea	Douglas-fir lodgepole pine red-stemmed feathermoss knight's plume	Douglas-fir lodgepole pine western redcedar red-stemmed feathermoss knight's plume	Douglas-fir western redcedar subalpine fir red-stemmed feathermoss knight's plume step moss	Douglas-fir western redcedar subalpine fir red-stemmed feathermoss knight's plume step moss

Associates	one-sided wintergreen bunchberry prince's pine twinflower pinegrass	Sitka alder hybrid white spruce Douglas maple one-sided wintergreen bunchberry prince's pine fireweed twinflower pinegrass	subalpine fir hybrid white spruce western redcedar Douglas maple Utah honeysuckle birch-leaved spirea one-sided wintergreen bunchberry prince's pine step moss	subalpine fir hybrid white spruce Douglas maple Utah honeysuckle birch-leaved spirea one-sided wintergreen bunchberry prince's pine step moss	hybrid white spruce lodgepole pine western hemlock Douglas maple Utah honeysuckle birch-leaved spirea one-sided wintergreen bunchberry prince's pine	hybrid white spruce western hemlock Douglas maple Utah honeysuckle birch-leaved spirea one-sided wintergreen bunchberry prince's pine
Plots		T703	T910	9800883,T695,T704, T705,T724,T733,T905,T912,T955,T958,T960	T727,T702,T726, T908,T956	
Comments	Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting					

RD - Cw Hw - Devil's club - Lady fern Ecosystem Unit (05)

Map Unit	Description	BEC
RD	**Cw Hw - Devil's club - Lady fern Ecosystem Unit** Modified units: RDgm, RDgs, RDkm, RDks RDkv, RDm	**ICHmw1 /06**
RD typically occurs on gentle, lower slopes in a moisture receiving site and with deep, fine textured soils. Soil moisture is mesic to subhygric and soil nutrients from poor to rich. The following modified units are similar to the typic situation but differ in at least one aspect: RDgm occurs in gullies with medium textured soil. RDgs occurs in gullies with shallow soils. RDkm occurs on cool aspects with medium textured soils. RDks occurs on cool aspects with shallow soils. RDkv occurs on cool aspects with very shallow soils. RDm occurs on medium textured soils.		

Map Symbol	RDgm2, RDgs2, RDkm2, RDks2 RDkv2,RDm2,	RDgm3, RDgs3, RDkm3, RDks3 RDkv3,RDm3,	RDgm4, RDgs4, RDkm4, RDks4 RDkv4,RDm4,	RDgm5, RDgs5, RDkm5, RDks5 RDkv5,RDm5,	RDgm6, RDgs6, RDkm6, RDks6 RDkv6,RDm6,	RDgm7, RDgs7, RDkm7, RDks7 RDkv7,RDm7,
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	Douglas-fir mountain alder	western redcedar Douglas-fir	western redcedar Douglas-fir	western redcedar Douglas-fir	western redcedar Douglas-fir
Associates	oak fern bluejoint one-leaved foamflower rattlesnake-plantain bunchberry	western redcedar hybrid white spruce black twinberry red-osier dogwood Devil's club oak fern bluejoint one-leaved foamflower rattlesnake-plantain fireweed	hybrid white spruce mountain alder Devil's club rattlesnake-plantain red-stemmed feathermoss knight's plume	hybrid white spruce subalpine fir Devil's club rattlesnake-plantain red-stemmed feathermoss knight's plume	hybrid white spruce subalpine fir Devil's club rattlesnake-plantain red-stemmed feathermoss knight's plume	hybrid white spruce subalpine fir Devil's club rattlesnake-plantain red-stemmed feathermoss knight's plume
Plots		T1255		T906,T959	T701,T909,T694, T709,T911,T975	
Comments	As cedar dominates in the latter structural stages, the understorey often becomes devoid of understorey species. Vegetation derived from plot data, and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting					

RH - Cw Hw - Horsetail Ecosystem Unit (07)

Map Unit	Description	BEC
RH	**Cw Hw - Horsetail Ecosystem Unit** Modified units:	**ICHmw1 /07**
RH typically occurs on toe slopes or level sites with deep, coarse textured soils. Soil moisture is subhygric to hygric and soil nutrients from medium to very rich.		

Map Symbol	RH2	RH3	RH4	RH5	RH6	RH7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	common horsetail	western redcedar mountain alder red-osier dogwood common horsetail	western redcedar mountain alder red-osier dogwood common horsetail	western redcedar common horsetail	western redcedar stepmoss knight's plume	western redcedar stepmoss knight's plume
Associates	leafy mosses wild sarsaparilla	highbush cranberry leafy mosses wild sarsaparilla	hybrid white spruce highbush cranberry leafy mosses stepmoss knight's plume	hybrid white spruce mountain alder highbush cranberry red-osier dogwood leafy mosses stepmoss knight's plume	hybrid white spruce common horsetail leafy mosses	hybrid white spruce common horsetail leafy mosses
Plots						
Comments	As western redcedar dominates in the latter structural stages, the understorey often lacks cover of understorey species. Vegetation derived from plot data and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

8.3 IDFdm2 - Ecosystem Unit Descriptions

BH - Scrub birch - Horsetail Ecosystem Unit (06)

Map Unit	Description	BEC
BH	**Scrub birch - Horsetail Ecosystem Unit** Modified units: BHp	**IDFdm2 /06**
BH occurs in mineral wetlands with calcareous seepage. It has a hygric to subhydric moisture regime and submesotrophic to mesotrophic nutrient regime. The following modified units are similar to the typic situation but differ in at least one aspect: BHp occurs on organic deposits.		

Map Symbol	BH2,BHp2	BH3, BHp3	BH4,BHp4	BH5, BHp5	BH6,BHp6	BH7,BHp7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	water sedge beaked sedge	scrub birch water sedge	very open stands of: hybrid white spruce scrub birch water sedge	very open stands of: hybrid white spruce scrub birch water sedge	very open stands of: hybrid white spruce scrub birch water sedge	very open stands of: hybrid white spruce scrub birch water sedge
Associates	scrub birch marsh cinquefoil blue wild rye glow moss	hybrid white spruce willows Labrador tea shrubby cinquefoil beaked sedge marsh cinquefoil blue wild rye glow moss	willows Labrador tea shrubby cinquefoil beaked sedge marsh cinquefoil glow moss	willows Labrador tea shrubby cinquefoil beaked sedge marsh cinquefoil glow moss	Labrador tea willows shrubby cinquefoil beaked sedge marsh cinquefoil glow moss	Labrador tea willows shrubby cinquefoil beaked sedge marsh cinquefoil glow moss
Plots		9800869,T1167, T1132, T1250				
Comments	BH is most commonly found at structural stage 3, but according to Braumandl and Curran (1992), hybrid white spruce may occupy up to 15% cover in very open stands. This unit is blue listed as a vulnerable ecosystem by the Conservation Data Centre and is easily threatened by cattle grazing. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of wetland succession after disturbance by wildfires.					

BU - Great Bulrush Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
BU	**Great Bulrush Marsh Ecosystem Unit** Modified units: BUp	**IDFdm2/00**
BU is a wetland unit that typically occurs in depressional wetlands with fluctuating water levels. The following modified units are similar to the typic situation but differ in at least one aspect: BUp occurs on organic deposits.		

Map Symbol	BU2, BUp2
Plant Species	shrub/herb
Dominants	soft-stemmed bulrush
Associates	Baltic rush beaked sedge water sedge marsh cinquefoil
Plots	T1543,T1067,T1348
Comments	Often occurs in a unit ringing a kettle or pothole wetland with sedge marsh (SM) or open shallow water(OW). This unit is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data and adjacent TEM projects(see section 3.5)

CT - Cattail Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
CT	**Cattail Marsh Ecosystem Unit** Modified units:	**IDFdm2/00**
CTis a wetland unit that typically occurs in depressional wetlands with fluctuating water levels.		

Map Symbol	CT2
Plant Species	shrub/herb
Dominants	common cattail
Associates	
Plots	T1586
Comments	Often occurs in a unit ringing a kettle or pothole wetland with sedge marsh (SM) or open shallow water(OW). This unit is rare in this subzone. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

DS - Fd - Snowberry - Balsamroot Ecosystem Unit (03)

Map Unit	Description	BEC
DS	**Fd - Snowberry - Balsamroot Ecosystem Unit** Modified units: DSjs, DSs,DSv	**IDFdm2 /03**

DS typically occurs on significantly sloping sites with warm aspects and deep, medium-textured soils. Found on morainal or colluvial blankets with submesic moisture regimes and submesotrophic to mesotrophic nutrient regimes. Soils have a silt loam texture with variable coarse fragment content. Soils are usually calcareous. Moder humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
DSjs occurs gentle slopes with shallow soils.
DSs occurs on shallow soils
DSv occurs on very shallow soils

Map Symbol	DS2,DSjs2, DSs2,DSv2	DS3, DSjs3, DSs3,DSv3	DS4, DSjs4, DSs4,DSv4	DS5, DSjs5, DSs5,DSv5	DS6, DSjs6, DSs6,DSv6	DS7, DSjs7, DSs7,DSv7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	kinnikinnick pinegrass arrow-leaved balsamroot	clumpy shrub and grassland mosaic of: Douglas-fir lodgepole pine pinegrass	clumpy open young forests of: Douglas-fir lodgepole pine pinegrass	clumpy open canopy forests of: Douglas-fir bluebunch wheatgrass	open forests of: Douglas-fir bluebunch wheatgrass	open forests of: Douglas-fir bluebunch wheatgrass
Associates	timber milk-vetch junegrass bluebunch wheatgrass fireweed	common juniper saskatoon soopolallie bluebunch wheatgrass junegrass arrow-leaved balsamroot kinnikinnick	common juniper saskatoon soopolallie bluebunch wheatgrass arrow-leaved balsamroot junegrass kinnikinnick	lodgepole pine common juniper soopolallie saskatoon birch-leaved spirea arrow-leaved balsamroot pinegrass kinnikinnick	common juniper soopolallie saskatoon birch-leaved spirea arrow-leaved balsamroot pinegrass kinnikinnick	common juniper soopolallie saskatoon birch-leaved spirea arrow-leaved balsamroot pinegrass kinnikinnick
Plots		T942	T1175	9800867,T1174, T1113	T1176,T1172, T1069	

Comments	DS occurs much less commonly in TFL 14 than in the IDFdm2 farther south. It is restricted to strongly warm aspectswith shallow soils. This unit is red listed as a rare and endangered ecosystem by the Conservation Data Centre. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 6 IDFdm2- DSv 5

Fd - Snowberry - Balsamroot very shallow Ecosystem Unit (03), young forest structural stage Plot 98-00867
This unit is red listed as a rare and endangered ecosystem by the Conservation Data Centre.

DT - Fd-Pl - Pinegrass - Twinflower Ecosystem Unit (01)

Map Unit	Description	BEC
DT	**Fd-Pl - Pinegrass - Twinflower Ecosystem Unit** Modified units:DTc,DTck,DTcs, DTcw,DTf,DTfw,DTh,DTk,DTkn,DTks,DTkv, DTs,DTsw,DTv, DTvw,DTw	**IDFdm2 /01**

DT typically occurs on gentle slopes with medium-textured soils. These units occur on morainal or colluvial blanket parent materials with mesic moisture regimes and permesotrophic nutrient regimes. Silt loam textures, mull (moder) humus forms, and eutric brunisol soil development are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
DTc occurs on coarse textured soils
DTck occurs on cool aspects with coarse textured soils
DTcs occurs on shallow, coarse textured soils
DTcw occurs on warm aspects with coarse textured soils
DTf occurs on fine textured soils.
DTfw occurs on fine textured soils with a warm aspect.
DTh occurs on hummocky terrain.
DTk occurs on cool aspects.
DTkn occurs on a cool aspect fan.
DTks occurs on shallow soils with cool aspects.
DTkv occurs on very shallow soils with cool aspects.
DTs occurs on shallow soils
DTsw occurs on warm aspects with shallow soils
DTv occurs on very shallow soils.
DTvw occurs onwarm aspects wth very shallow soils.
DTw occurs on warm aspects.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 7 IDFdm2- DT 5

Fd-Pl - Pinegrass - Twinflower Ecosystem Unit (01), young forest structural stage Plot 98-00798

Map Symbol	DT2,DTc2,DTck2, DTcs2,DTcw2,DTf2, DTfw2,DTh2,DTk2,D Tkn2,DTks2, DTkv2,DTs2,DTsw2, DTv2,DTvw2,DTw2	DT3,DTc3,DTck3, DTcs3,DTcw3,DTf3, DTfw3,DTh3,DTk3,D Tkn3,DTks3, DTkv3,DTs3,DTsw3, DTv3, Tvw3,DTw3	DT4,DTc4,DTck4, DTcs4,DTcw4,DTf4, DTfw4,DTh4,DTk4,D Tkn4,DTks4, DTkv4,DTs4,DTsw4, DTv4, Tvw4,DTw4	DT5,DTc5,DTck5, DTcs5,DTcw5,DTf5, DTfw5,DTh5,DTk5,D Tkn5,DTks5, DTkv5,DTs5,DTsw5, DTv5,DTvw5,DTw5	DT6,DTc6,DTck6, DTcs6,DTcw6,DTf6, DTfw6,DTh6,DTk6,D Tkn6,DTks6,DTkv6, DTs6,DTsw6,DTv6, DTvw6,DTw6	DT7,DTc7,DTck7, DTcs7,DTcw7,DTf7, DTfw7,DTh7,DTk7,D Tkn7,DTks7, DTkv7,DTs7,DTsw7, DTv7,DTvw7,DTw7
Plant Species	herb†	shrub/herb†	pole sapling†	young forest	mature forest	old forest
Dominants	pinegrass grasses*	dense shrub cover of: Douglas-fir lodgpole pine pinegrass juniper haircap moss	young dense forests of: Douglas-fir lodgpole pine pinegrass red-stemmed feathermoss	dense forests of: Douglas-fir lodgepole pine pinegrass red-stemmed feathermoss	moderately open forests of: Douglas-fir pinegrass red-stemmed feathermoss step moss	moderately open forests of: Douglas-fir pinegrass red-stemmed feathermoss step moss
Associates	saskatoon junegrass stiff needlegrass bluebunch wheatgrass kinnikinnick rough fescue orchardgrass	saskatoon soopolallie prickly rose willow common snowberry showy aster kinnikinnick wild strawberry	saskatoon soopolallie prickly rose birch-leaved spirea common snowberry showy aster kinnikinnick step moss	trembling aspen saskatoon soopolallie prickly rose birch-leaved spirea common snowberry showy aster twinflower wild strawberry step moss	lodgepole pine trembling aspen saskatoon soopolallie prickly rose birch-leaved spirea twinflower showy aster wild strawberry	saskatoon soopolallie prickly rose birch-leaved spirea twinflower showy aster wild strawberry

Plots		T1073,T1218, T1252,T1587,T665,T1166,T665,T1106,T1577	T662,T936,T1114,T1119,T1141,T1344,T1457,T1465,T1540,T1541,T1542,T1578,T1665,T1684,T1685,T1686	9800797,9800798,9800800,9800873,T668,T940,T1060,T1068, T1070,T1081,T1107, T1116,T1118,T1122, T1128,T1129,T1135, T1179,T1199,T1202, T1203,T1204,T1215, T1216,T1252,T1316, T1332,T1343,T1347, T1456,T1458,T1471, T1473,T1476,T1477, T1478,T1502,T1573, T1575,T1593,T1594, T1595,T1596,T1597, T1650,T1671,T1683, T1701	9800864,9800845,T1187,T1305,T1576,T1584,T1588, T1589,T1590, T1599,T1661	
Comments	Cool aspect units of this site series have denser and faster regeneration than warm aspect units. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SH - Sxw - Horsetail Ecosystem Unit (07)

Map Unit	Description	BEC
SH	**Sxw - Horsetail Ecosystem Unit** Modified units: SHa, SHam, SHm, SHp	**IDFdm2/07**

SH typically occurs on level, moist, coarse-textured fluvial material. Hygric to subhygric soil moisture regimes, permesotrophic soil nutrient regimes, and moder humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
SHa occurs on active floodplain sites subject to periodic flooding.
SHam occurs on active floodplain sites textured soils.
SHm occurs on medium textured soils.
SHp occurs on sites with organic materials.

Map Symbol	SH2,SHa2,SHam2, SHm2, SHp2	SH3,SHa3,SHam3, SHm3, SHp3	SH4,SHa4,SHam4, SHm4, SHp4	SH5,SHa5,SHam5, SHm5, SHp5	SH6,SHa6,SHam6, SHm6, SHp6	SH7,SHa7,SHam7, SHm7, SHp7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	bluejoint beaked sedge	hybrid white spruce red-osier dogwood beaked sedge	open stands of: hybrid white spruce red-osier dogwood beaked sedge	open stands of: hybrid white spruce red-osier dogwood beaked sedge	open stands of: hybrid white spruce red-osier dogwood beaked sedge	h open stands of: hybrid white spruce red-osier dogwood beaked sedge
Associates	graceful cinquefoil coltsfoot horsetail	black cottonwood water birch mountain alder willow graceful cinquefoil horsetail bluejoint	black cottonwood water birch mountain alder willow graceful cinquefoil horsetail bluejoint	black cottonwood water birch mountain alder willow graceful cinquefoil horsetail bluejoint	black cottonwood water birch mountain alder willow graceful cinquefoil horsetail bluejoint	water birch mountain alder willow graceful cinquefoil horsetail bluejoint
Plots		T1140,T1649, T1300			T1165	
Comments	Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5)					

SM - Beaked sedge - Water sedge Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
SM	**Beaked sedge - Water sedge Marsh Ecosystem Unit** Modified units: SMp	**IDFdm2/00**
SM is a wetland unit that occurs in shallow, seasonally fluctuating marshes on mineral deposits. The following modified units are similar to the typic situation but differ in at least one aspect: SMp occurs in fens with organic deposits.		

Map Symbol	SM2,SMp2
Plant Species	shrub/herb
Dominants	beaked sedge water sedge
Associates	common cattail sickle moss sphagnum moss
Plots	T1124,T1182,T1314,T1579
Comments	Often is surrounded by a narrow ring of BU . This unit is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 8 IDFdm2- SMp 2

Beaked sedge - Water sedge Marsh peaty Ecosystem Unit (00), herb structural stage Plot T1314

SP - FdLw - Spruce - Pinegrass Ecosystem Unit (04)

Map Unit	Description	BEC
SP	**FdLw - Spruce - Pinegrass Ecosystem Unit (04)** Modified units: SPac,SPam,SPc,SPck,SPcs,SPgk,SPk,SPkm,SPm,SPmn,SPms,SPn,SPt,	**IDFdm2/04**

SP typically occurs on fine-textured parent materials in level receiving sites. These sites have mesic to subhygric soil moisture regimes and permesotrophic soil nutrient regimes. Moder and mor humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
SPac occurs on active floodplains with coarse textured soil.
SPam occurs on active floodplains with medium textured soil.
SPc occurs on coarse textured soil.
SPck occurs on cool aspects with coarse textured soil.
SPcs occurs warm aspects with on shallow soil.
SPgk occurs in gullies on a cool aspect
SPk occurs on cool aspects.
SPkm occurs on medium textured soil.
SPm occurs on medium textured soil.
SPmn occurs on a fan with medium textured soil.
SPms occurs on shallow, medium textured soil.
SPn occurs on a fan.
SPt occurs on a terrace

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 9 IDFdm2- SP 5 M

FdLw - Spruce - Pinegrass Ecosystem Unit (04), young forest structural stage - Mixed Composition (coniferous and broadleaf) Plot 98-00793

Map Symbol	SP2,SPac2,SPam2, SPc2,SPck2, SPcs2,SPk2, SPkm2,SPm2, SPmn2,SPms2, SPn2,SPt2,	SP3,SPac3,SPam3, SPc3,SPck3, SPcs3,SPk3, SPkm3,SPm3, SPmn3,SPms3, SPn3,SPt3,	SP4,SPac4,SPam4, SPc4,SPck4, SPcs4,SPk4, SPkm4,SPm4, SPmn4,SPms4, SPn4,SPt4,	SP5,SPac5,SPam5, SPc5,SPck5 ,SPcs5,SPk5, SPkm5,SPm5, SPmn5,SPms5, SPn5,SPt5,	SP6,SPac6,SPam6, SPc6,SPck6, SPcs6,SPk6, SPkm6,SPm6, SPmn6,SPms6, SPn6,SPt6,	SP7,SPac7,SPam7, SPc7,SPck7 ,SPcs7,SPk7, SPkm7,SPm7, SPmn7,SPms7, SPn7,SPt7,
Plant Species	herb†	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	Kentucky bluegrass grasses	soopolallie lodgepole pine	lodgepole pine Douglas-fir soopollalie red-stemmed feathermoss	Douglas-fir lodgepole pine pinegrass red-stemmed feathermoss	hybrid white spruce Douglas-fir red-stemmed feathermoss	hybrid white spruce Douglas-fir red-stemmed feathermoss
Associates	common snowberry pinegrass fireweed	hybrid white spruce Douglas-fir paper birch common snowberry willow saskatoon tall Oregon-grape bunchberry pinegrass bluejoint	hybrid white spruce paper birch common snowberry saskatoon tall Oregon-grape pinegrass bunchberry	hybrid white spruce paper birch common snowberry soopollalie prickly rose saskatoon tall Oregon-grape twinflower showy aster bunchberry step moss	lodgepole pine trembling aspen paper birch common snowberry soopollalie prickly rose tall Oregon-grape pinegrass twinflower showy aster bunchberry	common snowberry soopollalie prickly rose tall Oregon-grape pinegrass twinflower showy aster bunchberry step moss

Map Symbol	SP2,SPac2,SPam2, SPc2,SPck2, SPcs2,SPk2, SPkm2,SPm2, SPmn2,SPms2, SPn2,SPt2,	SP3,SPac3,SPam3, SPc3,SPck3, SPcs3,SPk3, SPkm3,SPm3, SPmn3,SPms3, SPn3,SPt3,	SP4,SPac4,SPam4, SPc4,SPck4, SPcs4,SPk4, SPkm4,SPm4, SPmn4,SPms4, SPn4,SPt4,	SP5,SPac5,SPam5, SPc5,SPck5 ,SPcs5,SPk5, SPkm5,SPm5, SPmn5,SPms5, SPn5,SPt5,	SP6,SPac6,SPam6, SPc6,SPck6, SPcs6,SPk6, SPkm6,SPm6, SPmn6,SPms6, SPn6,SPt6,	SP7,SPac7,SPam7, SPc7,SPck7 ,SPcs7,SPk7, SPkm7,SPm7, SPmn7,SPms7, SPn7,SPt7,
Plots	T1142	T1299,T1315	T1109,T1173, T1177,T1188	9800793,9800861,98 00862,9800863,9800 865,9800868,980087 2,9800874,T932,T10 77,T1100,T1103,T11 05,T1110,T0020,T11 25,T1130,T1131,T11 63,T1166,T1189,T11 91,T1192,T1193,T12 05,T1214,T1219,T12 20,T1295,T1309,T13 12,T1317,T1455,T14 59,T1460,T1461,T14 72,T1503,T1529,T15 72,T1583,T1592,T16 70,T1682	T1198,T1063	
Comments	Grass species will vary according to disturbance and grazing history. Introduced agronomic species will persist into later structural stages if utilization is high. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SS - SxwAt - Sarsaparilla Ecosystem Unit (05)

Map Unit	Description	BEC
SS	**SxwAt - Sarsaparilla Ecosystem Unit** Modified units: SSa,SSac, SSam,SSg,SSm,SSn,SSt	**IDFdm2 /05**

SS typically occurs on lower slopes with fine-textured soils in receiving sites. These sites have subhygric - hygric soil moisture regimes and permesotrophic soil nutrient regimes. Mor and moder humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
SSa occurs on an active floodplain.
SSac occurs on coarse-textured fluvial parent materials subject to periodic flooding.
SSam occurs on medium textured fluvial parent materials subject to periodic flooding .
SSg occurs in gullies.
SSm occurs on medium textured soils.
SSn occurs on a fan.
SSt occurs on a (glaciofluvial) terrace

Map Symbol	SS2,SSa2,SSac2, SSam2, SSg2, SSm2,SSn2,SSt2	SS3,SSa3,SSac,3 SSam3, SSg3, SSm3,SSn3,SSt3	SS4,SSa4,SSac4, SSam4, SSg4, SSm4,SSn4,SSt4	SS5,SSa5,SSac5, SSam5, SSg5, SSm5,SSn5,SSt5	SS6,SSa6,SSac6, SSam6, SSg6, SSm6,SSn6,SSt6	SS7,SSa7,SSac7, SSam7, SSg7, SSm7,SSn7,SSt7
Plant Species	herb†	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	bluejoint Kentucky bluegrass	red-osier dogwood mountain alder	trembling aspen	trembling aspen hybrid white spruce bunchberry	hybrid white spruce trembling aspen bunchberry	hybrid white spruce bunchberry
Associates	blue wildrye fireweed grasses	lodgepole pine hybrid white spruce trembling aspen paper birch thimbleberry common snowberry blue wildrye wild sarsaparilla bunchberry	lodgepole pine hybrid white spruce paper birch common snowberry mountain alder red-osier dogwood blue wildrye wild sarsaparilla bunchberry	lodgepole pine paper birch red-osier dogwood common snowberry mountain alder blue wildrye wild sarsaparilla common horsetail twinflower dwarf scouring-rush trailing raspberry red-stemmed feathermoss	paper birch red-osier dogwood common snowberry mountain alder twinflower wild sarsaparilla dwarf scouring-rush common horsetail trailing raspberry red-stemmed feathermoss	trembling aspen paper birch red-osier dogwood twinflower wild sarsaparilla dwarf scouring-rush common horsetail trailing raspberry red-stemmed feathermoss
Plots	T1102	T1213	T1180	T1184,T1349, T1668,T1075	9800795,T1112, T1201	T1061
Comments	Grass species will vary according to disturbance and grazing history. Introduced agronomic species will persist into later structural stages if utilization is high. Western redcedar is a component on generalized cool aspects in TFL 14. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

8.4 MSdk - Ecosystem Unit Descriptions

AC - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
ACjy	**Avalanche chute Ecosystem Unit** Modified units: ACjy	**MSdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACjy is similar to the typic situation but, in the gentler runout zone at the chute toe with a wetter (mesic to subhygric)moisture regime. It is often in a mosaic with SG or SS ecosystem units.		

Map Symbol	ACjy2	ACjy3,ACjy3a, ACjy3b
Plant Species	herb	shrub/herb
Dominants	dense herb cover of: bluejoint	dense shrub cover of: Sitka alder subalpine fir willows
Associates	pinegrass western meadowrue cow-parsnip slender wheatgrass common snowberry stinging nettle wild strawberry	black twinberry western meadowrue black gooseberry common snowberry stinging nettle cow-parsnip violets
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACk - Avalanche chute Cool Aspect Ecosystem Unit (00)

Map Unit	Description	BEC
ACk	**Avalanche chute Ecosystem Unit** Modified units: ACk	**MSdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACk is similar to the typic situation but with a cool aspect and submesic to mesic soil moisture.		

Map Symbol	ACk2	ACk3,AC3a,AC3b
Plant Species	herb	shrub/herb
Dominants	dense herb cover of: pinegrass smooth brome	dense shrub cover of: Sitka alder willows
Associates	grouseberry showy aster kinnikinnick blue wild rye wild strawberry bluejoint	Douglas maple thimbleberry black gooseberry black twinberry red-osier dogwood western meadowrue violets
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data, and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACw - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
ACw	**Avalanche chute Ecosystem Unit** Modified units: ACw	**MSdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACw is similar to the typic situation but with a significant warm aspect and submesic to mesic soil moisture.		

Map Symbol	ACw2	ACw3,ACw3a,AC3b
Plant Species	herb	shrub/herb
Dominants	dense herb cover of: Columbia brome pinegrass	bluejoint slender wheatgrass
Associates	kinnikinnick fireweed saskatoon willows	dense shrub cover of: subalpine fir trembling aspen Douglas maple willows saskatoon Sitka alder common snowberry fireweed western meadowrue violets
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data, and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

CT - Cattail Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
CT	**Cattail Marsh Ecosystem Unit** Modified units:CTp	**MSdk/00**
CTis a wetland unit that typically occurs in depressional wetlands with fluctuating water levels.		

Map Symbol	CT2,
Plant Species	shrub/herb
Dominants	cattail
Associates	water sedge marsh cinquefoil
Plots	T1508
Comments	Often occurs in a unit ringing a kettle or pothole wetland with sedge meadow (SM) , great bullrush marsh (BU) or open shallow water(OW). This unit is rare in this subzone. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

LJ Pl - Juniper - Pinegrass Ecosystem Unit (03)

Map Unit	Description	BEC
LJ	**Pl - Juniper - Pinegrass Ecosystem Unit** Modified units: LJc,LJcv, LJs,LJv,LJvz,	**MSdk /03**

LJ typically occurs on steep warm aspects with deep, medium-textured soils. Morainal and colluvial parent materials are common, with xeric to submesic soil moisture regimes being typical on these sites. Moder (mor) humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
LJc occurs on coarse textured soils.
LJcv occurs on very shallow, coarse textured soils.
LJs occurs on shallow soil.
LJv occurs on very shallow soil.
LJvz occurs on very steep, warm aspect slopes with very shallow soil.

Map Symbol	LJ2,LJc2,LJcv2, LJs2,LJv2,LJvz2,	LJ3,LJc3,LJcv3, LJs3,LJv3,LJvz3,	LJ4,LJc4,LJcv4, LJs4,LJv4,LJvz4,	LJ5,LJc5,LJcv5, LJs5,LJv5,LJvz5,	LJ6,LJc6,LJcv6, LJs6,LJv6,LJvz6,	LJ7,LJc7,LJcv7 LJs7,LJv7,LJvz7,
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	pinegrass	shrubby stands of: Douglas-fir lodgepole pine	clumpy stands of: Douglas-fir lodgepole pine	clumpy stands of: Douglas-fir lodgepole pine	open stands of: Douglas-fir pinegrass	open stands of: Douglas-fir pinegrass
Associates	kinnikinnick Douglas-fir birch-leaved spirea fireweed bluebunch wheatgrass Rocky Mountain fescue spotted saxifrage fringed aster	trembling aspen soopolallie Douglas maple saskatoon common juniper birch-leaved spirea kinnikinnick bluebunch wheatgrass* pinegrass	trembling aspen soopolallie Douglas maple saskatoon common juniper birch-leaved spirea kinnikinnick pinegrass bluebunch wheatgrass* showy aster	soopolallie Douglas maple common juniper birch-leaved spirea pinegrass kinnikinnick showy aster red-stemmed feathermoss	lodgepole pine soopolallie Douglas maple common juniper kinnikinnick showy aster red-stemmed feathermoss	soopolallie common juniper Douglas maple kinnikinnick showy aster red-stemmed feathermoss
Plots		T650,T900,	T369,	9800885,T917, T1283,T651	9800871,T916, T1149,T1046, T1098	
Comments	*Bluebunch wheatgrass is more commonly present on shallow soils and strong south aspects Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

LP Pl - Oregon grape - Pinegrass Ecosystem Unit (04)

Map Unit	Description	BEC
LP	**Pl - Oregon grape - Pinegrass Ecosystem Unit** Modified units: LPc,LPcg LPck, LPcn, LPcr, LPct, LPcw, LPf,LPfwLPgk,LPgw,LPh,LPhs,LPk,LPks,LPkv, ,LPr,LPs,LPsw,LPt,LPv,LPvw,LPw	**MSdk /04**

LP typically occurs on significant sloping, deep medium-textured soils. Morainal parent materials occur most frequently with subxeric to mesic soil moisture regimes. Mor humus forms are common.

The following modified units are similar to the typic situation but differ in at least one aspect:

LPc occurs on coarse-textured soils.
LPcg occurs in a gully with coarse textured soil.
LPck occurs on cool aspects with coarse-textured soils.
LPcn occurs on a fan wth coarse-textured soils.
LPcr occurs ona ridge with coarse-textured soils.
LPct occurs on a terrace (glaciofluvial) with coarse-textured soils.
LPcw occurs on a warm aspect with coarse-textured soils.
LPf occurs on fine textured soil.
LPfw occurs on fine textured soil with a warm aspect.
LPgk occurs in a gully with a cool aspect.
LPgw occurs in a gully on a warm aspect.
LPh occurs on hummocky terrain.
LPhs occurs on hummocky terrain with shallow soil.
LPk occurs on cool aspects.
LPks occurs on cool aspects with shallow soils.
LPkv occurs on cool aspects with very shallow soils.
LPr occurs on ridged terrain.
LPs occurs on shallow soil.
LPsw occurs on warm aspects with shallow soil.
LPt occurs on a terrace.
LPv occurs on very shallow soil.
LPw occurs on warm aspects with very shallow soil.
LPw occurs on warm aspects.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 10 MSdk- LP 5

Pl - Oregon grape - Pinegrass Ecosystem Unit (04), young forest structural stage Plot 98-00001

Map Symbol	LP2,LPc2,LPcg2,LPck2,LPcn2,LPcs2,LPct2,LPcw2,LPcz2,LPf2,LPfw2,LPgk2,LPh,LPhs2,LPk2,LPks2,LPkv2,LPn2,LPr2,LPs2,LPsw2,LPt2,LPv2,LPvw2,LPw2	LP3,LPc3,LPcg3,LPck3,LPcn3,LPcs3,LPct3,LPcw3,LPcz3,LPf3,LPfw3,LPgk3,LPh,LPhs3,LPk3,LPks3,LPkv3,LPn3,LPr3,LPs3,LPsw3,LPt3,LPv3,LPvw3,LPw3	LP4,LPc4,LPcg4,LPck4,LPcn4,LPcs4,LPct4,LPcw4,LPcz4,LPf4,LPfw4,LPgk4,LPh,LPhs4,LPk4,LPks4,LPkv4,LPn4,LPr4,LPs4,LPsw4,LPt4,LPv4,LPvw4,LPw4	LP5,LPc5,LPcg5,LPck5,LPcn5,LPcs5,LPct5,LPcw5,LPcz5,LPf5,LPfw5,LPgk5,LPh,LPhs5,LPk5,LPks5,LPkv5,LPn5,LPr5,LPs5,LPsw5,LPt5,LPv5,LPvw5,LPw5	LP6,LPc6,LPcg6,LPck6,LPcn6,LPcs6,LPct6,LPcw6,LPcz6,LPf6,LPfw6,LPgk6,LPh,LPhs6,LPk6,LPks6,LPkv6,LPn6,LPr6,LPs6,LPsw6,LPt6,LPv6,LPvw6,LPw6	LP7,LPc7,LPcg7,LPck7,LPcn7,LPcs7,LPct7,LPcw7,LPcz7,LPf7,LPfw7,LPgk7,LPh,LPhs7,LPk7,LPks7,LPkv7,LPn7,LPr7,LPs7,LPsw7,LPt7,LPv7,LPvw7,LPw7
Plant Species	herb	shrub/herb†	pole sapling†	young forest	mature forest	old forest
Dominants	dense herb cover of: pinegrass fireweed	shrubby cover of: lodgepole pine pinegrass	dense young forests of: Douglas-fir lodgepole pine pinegrass red-stemmed feathermoss	dense canopy of: Douglas-fir lodgepole pine pinegrass red-stemmed feathermoss	closed canopy stands of: Douglas-fir hybrid white spruce pinegrass red-stemmed feather moss	closed canopy stands of: Douglas-fir hybrid white spruce pinegrass red-stemmed feather moss
Associates	kinnikinnick wild strawberry showy aster yarrow soopolallie	Douglas-fir hybrid white spruce soopolallie birch-leaved spirea saskatoon common snowberry bunchberry twinflower showy aster *Brachythecium sp*	hybrid white spruce soopolallie Sitka alder birch-leaved spirea twinflower showy aster bunchberry *Brachythecium sp*	hybrid white spruce soopolallie saskatoon birch-leaved spirea showy aster twinflower bunchberry	lodgepole pine subalpine fir soopolallie saskatoon showy aster twinflower bunchberry	subalpine fir soopolallie saskatoon showy aster twinflower bunchberry

Map Symbol	LP2,LPc2,LPcg2,LPck2,LPcn2,LPcs2,LPct2,LPcw2,LPcz2,LPf2,LPfw2,LPgk2,LPh,LPhs2,LPk2,LPks2,LPkv2,LPn2,LPr2,LPs2,LPsw2,LPt2,LPv2,LPvw2,LPw2	LP3,LPc3,LPcg3,LPck3,LPcn3,LPcs3,LPct3,LPcw3,LPcz3,LPf3,LPfw3,LPgk3,LPh,LPhs3,LPk3,LPks3,LPkv3,LPn3,LPr3,LPs3,LPsw3,LPt3,LPv3,LPvw3,LPw3	LP4,LPc4,LPcg4,LPck4,LPcn4,LPcs4,LPct4,LPcw4,LPcz4,LPf4,LPfw4,LPgk4,LPh,LPhs4,LPk4,LPks4,LPkv4,LPn4,LPr4,LPs4,LPsw4,LPt4,LPv4,LPvw4,LPw4	LP5,LPc5,LPcg5,LPck5,LPcn5,LPcs5,LPct5,LPcw5,LPcz5,LPf5,LPfw5,LPgk5,LPh,LPhs5,LPk5,LPks5,LPkv5,LPn5,LPr5,LPs5,LPsw5,LPt5,LPv5,LPvw5,LPw5	LP6,LPc6,LPcg6,LPck6,LPcn6,LPcs6,LPct6,LPcw6,LPcz6,LPf6,LPfw6,LPgk6,LPh,LPhs6,LPk6,LPks6,LPkv6,LPn6,LPr6,LPs6,LPsw6,LPt6,LPv6,LPvw6,LPw6	LP7,LPc7,LPcg7,LPck7,LPcn7,LPcs7,LPct7,LPcw7,LPcz7,LPf7,LPfw7,LPgk7,LPh,LPhs7,LPk7,LPks7,LPkv7,LPn7,LPr7,LPs7,LPsw7,LPt7,LPv7,LPvw7,LPw7
Plots		T367,T655,TT785,T1083,T1159,T1160,T1225,T1235,T1239,T1240	T1050,T1052,T1092,T1144,T1221,T1504	9800001,9800789,9800846,9800888,T250,T645,T794,T809,T816,T824,T830,T871,T947,T953,T1087,T1196,T1249,T1278,T1280,T1281,T1282,T1288,T1290,T1322,T1451,T1505,T1507,T1522,T1526,T1537,T1538,T1539,T1652,T1653,T1656,T1657,T1658,T1663,T1687,T1688,T1689,T1690,T1691,T1692,T1697,T1699,T1700	9800989,T624,T654,T890,T946,T1148,T1151,T1157,T1248,T1345,T1346,T1509,T1511,T1514,T1600	9800875,T1195
Comments	Cool aspect forests have denser canopy than do warmer aspects. Herb and moss layers are better developed in all late seral structural stages on cool aspect modified units. This site series does not occur in the EPM ecosection; SG vegetation dominates this edatopic position in the EPM. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SB - Sxw - Scrub birch - Sedge Ecosystem Unit (07)

Map Unit	Description	BEC
SB	**Sxw - Scrub birch - Sedge Ecosystem Unit** Modified units:	**MSdk /07**
SB typically occurs on open treed bogs with organic soils and subhydric moisture regime.		

Map Symbol	SB2	SB3	SB4	SB5	SB6	SB7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	beaked sedge water sedge sphagnum	sphagnum beaked sedge water sedge	hybrid white spruce beaked sedge water sedge	hybrid white spruce beaked sedge water sedge	hybrid white spruce	hybrid white spruce
Associates	common horsetail arrow-leaved coltsfoot marsh cinquefoil glow moss willow	hybrid white spruce scrub birch red-osier dogwood willows Labrador tea common horsetail glow moss	scrub birch red-osier dogwood willows Labrador tea common horsetail glow moss sphagnum	scrub birch red-osier dogwood willows Labrador tea common horsetail glow moss sphagnum	scrub birch red-osier dogwood willows Labrador tea common horsetail beaked sedge water sedge glow moss sphagnum	scrub birch red-osier dogwood willows Labrador tea common horsetail beaked sedge water sedge glow moss sphagnum
Plots	T1329	T885,T1025				
Comments	This unit is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5)					

SG Sxw - Soopolallie - Grouseberry Ecosystem Unit (01)

Map Unit	Description	BEC
SG	**Sxw - Soopolallie - Grouseberry Ecosystem Unit** Modified units: SGc,SGck,SGct,SGf,SGfk,SGg,SGgk,SGgw,SGh,SGk,SGkn,SGks,SGkv,SGn,SGr,SGs,SGsw,SGt,SGw	**MSdk /01**

SG typically occurs on sites with significant slopes and deep medium-textured soils. Commonly found on morainal or colluvial parent materials with mesic to subhygric soil moisture regimes. Mor humus forms are common.

The following modified units are similar to the typic situation but differ in at least one aspect:

SGc occurs on coarse textured soil.

SGck occurs on cool aspects with coarse textured soil

SGct occurs on a terrace (glaciofluvial) with coarse textured soil

SGf occurs on fine textured soils.

SGfk occurs on fine textured soil on a cool aspect.

SGg occurs in a gully.

SGgk occurs in a gully on a cool aspect.

SGgw occurs in a gully with a warm aspect.

SGh occurs on hummocky terrain.

SGk occurs on a cool aspect. Subhygric soil moisture regimes are common.

SGkn occurs on a fan with a cool aspect

SGks occurs on shallow soils with a cool aspect

SGkv occurs on very shallow soils with a cool aspect

SGn occurs on a fan.

SGr occurs on ridged terrain.

SGs occurs on shallow soils.

SGsw occurs on shallow soil on a warm aspect.

SGt occurs on a terrace.

SGw occurs on a warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 11 MSdk- SG 5

Sxw - Soopolallie - Grouseberry Ecosystem Unit (01), young forest structural stage Plot 98-00796

Map Symbol	SG2,SGc2,SGck2, SGct2,SGf2,SGg2, SGgk2,SGgw2, SGh2,SGk2,SGkn2, SGks2,SGkv2, SGn2,SGr2,SGs2, SGt2,SGw2	SG3,SGc3,SGck3, SGct3,SGf3,SGg3,S Ggk3,SGgw3, SGh3,SGk3,SGkn3, SGks3,SGkv3, SGn3,SGr3,SGs3, SGt3,SGw3	SG4,SGc4,SGck4, SGct4,SGf4,SGg4,S Ggk4,SGgw4, SGh4,SGk4,SGkn4, SGks4,SGkv4, SGn4,SGr4,SGs4, SGt4,SGw4	SG5,SGc5,SGck5, SGct5,SGf5,SGg5,S Ggk5,SGgw5, SGh5,SGk5,SGkn5, SGks5,SGkv5, SGn5,SGr5,SGs5, SGt5,SGw5	SG6,SGc6,SGck6, SGct6,SGf6,SGg6,S Ggk6,SGgw6, SGh6,SGk6,SGkn6, SGks6,SGkv6, SGn6,SGr6,SGs6, SGt6,SGw6	SG7,SGc7,SGck7, SGct7,SGf7,SGg7,S Ggk7,SGgw7, SGh7,SGk7,SGkn7, SGks7,SGkv7, SGn7,SGr7,SGs7, SGt7,SGw7
Plant Species	herb	shrub/herb†	pole sapling†	young forest	mature forest	old forest
Dominants	fireweed bunchberry	lodgepole pine Douglas-fir thimbleberry	closed canopy of: Douglas-fir lodgepole pine red-stemmed feathermoss	closed canopy of: Douglas-fir lodgepole pine red-stemmed feathermoss knight's plume	closed canopy of: Douglas-fir hybrid white spruce red-stemmed feathermoss	closed canopy of: Douglas-fir hybrid white spruce red-stemmed feathermoss
Associates	showy aster kinnikinnick pinegrass	hybrid white spruce subalpine fir Sitka alder common snowberry willow birch-leaved spirea soopolallie showy aster twinflower bunchberry *Brachythecium*	hybrid white spruce subalpine fir Sitka alder false azalea birch-leaved spirea soopolallie showy aster bunchberry twinflower	hybrid white spruce subalpine fir false azalea birch-leaved spirea soopolallie twinflower showy aster bunchberry step moss	subalpine fir lodgepole pine false azalea Utah honeysuckle black gooseberry bunchberry twinflower showy aster step moss	subalpine fir false azalea Utah honeysuckle black gooseberry bunchberry showy aster step moss

Map Symbol	SG2,SGc2,SGck2, SGct2,SGf2,SGg2, SGgk2,SGgw2, SGh2,SGk2,SGkn2, SGks2,SGkv2, SGn2,SGr2,SGs2, SGt2,SGw2	SG3,SGc3,SGck3, SGct3,SGf3,SGg3,S Ggk3,SGgw3, SGh3,SGk3,SGkn3, SGks3,SGkv3, SGn3,SGr3,SGs3, SGt3,SGw3	SG4,SGc4,SGck4, SGct4,SGf4,SGg4,S Ggk4,SGgw4, SGh4,SGk4,SGkn4, SGks4,SGkv4, SGn4,SGr4,SGs4, SGt4,SGw4	SG5,SGc5,SGck5, SGct5,SGf5,SGg5,S Ggk5,SGgw5, SGh5,SGk5,SGkn5, SGks5,SGkv5, SGn5,SGr5,SGs5, SGt5,SGw5	SG6,SGc6,SGck6, SGct6,SGf6,SGg6,S Ggk6,SGgw6, SGh6,SGk6,SGkn6, SGks6,SGkv6, SGn6,SGr6,SGs6, SGt6,SGw6	SG7,SGc7,SGck7, SGct7,SGf7,SGg7,S Ggk7,SGgw7, SGh7,SGk7,SGkn7, SGks7,SGkv7, SGn7,SGr7,SGs7, SGt7,SGw7
Plots		9800900,T1152, T1238,T154,T255, T1020,T972	T692,T1094,T78, T82,T1659	9800006,9800794,98 00796,9800799,9800 801,9800844,980086 6,9800878,9800991, T72,T84,T87,T204,T 245,T269,T370,T649 ,T657,T757,T799,T8 17,T818,T868,T869, T873,T894,T914,T93 0,T1034,T1038,T104 5,T1058,T1072,T120 7,T1210,T1244,T127 7,T1320,T1327,T134 2,T1523,T1693,T169 4,T1695	9800004,9800029,98 00802,9800884,T197 ,T784,T880,T892,T9 49,T1453,T1454,T15 31,T1532,T1093	T517,T1195
Comments	Western redcedar and false azalea are common components on cool aspects in TFL 14. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SH Sxw - Dogwood - Horsetail Ecosystem Unit (06)

Map Unit	Description	BEC
SH	**Sxw - Dogwood - Horsetail Ecosystem Unit** Modified units: SHa, SHac, SHf,SHfn,SHfs,SHg,SHp	**MSdk /06**

SH typically occurs on gentle lower slope receiving sites with deep, medium textured soils. Hygric moisture regimes,poor to rich nutrient regimes and moder and mor humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
SHa occurs on an active floodplain.
SHac occurs on an active floodplain with coarse textured soil.
SHf occurs on fine textured soil.
SHfn occurs on fine textured soil on a fluvial fan.
SHfs occurs on fine textured, shallow soil
SHg occurs in a gully.
SHp occurs on peaty surface horizons.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 12 MSdk- SHaf 6

Sxw - Dogwood - Horsetail active floodplain fine textured soil Ecosystem Unit (06), mature forest structural stage
Plot 98-00876

Map Symbol	SH2,SHa2,SHac2, SHf2,SHfn2,SHfs2,SHg2,SHp2	SH3,SHa3,SHac3, SHf3,SHfn3,SHfs3,SHg3,SHp3	SH4,SHa4,SHac4, SHf4,SHfn4,SHfs4,SHg4,SHp4	SH5,SHa5,SHac5, SHf5,SHfn5,SHfs5,SHg5,SHp5	SH6,SHa6,SHac6, SHf6,SHfn6,SHfs6,SHg6,SHp6	SH7,SHa7,SHac7, SHf7,SHfn7,SHfs7,SHg7,SHp7
Plant Species	herb†	shrub/herb†	pole sapling†	young forest	mature forest	old forest
Dominants	bluejoint Lindley's aster grasses*	dense cover of: hybrid white spruce mountain alder willows	dense cover of: hybrid white spruce	dense canopy of: hybrid white spruce lodgepole pine red-stemmed feathermoss	closed canopy of: hybrid white spruce	closed canopy of: hybrid white spruce subalpine fir red-stemmed feathermoss
Associates	fireweed common horsetail glow moss sedges	scrub birch red-osier dogwood highbush cranberry black twinberry water sedge bluejoint common horsetail bunchberry fowl mannagrass red-stemmed feathermoss	subalpine fir willows red-osier dogwood highbush cranberry mountain alder bluejoint common horsetail bunchberry red-stemmed feathermoss	subalpine fir false azalea highbush cranberry mountain alder red-osier dogwood bunchberry common horsetail meadow horsetail	subalpine fir false azalea red-osier dogwood mountain alder bunchberry common horsetail meadow horsetail trailing raspberry red-stemmed feathermoss step moss *Brachythecium*	subalpine fir red-osier dogwood false azalea mountain alder bunchberry common horsetail trailing raspberry
Plots	T1227	9800887,T623		T752,T821,T221, T1655,T656	9800876,T884, T899,T1234, T1452	9800870
Comments	*Grass species vary with amount and type of disturbance. Western redcedar may be present in areas with less insolation. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) †Vegetation data collected in sites disturbed by forest harvesting.					

SM - Beaked sedge - Water sedge Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
SM	**Beaked sedge - Water sedge Marsh Ecosystem Unit** Modified units: SMp	**MSdk /00**
SM is a wetland unit that typically occurs in shallow, seasonally fluctuating marshes on mineral deposits. The following modified units are similar to the typic situation but differ in at least one aspect: SMp occurs with organic surface deposits.		

Map Symbol	SM2,SMp2
Plant Species	shrub/herb
Dominants	beaked sedge water sedge
Associates	woolly sedge bluejoint marsh cinquefoil glow moss
Plots	T829
Comments	Often is surrounded by a narrow ring of BU and/orSB. This unit is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

SS Sxw - Soopolallie - Snowberry Ecosystem Unit (05)

Map Unit	Description	BEC
SS	**Sxw - Soopolallie - Snowberry Ecosystem unit** Modified units: SSa,SSaf,SScn,SSf,SSfg,SSg,SSgk,SSgw,SSk,SSkn,SSn,SSt	**MSdk /05**

SS typically occurs on gentle, lower slope receiving sites with medium textured soils. This unit is found on all parent materials in toe slope position with subhygric soil moisture regime. Mor (moder) humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
SSa occurs on active floodplains
SSaf occurs on active floodplains with fine textured soils.
SScn occurs on a fan with coarse-textured soil.
SSf occurs on fine textured soil.
SSfg occurs in a gully with fine textured soil.
SSg occurs in a gully.
SSgk occurs in a gully with a cool aspect.
SSgw occurs on in a gully with a warm aspect.
SSk occurs on a cool aspect.
SSkn occurs on a cone with a cool aspect.
SSn occurs on a fan
SSt occurs on a terrace.

Map Symbol	SS2,SSa2,SSaf2, SScn2,SSf2,SSfg2, SSg2,SSgk2, SSgw2,SSk2,SSkn2 ,SSn2,SSt2	SS3,SSa3,SSaf3, SScn3,SSf3,SSfg3, SSg3,SSgk3, SSgw3,SSk3,SSkn3 ,SSn3,SSt3	SS4,SSa4,SSaf4, SScn4,SSf4,SSfg4, SSg4,SSgk4, SSgw4,SSk4,SSkn4 ,SSn4,SSt4	SS5,SSa5,SSaf5, SScn5,SSf5,SSfg5, SSg5,SSgk5, SSgw5,SSk5,SSkn5 ,SSn5,SSt5	SS6,SSa6,SSaf6, SScn6,SSf6,SSfg6, SSg6,SSgk6, SSgw6,SSk6,SSkn6 ,SSn6,SSt6	SS7,SSa7,SSaf7, SScn7,SSf7,SSfg7, SSg7,SSgk7, SSgw7,SSk7,SSkn7 ,SSn7,SSt7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	shrubby sites of: hybrid white spruce mountain alder	closed cover of: hybrid white spruce subalpine fir lodgepole pine	closed forests of: hybrid white spruce subalpine fir lodgepole pine red-stemmed feathermoss	closed forests of: hybrid white spruce subalpine fir red-stemmed feathermoss knight's plume	closed forests of: hybrid white spruce subalpine fir red-stemmed feathermoss knight's plume
Associates	bluejoint grasses* common horsetail bunchberry blue wildrye	lodgepole pine subalpine fir willows black twinberry common horsetail bunchberry blue wildrye bluejoint	Douglas-fir mountain alder false azalea black twinberry bunchberry red-stemmed feathermoss red-stemmed feathermoss	Douglas-fir mountain alder false azalea black twinberry thimbleberry bunchberry knight's plume	lodgepole pine Douglas-fir mountain alder false azalea black twinberry wild sarsaparilla bunchberry twinflower common horsetail stepmoss	Douglas-fir mountain alder black twinberry false azalea bunchberry wild sarsaparilla twinflower common horsetail stepmoss
Plots		T1048,T758,T1027,T636		9800877,9800889,T874,T878,T903, T1024,T1279	9800792,9800886. 9800992,T258,T812, T883,T902,T915,T931,T1029,T1043,T1145,T1227	
Comments	Western redcedar may be present . *Agronomic species will persist into later structural stages with increased grazing pressure Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

WS - Willow - Sedge Ecosystem Unit (00)

Map Unit	Description	BEC
WS	**Willow - Sedge Ecosystem Unit** Modified units:	**MSdk /00**
WS is a wetland that typically occurs on mineral soil and subhydric moisture regime.		

Map Symbol	WS2	WS3
Plant Species	herb	shrub/herb
Dominants	beaked sedge bluejoint	willow beaked sedge bluejoint
Associates	common horsetail great northern aster	Labrador tea mountain alder black twinberry common horsetail great northern aster
Plots		T1208,T1664
Comments	This unit is similar to SB but is found on mineral soil. It is rare in this subzone and easily threatened by cattle grazing. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5)	

8.5 ESSFdk - Ecosystem Unit Descriptions

AC - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
ACjy	**- Avalanche chute Ecosystem Unit (00)** Modified units: ACjy	**ESSFdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACjy is similar to the typic situation but in the gentler runout zone at the chute toe with a. wetter mesic to subhygric moisture regime. It is often in a mosaic with FA or FM ecosystem units.		

Map Symbol	ACjy2,	ACjy3,ACjy3a,ACjy3b
Plant Species	herb	shrub/herb
Dominants	dense herb cover of: fireweed pumpelly brome	dense shrub cover of: Sitka alder willows
Associates	wild strawberry western meadowrue bluejoint blue wildrye arrow-leaved groundsel cow-parsnip stinging nettle	subalpine fir mountain alder high-bush cranberry black gooseberry cow-parsnip Columbia brome bluejoint western meadowrue stinging nettle
Plots		T1479
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data, and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACk - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
ACk	**Avalanche chute Ecosystem Unit (00)** Modified units: ACk	**ESSFdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACk is similar to the typic situation but with a significant cool aspect.		

Map Symbol	ACk2	ACk3,ACk3a,ACk3b
Plant Species	herb	shrub/herb
Dominants	dense herb cover of: blue wild rye	dense shrub cover of: Sitka alder willows
Associates	fireweed western meadowrue sedges bluejoint arrow-leaved groundsel	subalpine fir Engelmann spruceblack gooseberry black twinberry bluejoint arrow-leaved groundsel western meadowrue
Plots		T921,T923,T927,T1231
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data, and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACw - Avalanche chute Ecosystem Unit (00)

Map Unit	Description	BEC
ACw	**- Avalanche chute Ecosystem Unit (00)** Modified units: ACw	**ESSFdk /00**
AC typically occurs on significant slopes with coarse textured soils and is regularly disturbed by sliding snow. It is located in moist draws with concave surface shape on colluvial parent material; often in a mosaic with non-vegetated talus (TA) ecosystem unit. Mor (moder) humus forms and subxeric to mesic moisture regime are common. ACw is similar to the typic situation but with a significant warm aspect and subxeric to mesic soil moisture.		

Map Symbol	ACw2	ACw3,ACw3a,ACw3b
Plant Species	herb	shrub/herb
Dominants	open cover of: grasses	open shrub cover of: Sitka alder willows
Associates	fireweed wild strawberry nodding onion arctic bluegrass bluejoint slender wheatgrass sedges	subalpine fir black gooseberry thimbleberry fireweed grasses western meadowrue stinging nettle
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

FA Bl - Azalea - Foamflower Ecosystem Unit (01)

Map Unit	Description	BEC
FA	**Bl - Azalea - Foamflower Ecosystem Unit** Modified units: FAaf,FAc,FAcn,FAf,FAg,FAgs,FAn,FAs,FAsw,FAt,FAw	**ESSFdk /01**

FA typically occurs on gently sloping sites with deep medium-textured soils. These sites generally have mesic soil moisture regimes. This unit occurs frequently on morainal parent materials. Mor and moder humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
FAaf occurs on an active floodplain with fine textured soil.
FAc occurs on coarse textured soil
FAcn occurs on a fan (fluvial) with coarse textured soil
FAf occurs on fine textured soil.
FAg occurs in a gully.
FAgs occurs in a gully with shallow soil.
FAn occurs on a fan(colluvial or fluvial)
FAs occurs on shallow soil.
FAsw occurs on a moderately sloped, warm aspect with shallow soil.
FAt occurs on a terrace.
FAw occurs on a moderately sloped, warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 13: ESSFdk- FAt 6

Bl - Azalea - Foamflower, terrace ecosystem unit (01), mature forest structural stage Plot 98-00024

Map Symbol	FA2,FAc2,FAcn2, FAf2,FAg2,FAgs2, FAn2,FAs2,FAsw2, FAt2,FAw2	FA3,FAc3,FAcn3, FAf3,FAg3,FAgs3, FAn3,FAs3,FAsw3, FAt3,FAw3	FA4,FAc4,FAcn4, FAf4,FAg4,FAgs4, FAn4,FAs4,FAsw4, FAt4,FAw4	FA5,FAc5,FAcn5, FAf5,FAg5,FAgs5, FAn5,FAs5,FAsw5, FAt5,FAw5	FA6,FAc6,FAcn6, FAf6,FAg6,FAgs6, FAn6,FAs6,FAsw6, FAt6,FAw6	FA7,FAc7,FAcn7, FAf7,FAg7,FAgs7, FAn7,FAs7,FAsw7, FAt7,FAw7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed sedge	open shrubby sites of: subalpine fir lodgepole pine false azalea	dense stands of: subalpine fir lodgepole pine red-stemmed feathermoss	closed stands of: lodgepole pine subalpine fir red-stemmed feathermoss	closed stands of: Engelmann spruce subalpine fir red-stemmed feathermoss	closed stands of: Engelmann spruce subalpine fir red-stemmed feathermoss
Associates	bluejoint grouseberry trailing raspberry	Engelmann spruce Sitka alder black gooseberry black huckleberry grouseberry bluejoint red-stemmed feathermoss	Engelmann spruce false azalea black gooseberry black huckleberry grouseberry low bilberry bunchberry	Engelmann spruce false azalea black gooseberry black huckleberry Utah honeysuckle bunchberry	lodgepole pine false azalea black gooseberry black huckleberry Utah honeysuckle bunchberry broom moss *Barbilophozia*	false azalea black gooseberry grouseberry bunchberry step moss *Dicranium*
Plots	T530	T102,T17,T300, T535,T550,T553		T581,T969,T551, T566	9800022,9800024, T587,T531,T536, T544	T1480
Comments	Because there is more moisture available on cool aspect units than warm aspect units, regeneration is denser and faster. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

FG Bl - False azalea - Grouseberry Ecosystem unit (03)

Map Unit	Description	BEC
FG	**Bl - False azalea - Grouseberry Ecosystem unit** Modified units: FGac,FGc,FGcw,FGhs,FGk,FGkn,FGks,FGkv,FGn,FGnw,FGs,FGsw,FGt,FGv,FGvw,FGw	**ESSFdk /03**

FG typically occurs on gentle slopes with deep medium-textured soils. Morainal and colluvial parent materials of non-calcareous origin produce submesotrophic to mesotrophic nutrient regimes on these sites. Subxeric to mesic soils moisture regimes and mor humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
FGac occurs on an active floodplain with coarse soil.
FGc occurs on coarse textured soils
FGcw occurs on a moderately to steeply sloped, warm aspect with coarse textured soils
FGhs occurs on hummocky terrain with shallow soil.
FGk occurs on a moderately to steeply sloped, cool aspect.
FGkn occurs on a cone with a cool aspect.
FGks occurs on a moderately to steeply sloped, cool aspect with shallow soils.
FGkv. occurs on a moderately to steeply sloped, cool aspect with very shallow soils.
FGn occurs on a fan or cone.
FGnw occurs on a cone with a warm aspect.
FGs occurs on shallow soils.
FGsw. occurs on a moderately to steeply sloped, warm aspect with shallow soils.
FGt occurs on a terrace.
FGv occurs on very shallow soils.
FGvw occurs on a moderately to steeply sloped, warm aspect with very shallow soils.
FGw occurs on a moderately to steeply sloped, warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 14: ESSFdk- FGsw 5

Bl - False azalea - Grouseberry shallow soil, warm aspect Ecosystem unit (03), young forest structural stage
Plot 98-00002

Map Symbol	FG2,FGac2,FGc2, FGcw2,FGhs2,FGk2 ,FGkn2,FGks2,FGkv 2,FGn2,FGnw2, FGs2,FGsw2,FGt2, FGv2,FGvw2,FGw2	FG3,FGac3,FGc3, FGcw3,FGhs3,FGk3 ,FGkn3,FGks3,FGkv 3,FGn3,FGnw3, FGs3,FGsw3,FGt3, FGv3,FGvw3,FGw3	FG4,FGac4,FGc4, FGcw4,FGhs4,FGk4 ,FGkn4,FGks4,FGkv 4,FGn4,FGnw4, FGs4,FGsw4,FGt4, FGv4,FGvw4,FGw4	FG5,FGac5,FGc5, FGcw5,FGhs5,FGk5 ,FGkn5,FGks5,FGkv 5,FGn5,FGnw5, FGs5,FGsw5,FGt5, FGv5,FGvw5,FGw5	FG6,FGac6,FGc6, FGcw6,FGhs6,FGk6 ,FGkn6,FGks6,FGkv 6,FGn6,FGnw6, FGs6,FGsw6,FGt6, FGv6,FGvw6,FGw6	FG7,FGac7,FGc7, FGcw7,FGhs7,FGk7 ,FGkn7,FGks7,FGkv 7,FGn7,FGnw7, FGs7,FGsw7,FGt7, FGv7,FGvw7,FGw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	lodgepole pine false azalea	dense forests of: lodgepole pine false azalea red-stemmed feathermoss	closed canopy of: lodgepole pine Engelmann spruce subalpine fir false azalea red-stemmed feathermoss	closed canopy of: Engelmann spruce subalpine fir lodgepole pine red-stemmed feathermoss	closed canopy of: Engelmann spruce subalpine fir red-stemmed feathermoss
Associates	Columbia brome pinegrass black huckleberry heart-leaved arnica grouseberry low bilberry	subalpine fir Engelmann spruce Sitka alder black huckleberry grouseberry fireweed bunchberry red-stemmed feathermoss	Engelmann spruce subalpine fir white-flowered rhododendron black huckleberry grouseberry low bilberry bunchberry	white-flowered rhododendron black huckleberry grouseberry one-sided wintergreen *Barbilophozia*	false azalea white-flowered rhododendron black huckleberry grouseberry low bilberry bunchberry *Barbilophozia*	false azalea white-flowered rhododendron black huckleberry grouseberry bunchberry knight's plume *Barbilophozia*
Plots		T27,T607,T765, T238,T528,T633	T40	9800002,9800030,T306,T397,T537, T597,T1485,T1568	9800990,T358, T423,T305,T622	9800025,9800028,T1483
Comments	Whitebark pine may be present at upper elevations. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

FH Azalea - Horsetail Ecosystem Unit (06)

Map Unit	Description	BEC
FH	**Azalea - Horsetail Ecosystem Unit** Modified units: FHa,FHac,FHf,FHp,FHw	**ESSFdk /06**

FH typically occurs on gently sloping to level sites in receiving positions on colluvial or morainal blankets or veneers. Subhygric to hygric soil moisture. Mor (moder) humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
FHa occurs on active floodplains subject to annual flooding.
FHac occurs on coarse-textured, active floodplains subject to regular seasonal flooding.
FHf occurs on fine textured soil.
FHp occurs on peaty surface materials.
FHw. occurs on a warm aspect.

Map Symbol	FH2,FHa2,FHac2, FHf2,FHp2,FHw2	FH3,FHa3,FHac3, FHf3,FHp3,FHw3	FH4,FHa4,FHac4, FHf4,FHp4,FHw4	FH5,FHa5,FHac5, FHf5,FHp5,FHw5	FH6,FHa6,FHac6, FHf6,FHp6,FHw6	FH7,FHa7,FHac7, FHf7,FHp7,FHw7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	bluejoint	shrubby stands of: subalpine fir mountain alder	dense stands of: subalpine fir Engelmann spruce false azalea red-stemmed feathermoss	dense stands of: subalpine fir Engelmann spruce false azalea red-stemmed feathermoss	closed stands of: subalpine fir Engelmann spruce false azalea red-stemmed feathermoss	closed stands of: subalpine fir Engelmann spruce false azalea red-stemmed feathermoss
Associates	fireweed arrow-leaved groundsel mountain arnica common horsetail	black cottonwood Engelmann spruce black gooseberry black twinberry false azalea arrow-leaved groundsel bluejoint common horsetail bunchberry red-stemmed feathermoss	black cottonwood lodgepole pine mountain alder black twinberry black gooseberry bluejoint mountain arnica common horsetail bunchberry	black cottonwood lodgepole pine mountain alder black gooseberry black twinberry bluejoint common horsetail bunchberry	lodgepole pine black gooseberry black twinberry common horsetail bunchberry step moss *Barbilophozia*	black twinberry black gooseberry common horsetail bunchberry step moss *Barbilophozia*
Plots		T563,T152,T266			T430,T76	

Comments	Plant communities often occur as a mosaic of structural stages based on frequency and duration of flooding within the riparian plant communities. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.

FM Bl - Azalea - Step moss Ecosystem Unit (05)

Map Unit	Description	BEC
FM	**Bl - Azalea - Step Moss Ecosystem Unit** Modified units: FMa,FMac,FMf,FMg,FMn,FMp	**ESSFdk /05**

FM typically occurs on gently sloping to level sites in receiving positions on medium-textured soils. Mor and moder humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
FMa occurs on floodplains subject to periodic flooding. These sites have subhygric soil moisture regimes. Regosolic soils are common as a result of complex flooding histories.
FMac occurs on an active floodplain with coarse textured soil.
FMf occurs on fine textured soil.
FMg occurs in a gully.
FMn occurs on a fluvial fan.
FMp occurs on peaty surface materials.

Map Symbol	FM2,FMa2,FMac2,FMf2,FMg2,FMn2, FMp2	FM3,FMa3,FMac3,FMf3, FMg3, FMn3,FMp3	FM4,FMa4,FMac4,FMf4, FMg4, FMn4,FMp4	FM5,FMa5,FMac5,FMf5, FMg5, FMn5,FMp5	FM6,FMa6,FMac6,FMf6, FMg6, FMn6,FMp6	FM7,FMa7,FMac7,FMf7 FMg7, FMn7,FMp7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed bluejoint	shrubby site of: Engelmann spruce subalpine fir Sitka alder fireweed	dense forest of: Engelmann spruce subalpine fir red-stemmed feathermoss	closed forest of: Engelmann spruce subalpine fir red-stemmed feathermoss	closed forest of: Engelmann spruce subalpine fir red-stemmed feathermoss	closed forest of: Engelmann spruce subalpine fir red-stemmed feathermoss
Associates	false azalea grouseberry	lodgepole pine willow false azalea black twinberry black gooseberry bluejoint red-stemmed feathermoss	lodgepole pine willow false azalea black twinberry black gooseberry Sitka alder twinflower grouseberry step moss	lodgepole pine willow false azalea black twinberry black gooseberry Sitka alder twinflower grouseberry step moss broom moss	lodgepole pine false azalea black twinberry black gooseberry Sitka alder twinflower Sitka valerian grouseberry step moss *Barbilophozia*	false azalea black twinberry black gooseberry twinflower grouseberry five-leaved bramble bunchberry step moss *Barbilophozia*
Plots		T35		T1484	T515,T532,T590, T298,T760	T41
Comments	Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires †Vegetation data collected in sites disturbed by forest harvesting..					

FS - Bl - Azalea - Soopolallie Ecosystem Unit (04)

Map Unit	Description	BEC
FS	**Bl - Azalea - Soopolallie Ecosystem Unit (04)** Modified units: FSc,FSch,FSck,FSct,FScw,FSg,FSgs,FSh,FShs,FSk,FSks,FSkv,FSn,FSnw,FSr, FSs, FSsw FSt,FSv,FSvw,FSw	**ESSFdk /04**

FS typically occurs on gentle slopes with deep,medium-textured, soils. Morainal and colluvial parent materials of non-calcareous origin produce rich to very rich nutrient regimes on these sites. Subxeric to mesic soils moisture regimes and mor humus forms are common.
The following modified units are similar to the typic situation but differ in at least one aspect:
FSc occurs on coarse textured soils
FSch occurs on hummocky terrain with coarse textured soil.
FSck occurs on a significant cool aspect with coarse textured soil.
FSct occurs on a terrace with coarse-textured soil.
FScw occurs on a significant warm aspect with coarse textured soil.
FSg occurs in a gully.
FSgs occurs in a gully with shallow soil.
FSh occurs on hummocky terrain.
FShs occurs on hummocky terrain with shallow soil.
FSk occurs on significant cool aspects.
FSks occurs on a significant cool aspect with shallow soil.
FSkv occurs on a significant cool aspect with very shallow soil.
FSn occurs on colluvial (or fluvial) fans
FSnw occurs on colluvial (or fluvial) fans with a significant warm aspect.
FSr occurs on a ridge.
FSs occurs on shallow soils.
FSsw occurs on significant, warm aspect sites with shallow soils.
FSt occurs on a terrace.
FSv occurs on very shallow soil.
FSvw occurs on significant, warm aspect sites with very shallow soil.
FSw occurs on a significant warm aspect

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 15: ESSFdk- FSsw 5

Bl - Azalea - Soopolallie shallow soil, warm aspect Ecosystem Unit (04), young forest structural stage Plot 98-00021

Map Symbol	FS2,FSc2,FSch2, FSck2,FSct2,FScw 2,FSg2,FSgs2,FSh2 ,FShs2,FSk2,FSks2 ,FSkv2,FSn2,FSnw2 ,FSr2,FSt2,FSs2, FSsw2,FSv2,FSvw2, FSw2	FS3,FSc3,FSch3, FSck3,FSct3,FScw 3,FSg3,FSgs3,FSh3 ,FShs3,FSk3,FSks3 ,FSkv3,FSn3,FSnw3 ,FSr3,FSt3,FSs3, FSsw3,FSv3,FSvw3, FSw3	FS4,FSc4,FSch4, FSck4,FSct4,FScw 4,FSg4,FSgs4,FSh4 ,FShs4,FSk4,FSks4 ,FSkv4,FSn4,FSnw4 ,FSr4,FSt4,FSs4, FSsw4,FSv4,FSvw4, FSw4	FS5,FSc5,FSch5, FSck5,FSct5,FScw 5,FSg5,FSgs5,FSh5 ,FShs5,FSk5,FSks5 ,FSkv5,FSn5,FSnw5 ,FSr5,FSt5,FSs5, FSsw5,FSv5,FSvw5, FSw5	FS6,FSc6,FSch6, FSck6,FSct6,FScw 6,FSg6,FSgs6,FSh6 ,FShs6,FSk6,FSks6 ,FSkv6,FSn6,FSnw6 ,FSr6,FSt6,FSs6, FSsw6,FSv6,FSvw6, FSw6	FS7,FSc7,FSch7, FSck7,FSct7,FScw 7,FSg7,FSgs7,FSh7 ,FShs7,FSk7,FSks7 ,FSkv7,FSn7,FSnw7 ,FSr7,FSt7,FSs7, FSsw7,FSv7,FSvw7, FSw7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	lodgepole pine false azalea	lodgepole pine subalpine fir red-stemmed feathermoss	lodgepole pine Engelmann spruce subalpine fir red-stemmed feathermoss	Engelmann spruce subalpine fir lodgepole pine red-stemmed feathermoss	Engelmann spruce subalpine fir red-stemmed feathermoss
Associates	pearly everlasting bunchberry twinflower grouseberry	Engelmann spruce subalpine fir black huckleberry Sitka alder soopolallie bunchberry twinflower fireweed grouseberry red-stemmed feathermoss	Engelmann spruce false azalea soopolallie Sitka alder thimbleberry grouseberry	false azalea Sitka alder soopolallie heart-leaved arnica grouseberry twinflower broom moss *Barbilophozia*	false azalea Sitka alder grouseberry twinflower one-sided wintergreen broom moss *Barbilophozia*	false azalea twinflower grouseberry one-sided wintergreen broom moss *Barbilophozia*
Plots		9800023,T149,T18,T 105,T262,T549, T632,T609,T1232	9800842,T352,T77,T 354,T74,T43	9800017,9800021,98 00788,T75,T98, T100,T148,T292, T527,T558,T561, T678,T762,T766, T922,T966	9800016,9800018, T400,T547,T616, T768,T783	T29
Comments	Shallow soil sites,especially on a warm aspect have more open canopies. Whitebark pine may occur at upper elevations. Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

WS - Willow - Sedge Ecosystem Unit (07)

Map Unit	Description	BEC
WS	**Willow - Sedge Ecosystem Unit (07)** Modified units: WSa,WSp	**ESSFdk /07**
WS occurs on mineral wetlands with deep, medium textured soil and a subhydric moisture regime. The following modified units are similar to the typic situation but differ in at least one aspect: WSp is similar but occurs on organic materials.		

Map Symbol	WS2, WSa 2,WSp2	WS3, WSa3, WSp3
Plant Species	herb	shrub/herb
Dominants	water sedge beaked sedge bluejoint glow moss sphagnum	willows sedges glow moss sphagnum
Associates	willows arrow-leaved groundsel common horsetail	scrub birch bluejoint arrow-leaved groundsel common horsetail Engelmann Spruce
Plots	T433,T363	T42,T264,T268
Comments	Vegetation derived from plot data, adjacent TEM projects and the Nelson Field Guide (Braumandl and Curran 1992) (see section 3.5)	

8.6 ESSFdku - Ecosystem Unit Descriptions

CH- Cow-parsnip - Indian hellebore Ecosystem Unit (00)

Map Unit	Description	BEC
CH	**Cow-parsnip - Indian hellebore Ecosystem Unit** Modified units:	**ESSFdku /00**
CH typically occurs on gentle slopes with colluvial parent materials and a mesic to subhygric moisture regime. It is regularly disturbed by an accumulation of avalanche snow and debris.		

Map Symbol	CH2
Plant Species	herb
Dominants	cow-parsnip arrow-leaved groundsel
Associates	Indian hellebore western pasqueflower Sitka valerian
Plots	
Comments	The floristics of avalanche track run-out zones can vary with the severity and pattern of disturbance, soil moisture, and location. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)

FA - Subalpine fir - Sitka alder Ecosystem Unit (00)

Map Unit	Description	BEC
FA	**Subalpine fir - Sitka alder Ecosystem Unit** Modified units:	**ESSFdku /00**
FA is an avalanche run-out zone unit and occurs on gentle slopes with colluvial parent materials and coarse textured soils. It has a mesic to subhygric moisture regime and is regularly disturbed by an accumulation of avalanche snow and debris.		

Map Symbol	FA2	FA3,FA3a,FA3b
Plant Species	herb	shrub/herb
Dominants	pink mountain-heather	dense shrub cover of: subalpine fir Engelmann spruce
Associates	fireweed grouseberry	whitebark pine Sitka alder grouseberry fireweed pink mountain-heather
Plots		
Comments	The floristics of avalanche track run-out zones can vary with the severity and pattern of disturbance, soil moisture, and location. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

FG - Bl - Grouseberry Ecosystem Unit (00)

Map Unit	Description	BEC
FG	**Bl - Grouseberry Ecosystem Unit** Modified units: FGcw,FGh,FGk,FGkn,FGks,FGkv, FGr,FGs, FGsw,FGv,FGvw, FGw	**ESSFdku /00**

FG typically occurs on gentle to moderate convex slopes on morainal or colluvial parent materials. It has deep, medium- textured soils and a submesic soil moisture regime. Mor humus forms are common.

The following modified units are similar to the typic situation but differ in at least one aspect:

FGcw occurs on significant warm aspects with coarse textured soils

FGh occurs on hummocky terrain.

FGk occurs on significant cool aspects.

FGkn occurs on a cone with a cool aspect.

FGks occurs on significant cool aspects with shallow soils.

FGkv occurs on significant cool aspects with very shallow soils.

FGr occurs on a ridge.

FGs occurs on shallow soils.

FGsw occurs on significant warm aspects with shallow soils.

FGv occurs on very shallow soil.

FGvw occurs on significant warm aspects with very shallow soils.

FGw occurs on significant warm aspects.

Map Symbol	FG2,FGcw2,FGh2,FGk2,FGkn2,FGks2, FGkv2,FGs2, FGsw2,FGv2, FGvw2, FGw2	FG3,FGcw3,FGh3,FGk3,FGkn3,FGks3, FGkv3,FGs3, FGsw3,FGv3, FGvw3, FGw3	FG4,FGcw4,FGh4,FGk4,FGkn4,FGks4, FGkv4,FGs4, FGsw4,FGv4, FGvw4, FGw4	FG5,FGcw5,FGh5,FGk5,FGkn5,FGks5, FGkv5,FGs5, FGsw5,FGv5, FGvw5, FGw5	FG6,FGcw6,FGh6,FGk6,FGkn6,FGks6, FGkv6,FGs6, FGsw6,FGv6, FGvw6, FGw6	FG7,FGcw7,FGh7,FGk7,FGkn7,FGks7, FGkv7,FGs7, FGsw7,FGv7, FGvw7, FGw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	grouseberry fireweed	subalpine fir grouseberry	subalpine fir grouseberry white mountain-heather	subalpine fir grouseberry white mountain-heather	subalpine fir grouseberry white mountain-heather	subalpine fir Engelmann spruce grouseberry
Associates	white-flowered rhododendron white mountain-heather wild strawberry arnicas	whitebark pine Engelmann spruce subalpine larch[1] white-flowered rhododendron black huckleberry white mountain-heather arnicas	Engelmann spruce whitebark pine subalpine larch[1] white-flowered rhododendron black huckleberry arnicas *Dicranum* moss *Barbilophozia*	Engelmann spruce whitebark pine subalpine larch[1] white-flowered rhododendron black huckleberry arnicas *Dicranum* moss *Barbilophozia*	Engelmann spruce whitebark pine subalpine larch[1] white-flowered rhododendron black huckleberry arnicas *Dicranum* moss *Barbilophozia*	subalpine larch[1] whitebark pine black huckleberry white-flowered rhododendron white mountain-heather arnicas *Dicranum* moss *Barbilophozia*
Plots		T511			T510,T460,T420	9800843, T422
Comments	Stands may be very open or remain at low structural stages, and yet reach old forest age, due to frost pocketing and severe climate. Shallow soil units have more open canopies and more whitebark pine. Cool aspect units have denser canopies and less whitebark pine [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

FH - Bl -Horsetail Ecosystem Unit (00)

Map Unit	Description	BEC
FH	**Bl -Horsetail Ecosystem Unit (00)** Modified units: FHa, FHaf	**ESSFdku /00**
FH occurs on gently sloping to level sites in receiving positions on fluvial,colluvial or morainal parent materials. It has deep, medium textured soils; subhygric to hygric soil moisture and mor humus forms are common. The following modified units are similar to the typic situation but differ in at least one aspect: FHa occurs on an active floodplain. FHaf occurs on an active floodplain with fine soil.		

Map Symbol	FH2, FHa2, FHaf2,	FH3, FHa3, FHaf3,	FH4, FHa4, FHaf4,	FH5, FHa5, FHaf5,	FH6, FHa6, FHaf6,	FH7, FHa7, FHaf7,
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants		subalpine fir	open canopy of: subalpine fir Engelmann spruce	open canopy of: subalpine fir Engelmann spruce	open canopy of: subalpine fir Engelmann spruce	open canopy of: subalpine fir Engelmann spruce
Associates	common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel	Engelmann spruce willows common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel	willows common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel	willows common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel	willows common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel	willows common horsetail globeflower fringed grass-of-parnassus arrow-leaved groundsel
Plots		T421				
Comments	Stands may be very open or remain in herb or shrub structural stages, and yet reach old forest age, as a consequence of frost pocketing and severe climate. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

FS - Subalpine fir - Engelmann spruce Ecosystem Unit (00)

Map Unit	Description	BEC
FS	**Subalpine fir - Engelmann spruce Ecosystem Unit** Modified units: FSk,FSw	**ESSFdku /00**
FS is a avalanche chute unit and typically occurs in moist draws with concave surface shape and significant slopes. It has a subxeric to mesic moisture regime and is regularly disturbed by avalanches. It is characterized by coarse textured soils on colluvial parent material, often in a mosaic with non-vegetated talus (TA) ecosystem unit The following modified units are similar to the typic situation but differ in at least one aspect: FSk occurs on a cool aspect . FSw occurs on a warm aspect .		

Map Symbol	FS2, FSk2,FSw2	FS3,FS3a,FS3b ,FSk3,FSk3a,FSk3b,FSw3, FSw3a, FSw3b
Plant Species	herb	shrub/herb
Dominants	pink mountain-heather	dense shrub cover of: subalpine fir pink mountain-heather
Associates	fireweed grouseberry	whitebark pine Engelmann spruce Sitka alder grouseberry fireweed
Plots		
Comments	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

HG - Bl - Pink mountain-heather - Grouseberry Ecosystem Unit (00)

Map Unit	Description	BEC
HG	**Bl - Pink mountain-heather - Grouseberry Ecosystem Unit** Modified units: HGa,HGaf,HGn,HGs	**ESSFdku /00**
HG typically occurs on gentle concave slopes with morainal and colluvial parent materials. It has deep, medium textured soils. Subhygric moisture regimes and mor humus forms are common The following modified units are similar to the typic situation but differ in at least one aspect: HGa occurs on an active floodplain. HGaf occurs on an active floodplain with fine textured soil. HGn occurs on a fan. HGs occurs on shallow soil.		

Map Symbol	HG2,HGa2,HGaf2,HGn2,HGs2	HG3,HGa3,HGaf3,HGn3,HGs3	HG4,HGa4,HGaf4,HGn4,HGs4	HG5,HGa5,HGaf5,HGn5,HGs5	HG6,HGa6,HGaf6,HGn6,HGs6	HG7,HGa7,HGaf7,HGn7,HGs2
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	pink mountain-heather grouseberry	subalpine fir grouseberry subalpine larch[1]	subalpine fir subalpine larch[1] white mountain-heather	subalpine fir subalpine larch[1] white mountain-heather	subalpine fir subalpine larch[1] white mountain-heather	subalpine fir subalpine larch[1] white mountain-heather
Associates	white mountain-heather woolly pussytoes mountain arnica wild strawberry small-flowered woodrush arrow-leaved groundsel	subalpine larch[1] pink mountain-heather white mountain-heather woolly pussytoes mountain arnica wild strawberry small-flowered woodrush globeflower arrow-leaved groundsel	Engelmann spruce mountain arnica grouseberry pink mountain-heather Sitka valerian globeflower paintbrush small-flowered woodrush	Engelmann spruce mountain arnica grouseberry pink mountain-heather Sitka valerian globeflower paintbrush small-flowered woodrush	Engelmann spruce mountain arnica grouseberry pink mountain-heather Sitka valerian globeflower paintbrush small-flowered woodrush	Engelmann spruce mountain arnica grouseberry pink mountain-heather Sitka valerian globeflower paintbrush small-flowered woodrush
Plots		T382,T464			T461	
Comments	Stands may be very open or remain at herb or shrub structural stages, and yet reach old forest age, as a consequence of frost pocketing and severe climate. Warm aspect and shallow soil units have very open canopies. [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

LG - Subalpine larch - Grouseberry Ecosystem Unit (00)

Map Unit	Description	BEC
LG	**Subalpine larch - Grouseberry Ecosystem Unit** Modified units: LGk, LGks,LGs, LGt,LGv,LGw	**ESSFdku /00**

LG typically occurs on gentle slopes with morainal and colluvial parent materials.It is characterized by deep, medium textured soil. Mesic soil moisture regimes and mor humus forms are common

The following modified units are similar to the typic situation but differ in at least one aspect:

LGk occurs on moderate slopes with cool aspects.

LGks occurs on moderate slopes with cool aspects and shallow soils.

LGs occurs on moderate slopes with shallow soils.

LGt occurs on a terrace.

LGv occurs on very shallow soil.

LGw occurs on moderate slopes with warm aspects.

Map Symbol	LG2LGk2,LGks2, LGs2,LGt2,LGv2, LGw2	LG3LGk3,LGks3, LGs3,LGt3,LGv3, LGw3	LG4LGk4,LGks4, LGs4,LGt4,LGv4, LGw4	LG5LGk5,LGks5, LGs5,LGt5,LGv5, LGw5	LG6LGk6,LGks6, LGs6,LGt6,LGv6, LGw6	LG7LGk7,LGks7, LGs7,LGt7,LGv7, LGw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather	subalpine larch[1] grouseberry white mountain-heather	subalpine larch[1] subalpine fir Engelmann spruce	subalpine larch[1] subalpine fir Engelmann spruce	subalpine larch[1] subalpine fir Engelmann spruce	subalpine larch[1] subalpine fir Engelmann spruce
Associates	grouseberry arnicas small-flowered woodrush western pasqueflower woolly pussytoes arrow-leaved groundsel	subalpine fir Engelmann spruce pink mountain-heather western pasqueflower arnicas small-flowered woodrush woolly pussytoes arrow-leaved groundsel	white mountain-heather grouseberry arnicas small-flowered woodrush western pasqueflower arrow-leaved groundsel	white mountain-heather grouseberry arnicas small-flowered woodrush western pasqueflower arrow-leaved groundsel	white mountain-heather grouseberry arnicas small-flowered woodrush western pasqueflower arrow-leaved groundsel	white mountain-heather grouseberry arnicas small-flowered woodrush western pasqueflower arrow-leaved groundsel
Plots					T463	
Comments	Stands may be very open or remain at herb or shrub structural stages, and yet reach old forest age, as a consequence of frost pocketing and severe climate. Warm aspect and shallow soil units have very open canopies. [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

LH - Subalpine larch - Mountain-heather Ecosystem Unit (00)

Map Unit	Description	BEC
LH	**Subalpine larch - Mountain-heather Ecosystem Unit** Modified units: LHk, LHks,LHkv,LHn,LHs,LHv,LHvw,LHw	**ESSFdku /00**
LH typically occurs on gentle slopes with morainal and colluvial parent materials.It has deep, medium textured soil. Submesic to mesic soil moisture regimes and mor humus forms are common The following modified units are similar to the typic situation but differ in at least one aspect: LHk occurs on moderate slopes with cool aspects. LHks occurs on moderate slopes with cool aspects and shallow soils. LHn occurs on a fan. LHs occurs on moderate slopes with shallow soils. LHv occurs on very shallow soil. LHvw occurs on very shallow soil with a warm aspect. LHw occurs on moderate slopes with warm aspects.		

Map Symbol	LH2,LHk2,LHks2, LHkv2,LHn2,LHs2, LHv2,LHvw2,LHw2	LH3,LHk3,LHks3, LHkv3,LHn3,LHs3, LHv3,LHvw3,LHw3	LH4,LHk4,LHks4, LHkv4,LHn4,LHs4, LHv4,LHvw4,LHw4	LH5,LHk5,LHks5, LHkv5,LHn5,LHs5, LHv5,LHvw5,LHw5	LH6,LHk6,LHks6, LHkv6,LHn6,LHs6, LHv6,LHvw6,LHw6	LH7,LHk7,LHks7, LHkv7,LHn7,LHs7, LHv7,LHvw7,LHw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather pink mountain-heather	subalpine larch[1] white mountain-heather	subalpine larch[1] white mountain-heather	subalpine larch[1] white mountain-heather	subalpine larch[1] subalpine fir grouseberry white mountain-heather	subalpine larch[1] subalpine fir grouseberry white mountain-heather
Associates	subalpine larch grouseberry black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass	subalpine fir grouseberry black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass	subalpine fir grouseberry black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass	subalpine fir grouseberry black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass	black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass	black huckleberry small-flowered woodrush Sitka valerian mountain hairgrass
Plots					T459	
Comments	Stands may be very open or remain at herb or shrub structural stages, and yet reach old forest age, as a consequence of frost pocketing and severe climate. Warm aspect and shallow soil units have very open canopies. [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

LM-Subalpine larch - moss Ecosystem Unit (00)

Map Unit	Description	BEC
LM	**Subalpine larch - moss Ecosystem Unit** Modified units: LMv,LMvw	**ESSFdku /00**
LM typically occurs on steep cool aspects with shallow coarse textured soils. Common parent materials are colluvial and morainal blankets with subxeric to mesic soil moisture regimes. The following modified units are similar to the typic situation but differ in at least one aspect: LMv occurs on very shallow soil. LMvw occurs on very shallow soil on a warm aspect.		

Map Symbol	LM2, LMv2	LM3, LMv3	LM4, LMv4	LM5, LMv5	LM6, LMv6	LM7, LMv7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants		very open canopy of: subalpine larch	very open canopy of: subalpine larch	very open canopy of: subalpine larch	very open canopy of: subalpine larch	very open canopy of: subalpine larch
Associates	cladonia moss	subalpine fir cladonia moss	subalpine fir cladonia moss	subalpine fir cladonia moss	subalpine fir cladonia moss	subalpine fir cladonia moss
Plots						
Comments	Stands tend to be very open and may remain at shrub structural stage, and yet reach old forest age, for long periods as a consequence of severe climate. Often occurs on newly deglaciated sites. [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from adjacent TEM projects (see section 3.5)					

PJ - Pa - Common juniper Ecosystem Unit (00)

Map Unit	Description	BEC
PJ	**Pa - Common juniper Ecosystem Unit** Modified units: PJks, PJkv,PJs,PJv	**ESSFdku /00**
PJ typically occurs on steep warm aspects with deep, medium-textured soils. Common parent materials are colluvial and morainal blankets with xeric to subxeric soil moisture regimes. Mor or mull humus form, silt loam textures. Brunisolic soil development occurs frequently. The following modified units are similar to the typic situation but differ in at least one aspect: PJks is similar but occurs on cool aspects with shallow (25 - 100cm) soils. PJkv is similar but occurs on cool aspects with very shallow (<25cm) soils. PJs is similar but occurs on shallow (25 - 100cm) soils PJv is similar but occurs on very shallow (<25cm) soils.		

Map Symbol	PJ2, PJks2, PJkv2, PJs2, PJv2	PJ3, PJks3, PJkv3, PJs3, PJv3	PJ4, PJks4, PJkv4, PJs4, PJv4	PJ5, PJks5, PJkv5, PJs5, PJv5	PJ6, PJks6, PJkv6, PJs6, PJv6	PJ7, PJks7, PJkv7, PJs7, PJv7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	grasses fireweed	open,shrubby site of: whitebark pine	open canopy of: whitebark pine	open canopy of: whitebark pine grouseberry	open canopy of: whitebark pine grouseberry	open canopy of: whitebark pine grouseberry
Associates	grouseberry common juniper round-leaved alumroot kinnikinnick mountain arnica sedges cladonia	subalpine fir common juniper grouseberry kinnikinnick fireweed grasses sedges	subalpine fir common juniper grouseberry kinnikinnick fireweed grasses	subalpine fir common juniper kinnikinnick grasses	subalpine fir common juniper kinnikinnick grasses	subalpine fir common juniper kinnikinnick grasses
Plots	T304					
Comments	Stands tend to be very open and may remain at shrub structural stage, and yet reach old forest age, on sites wth shallow soils. Cool aspect sites have denser canopies. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

PV - Western pasqueflower - Sitka valerian Ecosystem Unit (00)

Map Unit	Description	BEC
PV	**Western pasqueflower - Sitka valerian Ecosystem Unit** Modified units: PVk,PVw	**ESSFdku /00**
PV is an avalanche chute unit and typically occurs on significant slopes with subxeric to submesic moisture regime. Regularly disturbed by avalanches. It is characterized by coarse textured soils on colluvial parent material, often in a mosaic with non-vegetated talus (TA) ecosystem unit The following modified units are similar to the typic situation but differ in at least one aspect: PVk with a cool aspect PVw with a warm aspect.		

Map Symbol	PV2, PVk2,PVw2
Plant Species	herb
Dominants	Sitka valerian
Associates	western pasqueflower arrow-leaved groundsel white mountain-heather sedges grasses
Plots	T419
Comments	Warm aspect sites are more sparsely vegetated. The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)

PW - Western pasqueflower - Arctic willow Ecosystem Unit (00)

Map Unit	Description	BEC
PW	**Western pasqueflower - Arctic willow Ecosystem Unit** Modified units: PWk,PWn	**ESSFdku /00**
PW typically occurs on gentle concave slopes of morainal or colluvial materials with deep medium textured soils. It has mesic to subhygric moisture regimes. The following modified units are similar to the typic situation but differ in at least one aspect: PWk occurs on a cool aspect. PWn occurs on a fan.		

Map Symbol	PW2, PWk2,PWn2
Plant Species	herb
Dominants	western pasqueflower arctic willow
Associates	woolly pussytoes alpine pussytoes black alpine sedge white mountain-heather arrow-leaved groundsel *Brachythecium*
Plots	
Comments	Sites commonly do not progress past herb dominated structural stage as a consequence of frost pocketing. Often in mosaic with other site series; its distribution controlled by microsite conditions. Vegetation derived from adjacent TEM projects (see section 3.5)

WS - Willow - Sedge Ecosystem Unit (00)

Map Unit	Description	BEC
WS	**Willow - Sedge Ecosystem Unit** Modified units: WSp	**ESSFdku /00**
WS typically occurs on level mineral wetlands with subhydric moisture and permesotrophic nutrient regimes. It often occurs in cirque basins on morainal or fluvial parent materials. The following modified units are similar to the typic situation but differ in at least one aspect: WSp occurs on organic surface materials.		

Map Symbol	WS2, WSp2	WS3, WSp3
Plant Species	herb	shrub/herb
Dominants	globeflower mosses	shrubby sites of: willows mosses
Associates	sedges subalpine daisy	shrubby cinquefoil sedges globeflower common horsetail
Plots		
Comments	Sites do not progress past shrub structural stage as a consequence of frost pocketing. Stands may be very open or remain at low structural stages due to frost pocketing These sites are rare in TFL 14. Vegetation derived from adjacent TEM projects (see section 3.5)	

8.7 ESSFdkp Ecosystem Unit Descriptions

AW - Mountain-avens - Snow willow Ecosystem Unit (00)

Map Unit	Description	BEC
AW	**Mountain-avens - snow willow Ecosystem Unit** Modified units: AWdk,AWdw,AWk,AWkn,AWkv,AWnw,AWv,AWvw,AWw	**ESSFdkp /00**

AW is an edaphic climax unit and typically occurs at higher elevations within the ESSFdkp subzone on gentle slopes (often ridge crests) and has shallow, coarse textured soil on colluvial or morainal parent material. The soil moisture regime is generally subxeric to mesic.
The following modified units are similar to the typic situation but differ in at least one aspect:
AWdk occurs on significant slopes with a cool aspect and deep soil.
AWdw occurs on significant slopes with a warm aspect and deep soil.
AWk occurs on significant slopes with a cool aspect.
AWkn occurs on a colluvial cone with significant slopes and a cool aspect.
AWkv occurs on significant slopes with a cool aspect and very shallow soils.
AWnw occurs on a warm aspect colluvial cone.
AWv occurs on very shallow soils.
AWvw occurs on significant slopes with a warm aspect and very shallow soils.
AWw occurs on significant slopes with a warm aspect

Map Symbol	AW2,AWdk2,AWdk2 AWk2, AWkn2, AWkv2, AWv2, AWvw2,AWw2	AW3,AWdk3,AWdk3 AWk3, AWkn3, AWkv3, AWv3, AWvw3,AWw3
Plant Species	herb	herb/shrub/ krummholtz
Dominants	patchy distribution of: white mountain-avens	patchy distribution of: white mountain-avens subalpine fir snow willow
Associates	snow willow Rocky Mountain fescue northern goldenrod alpine bluegrass	alpine bluegrass Rocky Mountain fescue northern goldenrod
Plots		
Comments	Stands are very patchy (usually in a mosaic with TA or RO) and remain in shrub structural stage (<10m) yet may be very old because of the severe climate. Vegetation derived from adjacent TEM projects (see section 3.5)	

DV - Subalpine daisy - Sitka valerian Ecosystem Unit (00)

Map Unit	Description	BEC
DV	**Subalpine daisy - Sitka valerian Ecosystem Unit** Modified units: DVg,DVs,DVv	**ESSFdkp /00**
DV is an edaphic climax and typically occurs on receiving sites with gentle slopes.It has deep, medium textured soil on colluvial or morainal parent material. Soil moisture is generally mesic to subhygric. The following modified units are similar to the typic situation but differ in at least one aspect: DVg occurs in a gully. DVs occurs on shallow soils. DVv occurs on very shallow soils.		

Map Symbol	DV2, DVg2,DVs2,DVv2
Plant Species	herb
Dominants	black alpine sedge
Associates	arrow-leaved groundsel western pasqueflower arctic willow Sitka valerian subalpine daisy pink mountain-heather woolly pussytoes grasses
Plots	T389, T384,T414, T455
Comments	This unit will remain at the herb structural stage as a consequence of the severe climate, as it occurs in frost pockets and nivation hollows The mix of moist herb vegetation varies from site to site. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5)

EM - SeBl - White mountain-heather Ecosystem unit (00)

Map Unit	Description	BEC
EM	**SeBl - white mountain-heather Ecosystem unit** Modified units: EMcj,EMck,EMj, EMjs,EMjv,EMk,EMks,EMkv,EMnw,EMsw,EMvw,EMw	**ESSFdkp /00**

EM typically occurs on significant slopes with deep, medium textured soils on morainal or colluvial parent material and has a submesic to mesic moisture regime.

The following modified units are similar to the typic situation but differ in at least one aspect:

EMcj occurs on a gentle slope with coarse textured soil.

EMck occurs on a cool aspect with coarse textured soil.

EMj occurs on gentle slopes

EMjs occurs on gentle slopes with shallow soil.

EMjv occurs on gentle slopes with very shallow soil.

EMk occurs on a cool aspect.

EMks occurs on a cool aspect with shallow soil.

EMkv occurs on a cool aspect with very shallow soil.

EMnw occurs on a warm aspect colluvial cone.

EMsw occurs on a warm aspect with shallow soil.

EMvw occurs on a warm aspect with very shallow soil.

EMw occurs on a warm aspect.

Map Symbol	EM2,EMcj2,EMck2,EMj2,EMjs2,EMjv2,EMk2,EMks2,EMkv2,EMnw2,EMsw2,EMw2	EM3,EMcj3,EMck3,EMj3,EMjs3,EMjv3,EMk3,EMks3,EMkv3,EMnw3,EMsw3,EMw3	EM4,EMcj4,EMck4,EMj4,EMjs4,EMjv4,EMk4,EMks4,EMkv4,EMnw4,EMsw4,EMw4	EM5,EMcj5,EMck5,EMj5,EMjs5,EMjv5,EMk5,EMks5,EMkv5,EMnw5,EMsw5,EMw5	EM6,EMcj6,EMck6,EMj6,EMjs6,EMjv6,EMk6,EMks6,EMkv6,EMnw6,EMsw6,EMw6	EM7,EMcj7,EMck7,EMj7,EMjs7,EMjv7,EMk7,EMks7,EMkv7,EMnw7,EMsw7,EMw7
Plant Species	herb	herb/shrub/ krummholtz	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather yellow mountain-heather grouseberry	clumpy stands of: subalpine fir white mountain-heather grouseberry	clumpy stands of: subalpine fir white mountain-heather grouseberry	clumpy stands of: subalpine fir white mountain-heather grouseberry	clumpy stands of: subalpine fir white mountain-heather grouseberry	clumpy stands of: subalpine fir white mountain-heather grouseberry
Associates	subalpine fir subalpine daisy woolly pussytoes	subalpine larch[1] Engelmann spruce yellow mountain-heather	subalpine larch[1] Engelmann spruce yellow mountain-heather	subalpine larch[1] Engelmann spruce yellow mountain-heather	subalpine larch[1] Engelmann spruce yellow mountain-heather	subalpine larch[1] Engelmann spruce yellow mountain-heather
Plots	T412	T413,T385,T416,T418,T503				
Comments	Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. On hummocky terrain, it is often found in a mosaic with YW. Warm aspect and shallow soil sites have open canopies [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

LM - Bl - Subalpine larch -White mountain-heather Ecosystem Unit (00)

Map Unit	Description	BEC
LM	**Bl - Subalpine larch -White mountain-heather Ecosystem Unit** Modified units: LMk,LMs,LMw	**ESSFdkp /00**

LM typically occurs on gentle slopes with deep, medium textured soils on morainal or colluvial parent material and has a mesic to subhygric moisture regime.
The following modified units are similar to the typic situation but differ in at least one aspect:
LMk occurs on a cool aspect. This unit usually occurs in a series of moist, poorly drained microsites within a slope of stepped bedrock and has a denser canopy than the typic situation.
LMs occurs on shallow soil.
LMw occurs on a warm aspect. This unit usually occurs in a series of moist, poorly drained microsites within a slope of stepped bedrock and has a denser canopy than the typic situation.

Map Symbol	LM2,LMk2,LMs2, LMw2	LM3,LMk3,LMs3, LMw3	LM4,LMk4,LMs4, LMw4	LM5,LMk5,LMs5, LMw5	LM6,LMk6,LMs6, LMw6	LM7,LMk7,LMs7, LMw7
Plant Species	herb	herb/shrub/ krummholtz	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather yellow mountain-heather grouseberry	very open stands of: subalpine fir subalpine larch[1] white mountain-heather	very open stands of: subalpine fir subalpine larch[1] white mountain-heather	very open stands of: subalpine fir subalpine larch[1] white mountain-heather	very open stands of: subalpine fir subalpine larch[1] white mountain-heather	very open stands of: subalpine fir subalpine larch[1] white mountain-heather
Associates	subalpine fir	grouseberry yellow mountain-heather small-flowered woodrush	grouseberry yellow mountain-heather small-flowered woodrush	grouseberry yellow mountain-heather small-flowered woodrush	grouseberry yellow mountain-heather small-flowered woodrush	grouseberry yellow mountain-heather small-flowered woodrush
Plots		T417,T383,T456, T509		T380		
Comments	Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. [1]Subalpine larch occurs in this subzone south of Bobbie Burns Creek only. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

WF - PaBl Ecosystem Unit (00)

Map Unit	Description	BEC
WF	**PaBl Ecosystem Unit (00)** Modified units: WFd,WFdj,WFk,WFkv,WFv	**ESSFdkp /00**

WF typically occurs on significant slopes with a warm aspect and on shallow, coarse textured soil on colluvial or morainal parent material. Soil moisture is generally subxeric to mesic.
The following modified units are similar to the typic situation but differ in at least one aspect:
WFd occurs on deep soils.
WFdj occurs on gentle slopes with deep soil.
WFk occurs on a cool aspect.
WFkv occurs on a cool aspect with very shallow soil.
WFv occurs on very shallow soil.

Map Symbol	WF2,WFd2,WFdj2, WFk2,WFkv2,WFv2	WF3,WFd3,WFj3, WFk3,WFkv3,WFv3	WF4,WFd4,WFdj4, WFk4,WFkv4,WFv4	WF5,WFd5,WFdj5, WFk5,WFkv5,WFv5	WF6,WFd6,WFdj6, WFk6,WFkv6,WFv6	WF7,WFd7,WFdj7, WFk7,WFkv7,WFv7
Plant Species	herb	herb/shrub/ krummholtz	pole sapling	young forest	mature forest	old forest
Dominants	grouseberry pink mountain-heather mountain hairgrass	patchy distribution of: whitebark pine subalpine fir	patchy distribution of: whitebark pine subalpine fir	patchy distribution of: whitebark pine subalpine fir	patchy distribution of: whitebark pine subalpine fir	patchy distribution of: whitebark pine subalpine fir
Associates	spike trisetum Rocky Mountain fescue junegrass alpine pussytoes	black huckleberry grouseberry pink mountain-heather mountain hairgrass spike trisetum Rocky Mountain fescue	black huckleberry grouseberry pink mountain-heather mountain hairgrass spike trisetum Rocky Mountain fescue	black huckleberry grouseberry pink mountain-heather mountain hairgrass spike trisetum Rocky Mountain fescue	black huckleberry grouseberry pink mountain-heather mountain hairgrass spike trisetum Rocky Mountain fescue	black huckleberry grouseberry pink mountain-heather mountain hairgrass spike trisetum Rocky Mountain fescue
Plots					T302	
Comments	This is a slow growing, open parkland type. Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. Cool aspect and deep soil sites have denser canopies. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

YW - Yellow mountain-heather - Woolly pussytoes Ecosystem Unit (00)

Map Unit	Description	BEC
YW	**Yellow mountain-heather - Woolly pussytoes Ecosystem Unit** Modified units: YWc,YWgs,YWhs,YWj,YWjs,YWks,YWkv,YWs,YWv	**ESSFdkp /00**

YW is an edaphic climax which typically occurs on significant, warm aspect slopes with deep, medium textured soils. These sites occur on morainal (often gullied, failed or soliflucted) parent material with a submesic to mesic moisture regime.
The following modified units are similar to the typic situation but differ in at least one aspect:
YWc occurs on coarse textured soil.
YWgs occurs on shallow soil in a gully.
YWhs occurs on shallow soil in hummocky terrain.
YWjs occurs on a gentle slope with shallow soil.
YWks occurs on a cool aspect with shallow soil.
YWkv occurs on a cool aspect with very shallow soil.
YWs occurs on shallow soil.
YWv occurs on very shallow soil.

Map Symbol	YW2,YWc2,YWgs2,YWhs2,YWj2 YWjs2,YWks2,YWkv2,YWs2,YWv2
Plant Species	herb/low shrub
Dominants	small-flowered woodrush yellow mountain-heather white mountain-heather alpine bluegrass
Associates	pink mountain-heather woolly pussytoes black alpine sedge mountain-avens mountain hairgrass
Plots	T386,T411,T454 ,T825,T826
Comments	This unit will remain in a herb dominated structural stage as a consequence of the severe climate. Vegetation derived from plot data,and adjacent TEM projects (see section 3.5)

8.8 ESSFwm - Ecosystem Unit Descriptions

ACjy - Avalanche chute - Gentle Slope - Moister Than typical Ecosystem Unit (00)

Map Unit	Description	BEC
ACjy	Avalanche chute - Gentle slope - Moister Than typical Ecosystem Unit	**ESSFwm/00**
ACjy is typically found on gentle slopes with subhygric to hygric with soil moisture regimes on deep medium textured colluvial or morainal materials. These sites receive regular disturbance by avalanching. They characterize gentlly sloping avalanche run-out zones.		

Map Symbol	ACjy2	ACjy3,ACjy3a. ACjy3b
Plant Species	herb	shrub/herb
Dominants	bluejoint cow parsnip	Sitka alder
Associates	fireweed	subalpine fir Engelmann spruce black gooseberry black twinberry willow bluejoint cow parsnip fireweed
Plots		
Comments	Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACk - Avalanche chute - Cool Aspect Ecosystem Unit (00)

Map Unit	Description	BEC
ACk	Avalanche chute - Cool Aspect Ecosystem Unit	**ESSFwm/00**
ACk is typically found on significant slopes with cool aspects with submesic to mesic soil moisture regimes on deep medium textured colluvial or morainal materials.		

Map Symbol	ACk2	ACk3,ACk3a.ACk3b
Plant Species	herb	shrub/herb
Dominants	bluejoint	Sitka alder
Associates	cow parsnip fireweed grouseberry	subalpine fir Engelmann spruce lodgepole pine black huckleberry black gooseberry black twinberry willow bluejoint cow parsnip fireweed
Plots		
Comments	Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

ACw - Avalanche chute - Warm Aspect Ecosystem Unit (00)

Map Unit	Description	BEC
ACw	Avalanche chute - Warm Aspect Ecosystem Unit	**ESSFwm/00**
ACw is typically found on significant slopes with warm aspects with submesic to mesic soil moisture regimes on deep medium textured colluvial or morainal materials.		

Map Symbol	ACw2	ACw3,ACw3a, ACw3b
Plant Species	herb	shrub/herb
Dominants	California brome bluejoint fireweed cow-parsnip	subalpine fir Sitka alder bluejoint cow-parsnip
Associates	subalpine fir black elderberry	black huckleberry black gooseberry black twinberry willow bluejoint bluejoint cow-parsnip black elderberry
Plots	T1559	
Comments	Vegetation derived from plot data,and adjacent TEM projects (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

FG - Bl Pa - Grouseberry Ecosystem Unit (00)

Map Unit	Description	BEC
FG	Bl Pa - Grouseberry Ecosystem Unit Modified units: FGck,FGjs,FGjv,FGk,FGks,FGkv,FGsw,FGvw,FGw	**ESSFwm/00**

FG common occurs on convex, shedding subxeric sites with significant slope on deep medium textured colluvial or morainal materials.
The following modified units are similar to the typic situation but differ in at least one aspect:
FGck occurs on coarse textured soil on a cool aspect.
FGjs occurs on gentle slopes with shallow soil.
FGjv occurs on gentle slopes with very shallow soil.
FGk occurs on a cool aspect.
FGks
FGkv occurs on a cool aspect with very shallow soil
FGsw occurs on a warm aspect.with shallow soil.
FGvw occurs on a warm aspect. with very shallow soil
FGw occurs on a warm aspect.

Map Symbol	FG2,FGck2,FGjs2,FGjv2,FGk2,FGks2, FGkv2,FGsw2, FGvw2,FGw2	FG3,FGck3,FGjs3,FGjv3,FGk3,FGks3 FGkv3,,FGsw3, FGvw3,FGw3	FG4,FGck4,FGjs4,FGjv4,FGk4,FGks4, FGkv4,FGsw4, FGvw4,FGw4	FG5,FGck5,FGjs5,FGjv5,FGk5,FGks5, FGkv5,,FGsw5, FGvw5,FGw5	FG6,FGck6,FGjs6,FGjv6,FGk6,FGks6, FGkv6,FGsw6, FGvw6,FGw6	FG7,FGck7,FGjs7,FGjv7,FGk7,FGks7, FGkv7,FGsw7, FGvw7,FGw7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	lodgepole pine Sitka alder grouseberry	lodgepole pine subalpine fir	lodgepole pine subalpine fir *Dicranum* moss	Engelmann spruce suballpine fir *Dicranum* moss	Engelmann spruce subalpine fir *Dicranum* moss
Associates	Sitka alder white-flowered hawkweed grouseberry prince's pine one-sided wintergreen rattlesnake-plantain	whitebark pine subalpine fir willow black huckleberry Utah honeysuckle false azalea birch-leaved spirea white-flowered hawkweed prince's pine one-sided wintergreen rattlesnake-plantain *Dicranum* moss	Engelmann spruce whitebark pine Sitka alder black huckleberry Utah honeysuckle false azalea birch-leaved spirea grouseberry prince's pine one-sided wintergreen rattlesnake-plantain *Dicranum* moss	Engelmann spruce whitebark pine Sitka alder black huckleberry Utah honeysuckle false azalea birch-leaved spirea grouseberry prince's pine one-sided wintergreen rattlesnake-plantain red-stemmed feathermoss *Barbilophozia* moss	whitebark pine lodgepole pine Sitka alder black huckleberry Utah honeysuckle false azalea birch-leaved spirea grouseberry prince's pine one-sided wintergreen rattlesnake-plantain red-stemmed feathermoss *Barbilophozia* moss	whitebark pine Sitka alder black huckleberry Utah honeysuckle false azalea birch-leaved spirea grouseberry prince's pine one-sided wintergreen rattlesnake-plantain red-stemmed feathermoss *Barbilophozia* moss
Plots				9800790,T88,T963,T967	T130	
Comments	Whitebark pine occurs more commonly at higher elevations. Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

FH - Bl - False azalea - Horsetail Ecosystem Unit (00)

Map Unit	Description	BEC
FH	Bl - False azalea - Horsetail Ecosystem Unit Modified units: FHa,FHac,FHan,FHc,FHck,FHcn,FHcw,FHf,FHfn,FHkp,FHks,FHp,FHt	**ESSFwm/00**

FH commonly occurs on subhygric to hygric sites with gentle slopes in toe slope or receiving site positions on deep medium textured morainal, colluvial or fluvial materials.
The following modified units are similar to the typic situation but differ in at least one aspect:
FHa occurs on active floodplains.
FHac occurs on active floodplains with coarse textured soil.
FHan occurs on active floodplains on a fan.
FHc occurs on coarse textured soil.
FHck occurs on coarse textured soil on a cool aspect.
FHcn occurs on coarse textured soil on a fan.
FHcw occurs on coarse textured soil on a warm aspect.
FHf occurs on fine textured soil.
FHfn occurs on fine textured soil on a fan.
FHkp occurs on a cool aspect with peaty surface material.
FHks occurs on a cool aspect with shallow soil.
FHp occurs on peaty material.
FHt occurs on a terrace.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 16: ESSFwm- FH 6

Bl - False azalea - Horsetail Ecosystem Unit (00), mature forest structural stage Plot 98-00019

Map Symbol	FH2,FHa2,FHac2, FHan2,FHc2,FHck2, FHcn2,FHcw2, FHf2,FHfn2,FHkp2, FHks2,FHp2,FHt2	FH3,FHa3,FHac3, FHan3,FHc3,FHck3, FHcn3,FHcw3, FHf3,FHfn3,FHkp3, FHks3,FHp3,FHt3	FH4,FHa4,FHac4, FHan4,FHc4,FHck4, FHcn4,FHcw4, FHf4,FHfn4,FHkp4, FHks4,FHp4,FHt4	FH5,FHa5,FHac5, FHan5,FHc5,FHck5, FHcn5,FHcw5, FHf5,FHfn5,FHkp5, FHks5,FHp5,FHt5	FH6,FHa6,FHac6, FHan6,FHc6,FHck6, FHcn6,FHcw6, FHf6,FHfn6,FHkp6, FHks6,FHp6,FHt6	FH7,FHa7,FHac7, FHan7,FHc7,FHck7, FHcn7,FHcw7, FHf7,FHfn7,FHkp7, FHks7,FHp7,FHt7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed bluejoint	lodgepole pine willow white-flowered rhododendron	Engelmann spruce	Engelmann spruce lodgepole pine red-stemmed feathermoss	Engelmann spruce subalpine fir false azalea red-stemmed feathermoss	Engelmann spruce subalpine fir false azalea red-stemmed feathermoss
Associates	willow common horsetail clasping twisted stalk western meadowrue bunchberry oak fern one-leaved foamflower sweet coltsfoot	Englemann spruce subalpine fir lodgepole pine mountain alder false azalea black twinberry black gooseberry common horsetail bluejoint bunchberry oak fern fireweed one-leaved foamflower sweet coltsfoot *Barbilophozia* moss	subalpine fir lodgepole pine mountain alder false azalea white-flowered rhododendron willow black twinberry black gooseberry bunchberry common horsetail bluejoint oak fern five-leaved bramble sweet coltsfoot knight's plume *Barbilophozia* moss	subalpine fir mountain alder false azalea white-flowered rhododendron willow black twinberry black gooseberry bunchberry common horsetail bluejoint oak fern five-leaved bramble sweet coltsfoot knight's plume *Barbilophozia* moss	mountain alder willow black twinberry white-flowered rhododendron oval-leaved blueberry black gooseberry bluejoint common horsetail five-leaved bramble bunchberry oak fern sweet coltsfoot knight's plume *Barbilophozia* moss	mountain alder willow black twinberry white-flowered rhododendron oval-leaved blueberry black gooseberry bunchberry common horsetail five-leaved bramble bluejoint oak fern sweet coltsfoot knight's plume *Barbilophozia* moss
Plots	T1014	T334,T156,T629,T8, T239		9800015	9800019, T1544, T680,T117,T240	980003,9800013, T281,T26
Comments	Shrub structural stages on significant slopes have more mountain alder and may remain at this stage for longer periods of time. Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

FP - Bl - Black huckleberry - Red-stemmed feathermoss Ecosystem Unit (00)

Map Unit	Description	BEC
FP	Bl - Black huckleberry - Red-stemmed feathermoss Ecosystem Unit Modified units: FPa,FPac,FPc,FPck,FPcn,FPct, FPf, FPfk, FPg, FPgk, FPk, FPkn, FPks, FPn, FPnw, FPs, FPsw, FPt, FPw	**ESSFwm/00**

FP commonly occurs on mesic to subhygric sites on gentle slopes with deep medium textured morainal or colluvial materials.
The following modified units are similar to the typic situation but differ in at least one aspect:
FPa occurs on an active floodplain.
FPac occurs on an active floodplain with coarse soil.
FPc occurs on coarse soil.
FPck occurs on a cool aspect with coarse soil.
FPcn occurs on a fan with coarse soil.
FPct occurs on a terrace with coarse soil.
FPf occurs on fine textured soil.
FPfk occurs on fine textured soil with a cool aspect
FPg occurs in a gully.
FPgk occurs in a gully with a cool aspect
FPk occurs on a cool aspect.
FPkn occurs on a colluvial cone with a cool aspect.
FPks occurs on a cool aspect with shallow soil.
FPn occurs on a fan.
FPnw occurs on on a colluvial cone with a warm aspect.
FPs occurs on shallow soil.
FPsw occurs on on shallow soil with a warm aspect.
FPt occurs on a terrace.
FPw occurs on a warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 17: ESSFwm- FP 7

Bl - Black huckleberry - Red-stemmed feathermoss Ecosystem Unit (00), old forest structural stage Plot 98-00007

Map Symbol	FP2,FPa2,FPac2,FPc2,FPck2,FPcn2,FPct2,FPf2,FPfk2,FPg2,FPgk2,FPk2,FPkn2,FPks2,FPn2,FPnw2,FPs2,FPsw2, FPt2,FPw2	FP3,FPa3,FPac3,FPc3,FPck3,FPcn3,FPct3,FPf3,FPfk3,FPg3,FPgk3,FPk3,FPkn3,FPks3,FPn3,FPnw3,FPs3,FPsw3, FPt3,FPw3	FP4,FPa4,FPac4,FPc4,FPck4,FPcn4,FPct4,FPf4,FPfk4,FPg4,FPgk4,FPk4,FPkn4,FPks4,FPn4,FPnw4,FPs4,FPsw4, FPt4,FPw4	FP5,FPa5,FPac5,FPc5,FPck5,FPcn5,FPct5,FPf5,FPfk5,FPg5,FPgk5,FPk5,FPkn5,FPks5,FPn5,FPnw5,FPs5,FPsw5, FPt5,FPw5	FP6,FPa6,FPac6,FPc6,FPck6,FPcn6,FPct6,FPf6,FPfk6,FPg6,FPgk6,FPk6,FPkn6,FPks6,FPn6,FPnw6,FPs6,FPsw6, FPt6,FPw6	FP7,FPa7,FPac7,FPc7,FPck7,FPcn7,FPct7,FPf7,FPfk7,FPg7,FPgk7,FPk7,FPkn7,FPks7,FPn7,FPnw7,FPs7,FPsw7, FPt7,FPw7
Plant Species	herb†	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	Englemann spruce subalpine fir Sitka alder	Englemann spruce subalpine fir	Englemann spruce subalpine fir lodgepole pine false azalea red-stemmed feathermoss	Englemann spruce subalpine fir false azalea *Barbilophozia*. red-stemmed feathermoss	Engelmann spruce subalpine fir false azalea *Barbilophozia* red-stemmed feathermoss
Associates	bunchberry grouseberry Sitka valerian sweet-scented bedstraw oak fern	lodgepole pine willow false azalea white-flowered rhododendron black huckleberry oval-leaved blueberry black gooseberry Utah honeysuckle fireweed bunchberry grouseberry Sitka valerian cow-parsnip	lodgepole pine Sitka alder false azalea white-flowered rhododendron black huckleberry oval-leaved blueberry black gooseberry Utah honeysuckle Sitka valerian five-leaved bramble grouseberry red-stemmed feathermoss	white-flowered rhododendron black huckleberry oval-leaved blueberry black gooseberry Utah honeysuckle Sitka valerian five-leaved bramble grouseberry bunchberry *Barbilophozia*. knight's plume	white-flowered rhododendron black huckleberry oval-leaved blueberry black gooseberry Utah honeysuckle Sitka valerian five-leaved bramble grouseberry bunchberry heart-leaved twayblade knight's plume broom moss step moss	white-flowered rhododendron black huckleberry oval-leaved blueberry black gooseberry Utah honeysuckle Sitka valerian five-leaved bramble grouseberry bunchberry heart-leaved twayblade knight's plume broom moss
Plots	T246,T289,T631	T136,T54,T584,T14, T67,T91,T115, T141,T215,T311	T217	T769,T33,T107, T612,T159,T614	9800027,T1158, T234, T351, T567, T68, T999,T331	9800007,9800011, 9800012,9800020, T1012,T1546,T364, T426, T427, T797
Comments	Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

FS - Bl - Sedge - Sphagnum Ecosystem Unit (00)

Map Unit	Description	BEC
FS	Bl - Sedge - Sphagnum Ecosystem Unit Modified units: FSa, FSc,FSp	**ESSFwm/00**
FS is typically found on level subhygric sites on deep medium textured morainal or fluvial materials or on near valley floors, often associated with wetland complexes. The following modified units are similar to the typic situation but differ in at least one aspect: FSa occurs on active floodplains. FSc occurs on coarse textured soil. FSp occurs on peaty material.		

Map Symbol	FS2 FSa2, FSc2,FSp2	FS3 FSa3, FSc3,FSp3	FS4 FSa4, FSc4,FSp4	FS5 FSa5, FSc5,FSp5	FS6 FSa6, FSc6,FSp6	FS7 FSa7, FSc7,FSp7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	beaked sedge	scrub birch willlow beaked sedge	Engelmann spruce scrub birch willlow beaked sedge	Engelmann spruce scrub birch willlow beaked sedge *Sphagnum* moss	Engelmann spruce scrub birch willlow beaked sedge *Sphagnum* moss	Engelmann spruce scrub birch willlow beaked sedge *Sphagnum* moss
FSsociates	scrub birch bluejoint sedges arrrow-leaved groundsel sweet coltsfoot common horsetail	Engelmann spruce shrubby cinquefoil Labrador tea mountain alder bluejoint common horsetail *Sphagnum* moss	shrubby cinquefoil Labrador tea mountain alder bluejoint common horsetail *Sphagnum* moss	shrubby cinquefoil Labrador tea mountain alder bluejoint common horsetail	shrubby cinquefoil Labrador tea mountain alder bluejoint common horsetail	shrubby cinquefoil Labrador tea mountain alder bluejoint common horsetail
Plots		T618,T620				
Comments	Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

FV - Bl - Rhododendron - Black huckleberry Ecosystem Unit (00)

Map Unit	Description	BEC
FV	FV - Bl - Rhododendron - Black huckleberry Ecosystem Unit Modified units:FVcj,FVck,FVcw,FVfk,FVgk,FVgw,FVh,FVhj,FVj,FVjn,FVjs,FVjv, FVk,FVkn,FVks,FVkv,FVnw,FVr, FVsw,FVvw,FVw	**ESSFwm/00**

FV is typically found on sities with significant slope with submesic to mesic soil moisture regimes on deep medium textured colluvial or morainal materials.
The following modified units are similar to the typic situation but differ in at least one aspect:
FVcj occurs on gentle slopes with coarse soil.
FVck occurs on a cool aspect with coarse soil.
FVcw occurs on a warm aspect with coarse soil.
FVfk occurs on a fan with a cool aspect.
FVgk occurs on a cool aspect.
FVgw occurs in a gully with a warm aspect.
FVh occurs on hummocky terrain.
FVhj occurs on gentle slopes with hummocky terrain.
FVj occurs on gentle slopes.
FVjn occurs on a fan with gentle slopes.
FVjs occurs on gentle slopes with shallow soil
FHjv occurs on gentle slopes with very shallow soil.
FVk occurs on a cool aspect.
FVkn occurs on a colluvial cone with a cool aspect.
FVks occurs on a cool aspect with shallow soil.
FVkv occurs on a cool aspect with very shallow soil.
FVnw occurs on colluvial cone with a warm aspect.
FVr occurs on a ridge.
FVsw occurs on a warm aspect with shallow soil.
FVvw occurs on a warm aspect with very shallow soil.
FVw occurs on a warm aspect

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 18: ESSFwm- FVks 5

Bl - Rhododendron - Black huckleberry Ecosystem Unit (00), young forest structural stage Plot 98-00010

Map Symbol	FV2,FVcj2,FVck2, FVcw2,FVfk2,FVgk2 ,FVgw2,FVhj2,FVj2, FVjn2,FVjs2,FVjv2,F Vk2,FVkn2,FVks2,F Vkv2,FVnw2,FVr2, FVsw2,FVvw2, FVw2	FV3,FVcj3,FVck3, FVcw3,FVfk3,FVgk3 ,FVgw3,FVhj3,FVj3, FVjn3,FVjs3,FVjv3,F Vk3,FVkn3,FVks3,F Vkv3,FVnw3,FVr3, FVsw3,FVvw3, FVw3	FV4,FVcj4,FVck4, FVcw4,FVfk4,FVgk4 ,FVgw4,FVhj4,FVj4, FVjn4,FVjs4,FVjv4,F Vk4,FVkn4,FVks4,F Vkv4,FVnw4,FVr4, FVsw4,FVvw4, FVw4	FV5,FVcj5,FVck5, FVcw5,FVfk5,FVgk5 ,FVgw5,FVhj5,FVj5, FVjn5,FVjs5,FVjv5,F Vk5,FVkn5,FVks5,F Vkv5,FVnw5,FVr5, FVsw5,FVvw5, FVw5	FV6,FVcj6,FVck6, FVcw6,FVfk6,FVgk6 ,FVgw6,FVhj6,FVj6, FVjn6,FVjs6,FVjv6,F Vk6,FVkn6,FVks6,F Vkv6,FVnw6,FVr6, FVsw6,FVvw6, FVw6	FV7,FVcj7,FVck7, FVcw7,FVfk7,FVgk7 ,FVgw7,FVhj7,FVj7, FVjn7,FVjs7,FVjv7,F Vk7,FVkn7,FVks7,F Vkv7,FVnw7,FVr7, FVsw7,FVvw7, FVw7
Plant Species	herb	shrub/herb†	pole sapling	young forest	mature forest	old forest
Dominants	fireweed	Engelmann spruce subalpine fir Sitka alder false azalea	Engelmann spruce subalpine fir lodgepole pine false azalea	Engelmann spruce subalpine fir lodgepole pine false azalea red-stemmed feathermoss *Barbilophozia* spp.	Engelmann spruce subalpine fir false azalea red-stemmed feathermoss *Barbilophozia* spp.	Engelmann spruce subalpine fir false azalea red-stemmed feathermoss *Barbilophozia* spp.
Associates	false azalea bunchberry grouseberry one-sided wintergreen pearly everlasting	lodgepole pine willow black huckleberry black gooseberry black twinberry fireweed bunchberry grouseberry red-stemmed feathermoss	Sitka alder willow black huckleberry black gooseberry black twinberry bunchberry grouseberry *Barbilophozia* spp. red-stemmed feathermoss	Sitka alder black huckleberry black gooseberry bunchberry grouseberry one-sided wintergreen	lodgepole pine black huckleberry black gooseberry bunchberry grouseberry *Dicranum* moss broom moss knight's plume	black huckleberry black gooseberry black twinberry bunchberry grouseberry *Dicranum* moss broom moss
Plots		T15, T157, T254, T595,T603		9800009,9800010. 9800014, 9800993 9800995,T192, T526,T555,T594, T962	9800791,9800994, T1015, T118, T140, T1549, T218, T243, T251, T332, T53	9800008,9800026, T119,T160, T373,T606
Comments	Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires. †Vegetation data collected in sites disturbed by forest harvesting.					

SM - Beaked sedge - Water sedge Marsh Ecosystem Unit (00)

Map Unit	Description	BEC
SM	Beaked sedge - Water sedge Marsh Ecosystem Unit (00) Modified units: SMp	**ESSFwm/00**
SM is typically found on level sites with subhydric to hydric moisture regimes on fluvial, glaciofluvial, lacustrine or glaciolacustrine materials. The following modified units are similar to the typic situation but differ in at least one aspect: SMp occurs on peaty material.		

Map Symbol	SM2, SMp2
Plant Species	herb
Dominants	water sedge beaked sedge
Associates	bluejoint marsh cinquefoil *Sphagnum* moss
Plots	T1535, T1551, T1553, T1557
Comments	Often has portions of open shallow water or in association with AS. Vegetation derived from plot data, (see section 3.5)

8.9 ESSFwmu - Ecosystem Unit Descriptions

FB - Bl - Black huckleberry - Mountain arnica Ecosystem Unit (00)

Map Unit	Description	BEC
FB	Bl - Black huckleberry - Mountain arnica Ecosystem Unit Modified units: FBa,FBc,FBk,FBks,FBs	**ESSFwmu/00**

FB typically occurs on gentle slopes with deep medium textured materials, subhygric moisture regimes and submesotrophic to mesotrophic nutrient regimes.
The following modified units are similar to the typic situation but differ in at least one aspect:
FBa occurs on an active floodplain.
FBc occurs on coarse textured soil.
FBk occurs on a cool aspect.
FBks occurs on shallow soil with a cool aspect.
FBs occurs on shallow soil.

Map Symbol	FB2,FBa2,FBc2, FBk2,FBks2,FBs2	FB3,FBa3,FBc3, FBk3,FBks3,FBs3	FB4,FBa4,FBc4, FBk4,FBks4,FBs4	FB5,FBa5,FBc5, FBk5,FBks5,FBs5	FB6,FBa6,FBc6, FBk6,FBks6,FBs6	FB7,FBa7,FBc7, FBk7,FBks7,FBs7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	sedge	subalpine fir partridgefoot crowberry sedge	subalpine fir .	subalpine fir *Barbilophozia* spp.	subalpine fir Engelmann spruce *Barbilophozia* spp.	subalpine fir Sitka valerian *Barbilophozia* spp.
Associates	subalpine fir pink mountain-heather Sitka valerian mountain arnica western pasqueflower nodding trisetum alpine bluegrass partridgefoot	Engelmann spruce black huckleberry white-flowered rhododendron Sitka valerian mountain arnica white mountain-heather western pasqueflower nodding trisetum alpine bluegrass Wallace's selaginella	Engelmann spruce black huckleberry white-flowered rhododendron mountain arnica Sitka valerian white mountain-heather partridgefoot sedge crowberry *Barbilophozia* spp	Engelmann spruce black huckleberry white-flowered rhododendron mountain arnica Sitka valerian white mountain-heather partridgefoot sedge crowberry	black huckleberry white-flowered rhododendron mountain arnica Sitka valerian white mountain-heather partridgefoot sedge crowberry *Dicranium* moss	Engelmann spruce black huckleberry white flowered rhododendron Sitka valerian mountain arnica white mountain-heather partridgefoot sedge crowberry *Dicranium* moss
Plots	T1564,T409,T275	T407			T330,T408,T995, T845	T318,T994,T993
Comments	Structural stages 2 and 3 can be long lived on moist sites, especially in concave topography.These sites frequently consist of patchy openings within a matrix of conifer dominated closed canopy stands. This patchiness is a consequence of a number of microtopographic related features Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

FR - Bl - White-flowered rhododendron - White mountain-heather Ecosystem Unit (00)

Map Unit	Description	BEC
FR	Bl - White-flowered rhododendron - White mountain-heather Ecosystem Unit Modified units: FRcj,FRck,FRcw,FRj,FRjs,FRjv,FRk,FRks,FRkv,FRr, FRsw,FRvw,FRw	**ESSFwmu/00**

FR typically occurs on significant slopes with deep medium textured soils, mesic moisture regimes and submesotrophic to mesotrophic nutrient regimes.
The following modified units are similar to the typic situation but differ in at least one aspect:
FRcj occurs on gentle slopes with coarse textured soil.
FRck occurs on coarse textured soil with a cool aspect.
FRcw occurs on coarse textured soil with a warm aspect.
FRj occurs on gentle slopes.
FRjs occurs on gentle slopes with shallow soil.
FRjv occurs on gentle slopes with very shallow soil.
FRk occurs on a cool aspect.
FRks occurs on a cool aspect with shallow soil.
FRkv occurs on a cool aspect with very shallow soil.
FRr occurs on a ridge.
FRsw occurs on a warm aspect with shallow soil.
FRvw occurs on a warm aspect with very shallow soil.
FRw occurs on a warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 19: ESSFwmu- FRcj 6

Bl - White-flowered rhododendron - White mountain-heather coarse textured, gentle Ecosystem Unit (00), mature forest structural stage Plot98-00804

Map Symbol	FR2,FRcj2,FRck2, FRcw2,FRj2,FRjs2, FRjv2,FRk2,FRks2, FRkv2,FRr2,FRsw2, FRvw2,FRw2	FR3,FRcj3,FRck3, FRcw3,FRj3,FRjs3, FRjv3,FRk3,FRks3, FRkv3,FRr3,FRsw3, FRvw3,FRw3	FR4,FRcj4,FRck4, FRcw4,FRj4,FRjs4, FRjv4,FRk4,FRks4, FRkv4,FRqs4,FRsw 4,FRvw4,FRw4	FR5,FRcj5,FRck5, FRcw5,FRj5,FRjs5, FRjv5,FRk5,FRks5, FRkv5,FRr5,FRsw5, FRvw5,FRw5	FR6,FRcj6,FRck6, FRcw6,FRj6,FRjs6, FRjv6,FRk6,FRks6, FRkv6,FRr6,FRsw6, FRvw6,FRw6	FR7,FRcj7,FRck7, FRcw7,FRj7,FRjs7, FRjv7,FRk7,FRks7, FRkv7,FRr7,FRsw7, FRvw7,FRw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather pink mountain-heather grouseberry greater pixie stick	subalpine fir Engelmann spruce white mountain-heather pink mountain-heather grouseberry	subalpine fir Engelmann spruce white mountain-heather .	subalpine fir Engelmann spruce white mountain-heather *Barbilophozia* spp.	subalpine fir Engelmann spruce white mountain-heather *Barbilophozia* spp.	subalpine fir Engelmann spruce white mountain-heather *Barbilophozia* spp.
Associates	black huckleberry Sitka valerian Piper's woodrush	black huckleberry Sitka valerian Piper's woodrush greater pixie stick	black huckleberry Sitka valerian grouseberry partridgefoot pink mountain-heather *Barbilophozia* spp greater pixie stick	black huckleberry Sitka valerian grouseberry partridgefoot pink mountain-heather	black huckleberry Sitka valerian grouseberry partridgefoot pink mountain-heather	black huckleberry Sitka valerian grouseberry partridgefoot pink mountain-heather
Plots		T1563			9800804,T273,T410, T487,T495,T992, T319, T274	T1569,
Comments	Structural stage 3 can be long lived on exposed sites or sites which have been burned. These sites frequently consist of patchy openings within a matrix of conifer dominated closed canopy stands. This patchiness can be the consequence of a number of microtopographic related features. Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

UFk - Avalanche Chute Cool Aspect Ecosystem Unit (00)

Map Unit	Description	BEC
UFk	Avalanche Chute - Cool Aspect Ecosystem Unit Modified units: UFcj,UFck,UFjs,UFks,UFkv,	**ESSFwmu**

UFk is typically found on significantly sloping sites with cool aspects which are subject to frequent avalanching. Soil moisture regimes are generally from subxeric to mesic
The following modified units are similar to the typic situation but differ in at least one aspect:
UFcj occurs on coarse textured soil on a gentle slope.
UFck occurs on a cool aspect with coarse textured soil.
UFjs occurs on on a gentle slope with shallow soil.
UFks occurs on shallow soils with a cool aspect.
UFkv occurs on very shallow soil with a cool aspect.

Map Symbol	UFcj2,UFck2,UFjs2 UFk2,UFks2,UFkv2,	UFcj3,UFcj3a,UFcj3b,UFck3, UFck3a,UFck3b,UFjs3a,UFjs3 b,UFk3,UFk3a,UFk3b,UFks3, UFks3a,UFks3b,,UFkv3, UFkv3a,UFkv3b
Plant Species	herb	shrub/herb
Dominants	western pasqueflower sedge moss	willow
Associates	arrow-leaved groundsel fringed grass-of-parnassus	subalpine fir Engelmann spruce sedge fringed grass-of-parnassus
Plots	T1008	T1007,T776
Comments	Vegetation derived from plot data, (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

UFw Avalanche Chute - Warm Aspect Ecosystem Unit (00)

Map Unit	Description	BEC
UFw	Avalanche Chute - Warm Aspect Ecosystem Unit Modified units: UFcw,UFsw,UFvw	**ESSFwmu**
UFw is typically found on significantly sloping sites with warm aspects which are subject to frequent avalanching. Soil moisture regimes are generally from subxeric to mesic. The following modified units are similar to the typic situation but differ in at least one aspect: UFcw occurs on coarse textured soil with a warm aspect. UFsw occurs on shallow soil with a warm aspect. UFvw occurs on very shallow soil with a warm aspect.		

Map Symbol	UFw2,UFcw2, UFsw2,UFvw2	UFw3,UFw3a,UF3b,UFcw3,UFCW3a,UF3b,UFsw3,UFsw3a, UFsw3b,UFvw3 UFvw3a, UFvw3b
Plant Species	herb	shrub/herb
Dominants	yellow mountain-heather white mountain-heather	black huckleberry yellow mountain-heather white mountain-heather
Associates	black huckleberry Sitka valerian fireweed alpine timothy western pasqueflower alpine pussytoes mountain hairgrass	subalpine fir Sitka valerian fireweed alpine timothy western pasqueflower alpine pussytoes mountain hairgrass
Plots		T475
Comments	Vegetation derived from plot data, (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

UG - Avalanche chute Run-out Zone Ecosystem Unit (00)

Map Unit	Description	BEC
UG	Avalanche chute - Run-out Zone Ecosystem Unit Modified units: UGac,UGc,UGk	**ESSFwmu/00**
UG is typically found on gentle sloping sites in the run out zones of avalanche chutes. Soil moisture is mesic to subhygric The following modified units are similar to the typic situation but differ in at least one aspect: UGac occurs on an active floodplain with coarse textured soil. UGc occurs on coarse textured soil. UGk occurs on a cool aspect.		

Map Symbol	UG2,UGac2,UGc2, UGk2	UG3,UG3a,UG3b, UGac3,UGac3a,UGac3b,UGc 3, UGc3aUGk3b
Plant Species	herb	shrub/herb
Dominants	willow	willow
Associates	broad-leaved willowherb arrow-leaved groundsel wild strawberry fringed grass-of-Parnassus pearly everlasting dog pelt moss	subalpine fir Engelmann spruce arrow-leaved groundsel wild strawberry fringed grass-of-Parnassus pearly everlasting dog pelt
Plots	T1006,T996	T1009,T485,T488
Comments	Vegetation derived from plot data, (see section 3.5) The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track. This is an interim unit only and will be updated into new avalanche units being developed by the U of C (see section 7.8)	

WE - Willow - Horsetail Ecosystem Unit (00)

Map Unit	Description	BEC
WE	Willow - Horsetail Ecosystem Unit Modified units: WEa,WEac,WEp	**ESSFwmu/00**
WE is typically found on gently sloping receiving or toe slope positions with hygric to subhydric moisture regimes and mesotrophic nutrient regimes The following modified units are similar to the typic situation but differ in at least one aspect: WEa occurs on an active floodplain. WEac occurs on an active floodplain with coase textured soil. WEp occurs on peaty material.		

Map Symbol	WE2,WEa2,WEac2,WEp2	WE3,WEa3,WEac3,WEp3
Plant Species	herb	shrub/herb
Dominants	common horsetail	willow common horsetail
Associates	mountain death camus broad-leaved willowherb	mountain death camus broad-leaved willowherb moss
Plots		T500,T501
Comments	Vegetation derived from plot data, (see section 3.5)	

WH - Pa - Black huckleberry - White mountain-heather Ecosystem Unit (00)

Map Unit	Description	BEC
WH	Pa - Black huckleberry - White mountain-heather Ecosystem Unit Modified units:WHcj,WHck,WHcw,WHj,WHjs,WHjv,WHk,WHks,WHkv,WHq,WHqv,WHsw,WHvw,WHw	**ESSFwmu/00**

WH typically occurs on convex, significant slopes with deep, medium textured materials with subxeric to submesic soil moisture regimes and submesotrophic to mesotrophic soil nutrient regimes.
The following modified units are similar to the typic situation but differ in at least one aspect:
WHcj occurs on a gentle slope with coarse textured soil.
WHck occurs on coarse textured soil with a cool aspect.
WHcw occurs on coarse textured soil with a warm aspect.
WHj occurs on a gentle slope.
WHjs occurs on a gentle slope with shallow soil.
WHjv occurs on a gentle slope wth very shallow soil.
WHk occurs on a cool aspect.
WHks occurs on shallow soil with a cool aspect.
WHkv occurs on very shallow soil with a cool aspect.
WHq occurs on a steep,cool aspect.
WHqv occurs on shallow soil with a steep, cool aspect
WHsw occurs on shallow soil with a warm aspect.
WHvw occurs on very shallow soil with a warm aspect
WHw occurs on a warm aspect.

Map Symbol	WH2,WHcj2,WHck2,WHcw2,WHj2,WHjs2,WHjv2,WHk2,WHks2,WHkv2,WHq2,WHqv2,WHsw2,WHvw2,WHw2	WH3,WHcj3,WHck3,WHcw3,WHj3,WHjs3,WHjv3,WHk3,WHks3,WHkv3,WHq3,WHqv3,WHsw3,WHvw3,WHw3	WH4,WHcj4,WHck4,WHcw4,WHj4,WHjs4,WHjv4,WHk4,WHks4,WHkv4,WHq4,WHqv4,WHsw4,WHvw4,WHw4	WH5,WHcj5,WHck5,WHcw5,WHj5,WHjs5,WHjv5,WHk5,WHks5,WHkv5,WHq5,WHqv5,WHsw5,WHvw5,WHw5	WH6,WHcj6,WHck6,WHcw6,WHj6,WHjs6,WHjv6,WHk6,WHks6,WHkv6,WHq6,WHqv6,WHsw6,WHvw6,WHw6	WH7,WHcj7,WHck7,WHcw7,WHj7,WHjs7,WHjv7,WHk7,WHks7,WHkv7,WHq7,WHqv7,WHsw7,WHvw7,WHw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	pink mountain-heather white mountain-heather partridgefoot grouseberry	subalpine fir black huckleberry pink mountain-heather white mountain-heather partridgefoot grouseberry	whitebark pine subalpine fir pink mountain-heather white mountain-heather grouseberry *Barbilophozia* spp.	whitebark pine subalpine fir white-flowered rhododendron black huckleberry *Barbilophozia* spp.	whitebark pine subalpine fir white-flowered rhododendron black huckleberry *Barbilophozia* spp.	whitebark pine subalpine fir white-flowered rhododendron black huckleberry *Barbilophozia* spp.
Associates	low bilberry western pasqueflower Sitka valerian bracted lousewort subalpine daisy	Engelmann spruce whitebark pine white-flowered rhododendron low bilberry western pasqueflower Sitka valerian bracted lousewort subalpine daisy	white-flowered rhododendron Engelmann spruce black gooseberry Sitka valerian bracted lousewort subalpine daisy mountain arnica partridgefoot	Engelmann spruce black gooseberry white mountain-heather pink mountain-heather Sitka valerian bracted lousewort subalpine daisy mountain arnica partridgefoot	Engelmann spruce black gooseberry white mountain-heather pink mountain-heather Sitka valerian bracted lousewort subalpine daisy mountain arnica partridgefoot	Engelmann spruce black gooseberry white mountain-heather pink mountain-heather Sitka valerian bracted lousewort subalpine daisy mountain arnica partridgefoot
Plots		T345,			T346	T476,T499
Comments	Structural stage 3 can be long lived on exposed sites or sites with thin materials. These sites frequently consist of patchy openings within a matrix of conifer dominated closed canopy stands. This patchiness can be the consequence of a number of microtopographic related features. Vegetation derived from plot data, (see section 3.5) Successional sequences described above are a consequence of disturbance by wildfires.					

WS - Willow - Sedge Ecosystem Unit (00)

Map Unit	Description	BEC
WS	Willow - Sedge Ecosystem Unit Modified units: WSac,WSaf,WSp	**ESSFwmu**
WS is typically found level on hygric to subhydric sites with mesotrophic to permesotrophic moisture regimes. The following modified units are similar to the typic situation but differ in at least one aspect: WSac occurs on an active floodplain with coarse textured soil. WSaf occurs on an active floodplain with fine textured soil. WSp occurs on peaty material.		

Map Symbol	WS2,WSac2,WSaf2 ,WSp2	WS3,WSac3, WSaf3,WSp3	WS4,WSac4, WSaf4,WSp4	WS5,WSac5, WSaf5,WSp5	WS6,WSac6, WSaf6,WSp6	WS7,WSac7, WSaf7,WSp7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	beaked sedge black alpine sedge bluejoint	willow beaked sedge black alpine sedge bluejoint	open canopy of: Engelmann spruce willow beaked sedge	open canopy of: Engelmann spruce willow beaked sedge	open canopy of: Engelmann spruce willow beaked sedge	open canopy of: Engelmann spruce willow beaked sedge
Associates	arrow-leaved groundsel	arrow-leaved groundsel	arrow-leaved groundsel black alpine sedge bluejoint	arrow-leaved groundsel black alpine sedge bluejoint	arrow-leaved groundsel black alpine sedge bluejoint	arrow-leaved groundsel black alpine sedge bluejoint
Plots	T498	T1561,T1570			T1388	
Comments	Structural stage 3 can be long lived and sites frequently consist of patchy, open conifer stands within a matrix of shrubby openings. This patchiness is a consequence of a number of microtopographic related features Vegetation derived from plot data, (see section 3.5)					

8.10 ESSFwmp - Ecosystem Unit Descriptions

FA - Bl - White mountain-heather - Arrow-leaved groundsel Ecosystem Unit (00)

Map Unit	Description	BEC
FA	Bl - White mountain-heather - Arrow-leaved groundsel Ecosystem Unit Modified units: FAa,FAk,FAks,FAp,FAs,FAv	**ESSFwmp/00**
FA typically occurs on gently sloping sites on deep medium textured materials with subhygric to hygric soil moisture and permesotrophic to mesotrophic nutrient regimes. The following modified units are similar to the typic situation but differ in at least one aspect: FAa occurs on an active floodplain. FAk occurs on a cool aspect. FAks occurs on shallow soil with a cool aspect. FAp occurs on peaty material. FAs occurs on shallow soil. FAv occurs on very shallow soil.		

Map Symbol	FA2,FAa2,FAk2, FAks2,FAp2,FAs2,FAv2	FA3,FAa3,FAk3, FAks3,FAp3,FAs3,FAv3	FA4,FAa4,FAk4, FAks4,FAp4,FAs4,FAv4	FA5,FAa5,FAk5, FAks5,FAp5,FAs5,FAv5	FA6,FAa6,FAk6, FAks6,FAp6,FAs6,FAv6	FA7,FAa7,FAk7, FAks7,FAp7,FAs7,FAv7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather arrow-leaved groundsel	subalpine fir white mountain-heather arrow-leaved groundsel	subalpine fir white mountain-heather arrow-leaved groundsel	subalpine fir white mountain-heather arrow-leaved groundsel	subalpine fir white mountain-heather arrow-leaved groundsel	subalpine fir white mountain-heather arrow-leaved groundsel
Associates	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge	arctic willow pink mountain-heather paintbrush alpine timothy fringed grass-of-parnassus western pasqueflower sedge
Plots	T208,T210,T403, T315, T329, T445, T467,T986,T988					
Comments	FA is a characterized by patchy distribution of structural stage 2 openings within a matrix of structural stage 3 stunted stands. The distribution of structural stages is dependant upon localized site features such as surface shape. Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. Vegetation derived from plot data, (see section 3.5)					

FM - Bl - White mountain-heather - Western pasqueflower Ecosystem Unit (00)

Map Unit	Description	BEC
FM	Bl - White mountain-heather - Western pasqueflower Ecosystem Unit Modified units: FMck, FMd,FMdk,FMdw,FMgw,FMk,FMkv,FMn,FMq,FMr,FMrv,FMv,FMvw,FMw	**ESSFwmp/00**

FM typically occurs on gently sloping sites in crest and upper slope shedding positions with xeric to subxeric soil moisture and submesotrophic nutrient regimes on shallow medium textured materials
The following modified units are similar to the typic situation but differ in at least one aspect:
FMck occurs on coarse textured soil with a cool aspect.
FMd occurs on deep soil.
FMdk occurs on deep soil with a cool aspect.
FMdw occurs on deep soil with a warm aspect.
FMgw occurs in a gully with a warm aspect.
FMk occurs on a cool aspect.
FMkv occurs on very shallow soil with a cool aspect.
FMn occurs on a fan or cone.
FMq occurs on a steep, cool aspect
FMr occurs on a ridge.
FMrv occurs on a ridge with shallow soil.
FMv occurs on very shallow soil.
FMvw occurs on very shallow soil with a warm aspect.
FMw occurs on a warm aspect.

Map Symbol	FM2,FMck2,FMdk2, FMdw2,FMd2,FMgw 2,FMk2,FMkv2, FMn2,FMq2,FMr2, FMrv2, FMvw2, FMv2,FMw2	FM3,FMck3,FMdk3, FMdw3,FMd3,FMgw 3,FMk3,FMkv3, FMn3,FMq3,FMr3, FMrv3, FMvw3, FMv3,FMw3	FM4,FMck4,FMdk4, FMdw4,FMd4,FMgw 4,FMk4,FMkv4, FMn4,FMq4,FMr4, FMrv4, FMvw4, FMv4,FMw4	FM5,FMck5,FMdk5, FMdw5,FMd5,FMgw 5,FMk5,FMkv5, FMn5,FMq5,FMr5, FMrv5, FMvw5, FMv5,FMw5	FM6,FMck6,FMdk6, FMdw6,FMd6,FMgw 6,FMk6,FMkv6, FMn6,FMq6,FMr6, FMrv6, FMvw6, FMv6,FMw6	FM7,FMck7,FMdk7, FMdw7,FMd7,FMgw 7,FMk7,FMkv7, FMn7,FMq7,FMr7, FMrv7, FMvw7, FMv7,FMw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	white mountain-heather	white mountain-heather	subalpine fir white mountain-heather	subalpine fir white mountain-heather	subalpine fir white mountain-heather	subalpine fir white mountain-heather
Associates	western pasqueflower sibbaldia black alpine sedge Piper's woodrush pink mountain-heather yellow mountain-heather wooly pussytoes mountain hairgrass Piper's woodrush	subalpine fir Engelmann spruce whitebark pine pink mountain-heather broad-leaved willowherb moss campion white mountain-avens mountain hairgrass Piper's woodrush	Engelmann spruce whitebark pine pink mountain-heather yellow mountain-heather broad-leaved willowherb moss campion white mountain-avens western pasqueflower sibbaldia black alpine sedge Piper's woodrush	Engelmann spruce whitebark pine pink mountain-heather yellow mountain-heather broad-leaved willowherb moss campion white mountain-avens western pasqueflower sibbaldia black alpine sedge Piper's woodrush	Engelmann spruce whitebark pine pink mountain-heather yellow mountain-heather broad-leaved willowherb moss campion white mountain-avens western pasqueflower sibbaldia black alpine sedge Piper's woodrush	Engelmann spruce whitebark pine pink mountain-heather yellow mountain-heather broad-leaved willowherb moss campion white mountain-avens western pasqueflower sibbaldia black alpine sedge Piper's woodrush
Plots	T312,T446,T314, T342, T344,T436, T441, T470, T490, T987, T491, T483	T981,T316, T324, T401, T339, T343, T482		T1616		
Comments	FM is a dry unit characterized by a patchy distribution of structural stage 2 openings within a matrix of structural stage 3 stunted stands. The distribution of structural stages is dependant upon localized site features such as exposure to wind, fire history, and microtopographic features. Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. Vegetation derived from plot data, (see section 3.5)					

FS - Bl - White mountain-heather - Sitka valerian Ecosystem Unit (00)

Map Unit	Description	BEC
FS	Bl - White mountain-heather - Sitka valerian Ecosystem Unit Modified units: FScj,FSck,FScw,FSj,FSjn,FSjs,FSjv,FSk,FSks,FSkv,FSnw,FSsw,FSvw,FSw	**ESSFwmp/00**

FS typically occurs on significant slopes with deep medium textured materials and submesic to mesic soil moisture regimes and submesotrophic to mesotrophic nutrient regimes.
The following modified units are similar to the typic situation but differ in at least one aspect:
FScj occurs on a gentle slope with coarse textured soil.
FSck occurs on coarse textured soil with a cool aspect.
FScw occurs on coarse textured soil with a warm aspect.
FSj occurs on a gentle slope.
FSjn occurs on a fan with a gentle slope.
FSjs occurs on shallow soil with a gentle slope.
FSjv occurs on very shallow soil with a gentle slope.
FSk occurs on a cool aspect.
FSks occurs on shallow soil with a cool aspect.
FSkv occurs on very shallow soil with a cool aspect.
FSnw occurs on a colluvial cone with a warm aspect.
FSsw occurs on shallow soil with a warm aspect.
FSvw occurs on very shallow soil with a warm aspect.
FSw occurs on a warm aspect.

-TO BE ADDED ON COMPLETION OF FINAL DRAFT

Plate 20: ESSFwmp- FSsw 3

Bl - White mountain-heather - Sitka valerian shallow soil, warm aspect Ecosystem Unit (00), shrub structural stage Plot 98-00803

Map Symbol	FS2,FScj2,FSck2,FScw2,FSj2,FSjs2, FSjn2,FSjv2,FSk2, ,FSks2,FSkv2, FSnw2,FSsw2, FSvw2,FSw2	FS3,FScj3,FSck3,FScw3,FSj3,FSjs3, FSjn3,FSjv3,FSk3, ,FSks3,FSkv3, FSnw3,,FSsw3, FSvw3,FSw3	FS4,FScj4,FSck4,FScw4,FSj4,FSjs4, FSjn4,FSjv4,FSk4, ,FSks4,FSkv4, FSnw4,FSsw4, FSvw4,FSw4	FS5,FScj5,FSck5,FScw5,FSj5,FSjs5, FSjn5,FSjv5,FSk5, FSks5,FSkv5, ,FSnw5,FSsw5, FSvw5,FSw5	FS6,FScj6,FSck6,FScw6,FSj6,FSjs6, FSjn6,FSjv6,FSk6, ,FSks6,FSkv6, ,FSnw6,FSsw6, FSvw6,FSw6	FS7,FScj7,FSck7,FScw7,FSj7,FSjs7, FSjn,FSjv7,FSk7, FSks7,FSkv7, FSnw7,FSsw7 ,FSvw7,FSw7
Plant Species	herb	shrub/herb	pole sapling	young forest	mature forest	old forest
Dominants	sedge	subalpine fir white mountain-heather	subalpine fir white mountain-heather	subalpine fir white mountain-heather	subalpine fir white mountain-heather *Barbilophozia* spp.	subalpine fir white mountain-heather *Barbilophozia* spp.
Associates	western pasqueflower Sitka valerian white mountain-heather pink mountain-heather mountain arnica	Engelmann spruce black huckleberry grouseberry pink mountain-heather Sitka valerian Piper's woodrush	Engelmann spruce black huckleberry pink mountain-heather Sitka valerian grouseberry *Barbilophozia* spp.	Engelmann spruce black huckleberry pink mountain-heather Sitka valerian grouseberry *Barbilophozia* spp.	Engelmann spruce black huckleberry pink mountain-heather Sitka valerian grouseberry	Engelmann spruce black huckleberry pink mountain-heather Sitka valerian grouseberry
Plots	T326,T435,T442,T469,T984,T205,T207,T209,T270,T272, T313, T327, T404, T425, T439, T447, T474, T481, T489, T492, T493, T496, T506, T508, T989, T990	9800803,T206,T340, T341,T480,T507, T982,T325, T406, T443, T448, T494			T405,T484	
Comments	FS is a characterized by patchy distribution of structural stage 2 openings within a matrix of structural stage 3 stunted stands. The distribution of structural stages is dependant upon localized site features such as exposure to wind, fire history, and microtopographic features. Stands may be very old and yet remain at shrub structural stage (<10m) as a consequence of the severe climate. Vegetation derived from plot data, (see section 3.5)					

8.11 AT - Alpine Tundra Ecosystem Unit Descriptions

AW - Mountain-avens - Snow willow Ecosystem Unit (00)

Map Unit	Description	BEC
AW	**Mountain-avens - Snow willow Ecosystem Unit** Modified units: AWdj,AWdw,AWj,AWk,AWkv,AWqv,AWvw,AWvz,AWw,AWz	**AT /00**

AW is an edaphic climax which typically occurs on significant slopes with shallow, coarse textured soils. It has colluvial or morainal parent material with subxeric to mesic moisture regime and is often in a mosaic with non-vegetated talus.
The following modified units are similar to the typic situation but differ in at least one aspect:
AWdj occurs on a gentle slope with deep soil.
AWdw occurs on a warm aspect with deep soil.
AWj occurs on a gentle slope.
AWk occurs on a cool aspect.
AWkv occurs on a cool aspect with very shallow soil.
AWqv occurs on a steep slope with very shallow soil.
AWvw occurs on a warm aspect with very shallow soil
AWvz occurs on very shallow soil with a steep warm aspect.
AWw occurs on a warm aspect.
AWz occurs on a steep warm aspect.

Map Symbol	AW2,AWdj2,AWdw2,AWj2,AWk2,AWkv2, AWqv2,AWvw2,AWvz2,AWw2,AWz2
Plant Species	herb / low shrub
Dominants	yellow mountain-avens yellow mountain-heather
Associates	arctic willow dwarf snow willow alpine fescue mountain arnica alpine bluegrass alpine pussytoes pink mountain-heather mountain hairgrass sedge Piper's woodrush *Racomitrium*
Plots	T827,T338,T452,T453,T424,T865
Comments	This unit will remain in a herb dominated structural stage as a consequence of the severe climate. Cool aspect and deep soil sites have denser vegetation. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

BP - Black alpine sedge - Woolly pussytoes Ecosystem Unit (00)

Map Unit	Description	BEC
BP	**Black alpine sedge - Woolly pussytoes Ecosystem Unit** Modified units: BPs,BPv	**AT/00**
BP is an edaphic climax which typically occurs on moisture receiving, gentle slopes with deep medium textured soils. It has colluvial or morainal (sometimes with fluvial veneer) parent material with a mesic to subhydric moisture regime and is often in a mosaic with non-vegetated talus or rubble. The following modified units are similar to the typic situation but differ in at least one aspect: BPs occurs on shallow soil. BPv occurs on very shallow soil.		

Map Symbol	BP2,BPs2,BPv2
Plant Species	herb/ low shrub
Dominants	black alpine sedge alpine pussytoes pink mountain-heather
Associates	sibbaldia yellow mountain-heather white mountain-heather Piper's woodrush mountain hairgrass alpine pussytoes
Plots	T979,T980
Comments	The floristics of this unit can vary with soil moisture, and location. It will remain in a herb dominated structural stage as a consequence of the severe climate. Vegetation derived from plot data and adjacent TEM projects (see section 3.5)

SL - Saxicolous lichen Ecosystem Unit (00)

Map Unit	Description	BEC
SL	**Saxicolous lichen Ecosystem Unit** Modified units: SLj,SLk,SLq,SLr,SLw,SLz	**AT/00**

SL is an edaphic climax which typically occurs near ridge tops,and has significant slopes.with very shallow, medium textured soils. It has colluvial parent material with xeric to subxeric moisture regime and is often in a mosaic with non-vegetated talus.
The following modified units are similar to the typic situation but differ in at least one aspect:
SLj occurs on a gentle slope.
SLk occurs on a cool aspect.
SLq occurs on a steep, cool aspect.
SLr occurs on a ridge.
SLw occurs on a warm aspect.
SLz occurs on a steep, warm aspect.

Map Symbol	SLj2,SLk2,SLq2,SLr2,SLw2,SLz2
Plant Species	herb
Dominants	
Associates	sparse distribution of: saxicolous lichens white mountain-avens
Plots	
Comments	This unit will remain in a herb dominated structural stage as a consequence of the severe climate. Often in mosaic with non-vegetated talus(TA) Cool aspect sites have denser vegetation. Vegetation derived from adjacent TEM projects (see section 3.5)

8.8 Anthropogenic and Non-Vegetated Sites

BA Barren

Map Unit	Description	BEC
BA	Barren Modified units:	**All Zones**
BA is land devoid of vegetation due to extreme climate or edaphic conditions		
Comments		

CF Cultivated Field

Map Unit	Description	BEC
CF	Cultivated Field	**All Zones**
CF is a flat or gently rolling, non-forested, open area which is subject to human agricultural practices including plowing,fertiization and non-native crop production; often resulting in long term soil and/or vegetation changes.		

CL Cliff

Map Unit	Description	BEC
CL	Cliff Modified units: CLq,CLz	**All Zones**
CL is a steep vertical or overhanging rock face (<5% vegetation cover) CLq occurs on a steep, cool aspect. CLz occurs on a steep, warm aspect		
Comments		

ES Exposed Soil

Map Unit	Description	BEC
ES	Exposed Soil Modified units: ESk, ESw	**All Zones**
ES is an area of exposed soil including recent disturbances such as mud slides, debris torrents,river cutbanks, avalanches, or human made disturbances such as pipeline rights-of-way where vegetation cover is <5%. ESk occurs on a cool aspect. ESw occurs on a warm aspect.		
Comments: Salt licks for ungulates can occur in this type. These can be an important focus for ungulate activity.		

GB Gravel Bar

Map Unit	Description	BEC
GB	GravelBar	**All Zones**
GB is an unconsolidated deposit of cobbles, pebbles,stones and/or sand usually on an active floodplain. (<5% vegetation cover).		
Comments		

GL Glacier

Map Unit	Description	BEC
GL	Glacier	**All Zones**
GL is a mass of perenial snow and ice with definite lateral limits; typically flowing in a parcticular direction.(non-vegetated)		
Comments:		

LA Lake

Map Unit	Description	BEC
LA	Lake	**All Zones**
LA is a naturally occurring body of water greater than 2 m deep in some portion. The boundary for the lake is the natural high water mark.		
Comments : Important for fish, waterfowl, and certain red and blue-listed species.		

MI Mine

Map Unit	Description	BEC
MI	Mine	**All Zones**
MI is an unvegetated area used for extraction of mineral ores.		
Comments		

MO Moraine

Map Unit	Description	BEC
MO	Moraine Modified units: MOk,MOr,MOw	**All Zones**
MO is an unvegetated(<5% vegetation cover) landform which consists of unstratified glacial drift that is usually till; a variety of shapes ranging from plains to mounds and ridges that are initial constructional forms independent of underlying bedrock or older materials. MOk occurs on a cool aspect. MOr occurs on a ridge. MOw occurs on a warm aspect.		
Comments		

MS Rubbly Mine Spoils

Map Unit	Description	BEC
MS	Rubbly mine spoils	**All Zones**
MS is discarded overburden or waste rock		
Comments		

OW Shallow Open Water

Map Unit	Description	BEC
OW	Shallow Open Water	**All Zones**
OW is a wetland composed of open, shallow (<2m deep)water and that lacks extensive emergent plant cover. It often contains submergent plants and is surrounded by wetlands units.		
Comments: Important for waterfowl and certain red and blue-listed species, especially at lower elevations.		

PD Pond

Map Unit	Description	BEC
PD	Pond	**All Zones**
PD is a small body of water greater than 2m deep, but not large enough to be classified as a lake; generally less than 50 ha.		
Comments: Important for waterfowl and certain red and blue-listed species, especially at lower elevations.		

PG Patterned Ground

Map Unit	Description	BEC
PG	Patterned Ground Modified units:	**All Zones**
PG is unvegetated land surface with a distinctive arrangement of stones or microtopography due to the effects of ground freezing		
Comments		

RG Rock Glacier

Map Unit	Description	BEC
RG	Rock Glacier Modified units: RGk,RGw	**All Zones**
RG is a ridged accumulation of angular fragments containing interstitular ice which moves downslope slowly. RGk occurs on a cool aspect. RGw occurs on a warm aspect.		
Comments:		

RM Reclaimed Mine

Map Unit	Description	BEC
RM	Reclaimed Mine Modified units:	**All Zones**
RM is a mined area that has plant communities composed of a mixture of agronomic or native grasses,forbs and shrubs.		
Comments:		

RI River

Map Unit	Description	BEC
RI	River	**All Zones**
RI is a watercouse formed when water flows between continuous, definable banks; flow may be intermittent or perennial. It does not include ephemeral flow where no channel with definable banks is present. This unit refers to the unvegetated (<5%vegetation) portion of the changing floodplain.		
Comments:		

RO Rock Outcrop

Map Unit	Description	BEC
RO	Rock Outcrop Modified units: ROh,ROk,ROq,ROr,ROw,ROz	**All Zones**
RO is a gentle to steep bedrock escarpment and/or outcropping with little soil development and sparse (<5%) vegetation. Very xeric to xeric moisture regime. ROh occurs on hummocky terrain. ROk occurs on a cool aspect. ROq occurs on a steep, cool aspect. ROr occurs on a ridge. ROw occurs on a warm aspect. ROz occurs on a steep, warm aspect.		
Comments: There exists potential for many species of vascular plant and bryophytes that could be considered rare or important for biodiversity. The difference between the floristics of rocks of differing origin was not investigated within the realm of this study. There is much to learn about the vegetation of these extreme sites.		

RP Road Surface

Map Unit	Description	BEC
RP	Road Surface	**All Zones**
RP is an area cleared and compacted for the purposes of transporting goods and services. Most road surfaces in this study area are gravel surfaced.		
Comments : Ungulates will use winter-plowed roads for travel and may suffer mortality. In spring and summer they are attracted to seeded forage plants on the road allowance, which may be the only opening in a forest.		

RR Rural

Map Unit	Description	BEC
RR	Rural	**All Zones**
RR is any area in which residences and other human developments are scttered and intermingled with forest, range, range, farmland and native vegetation or cultivated crops.		
Comments		

RU Rubble

Map Unit	Description	BEC
RU	Rubble Modified units: RUk,RUr,RUw	**All Zones**
RU occurs on generally gentle, coarse textured slopes. The material has been deposited as a result of frost action(<5% vegetation cover). RUk occurs on a cool aspect. RUr occurs on a ridge. RUw occurs on a warm aspect.		
Comments :		

TA Talus

Map Unit	Description	BEC
TA	Talus Modified units: TAk, TAq,TAw	**All Zones**
TA is a gravitational deposit of materials of any size on or at the base of a slope. The steepness is determined by the angle of repose of the colluvial material(<5% vegetation cover). TAk occurs on cool aspects. TAq occurs on steep, cool aspects. TAw occurs on warm aspects.		
Comments : Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus field.		

TS Mine Tailings

Map Unit	Description	BEC
TS	Mine tailings Modified units:	**All Zones**
TS is solid waste materials produced in mining or milling of ore		
Comments This unit may remain non-vegetated for long periods of time.		

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Appendix I PLANT SPECIES LIST

PLANTS ENCOUNTERED DURING FIELD SAMPLING IN TFL 14

Common to Scientific Names

TREES

black cottonwood	*Populus balsamifera ssp. trichocarpa*
Douglas-fir	*Pseudotsuga menziesii*
Engelmann spruce	*Picea engelmannii*
hybrid white spruce	*Picea engelmannii x glauca*
lodgepole pine	*Pinus contorta*
mountain hemlock	*Tsuga mertensiana*
paper birch	*Betula papyrifera*
subalpine fir	*Abies lasiocarpa*
subalpine larch	*Larix lyallii*
trembling aspen	*Populus tremuloides*
western hemlock	*Tsuga heterophylla*
western larch	*Larix occidentalis*
western redcedar	*Thuja plicata*
western white pine	*Pinus monticola*
whitebark pine	*Pinus albicaulis*

SHRUBS

alder-leaved buckthorn	*Rhamnus alnifolia*
Barclay's willow	*Salix barclayi*
beaked hazelnut	*Corylus cornuta*
Bebb's willow	*Salix bebbiana*
birch-leaved spirea	*Spiraea betulifolia*
black gooseberry	*Ribes lacustre*
black huckleberry	*Vaccinium membranaceum*
black twinberry	*Lonicera involucrata*
Columbia clematis	*Clematis occidentalis*
common juniper	*Juniperus communis*
common snowberry	*Symphoricarpos albus*
devil's club	*Oplopanax horridus*
Douglas maple	*Acer glabrum*
Drummond's willow	*Salix drummondiana*
false azalea	*Menziesia ferruginea*
falsebox	*Pachistima myrsinites*
grey-leaved willow	*Salix glauca*
highbush-cranberry	*Viburnum edule*
hoary willow	*Salix candida*

Labrador tea	*Ledum groenlandicum*
MacCall's willow	*Salix maccalliana*
Mackenzie's willow	*Salix prolixa*
mountain alder	*Alnus tenuifolia*
mountain willow	*Salix pseudomonticola*
northern blackcurrant	*Ribes hudsonianum*
northern gooseberry	*Ribes oxycanthoides*
oval-leaved blueberry	*Vaccinium ovalifolium*
prairie rose	*Rosa woodsii*
prickly rose	*Rosa acicularis*
red elderberry	*Sambucus racemosa ssp. pubens*
red raspberry	*Rubus idaeus*
red-osier dogwood	*Cornus stolonifera*
redstem ceanothus	*Ceanothus sanguineus*
rock willow	*Salix vestita*
Rocky Mountain juniper	*Juniperus scopulorum*
saskatoon	*Amelanchier alnifolia*
Scouler's willow	*Salix scouleriana*
scrub birch	*Betula glandulosa*
short-fruited willow	*Salix brachycarpa*
shrubby cinquefoil	*Potentilla fruticosa*
Sitka alder	*Alnus crispa ssp. sinuata*
Sitka mountain-ash	*Sorbus sitchensis*
snowbrush	*Ceanothus velutinus*
soopolallie	*Shepherdia canadensis*
squaw currant	*Ribes cereum*
tall Oregon-grape	*Mahonia aquifolium*
tea-leaved willow	*Salix planifolia ssp. planifolia*
thimbleberry	*Rubus parviflorus*
trapper's rea	*Ledum glandulosum*
Utah honeysuckle	*Lonicera utahensis*
variable willow	*Salix commutata*
variable willow	*Salix commutata var. puberula*
velvet-leaved blueberry	*Vaccinium myrtilloides*
water birch	*Betula occidentalis*
western mountain-ash	*Sorbus scopulina*
western trumpet honeysuckle	*Lonicera ciliosa*
white-flowered rhododendron	*Rhododendron albiflorum*
willow	*Salix sp.*

HERBS

	Astragalus sp.

	Cryptogramma sp.
	Geum sp.
	Senecio sp.
	Solidago sp.
	Stipa sp.
alpine bentgrass	*Agrostis humilis*
alpine bistort	*Polygonum viviparum*
alpine bluegrass	*Poa alpina*
alpine paintbrush	*Castilleja rhexifolia*
alpine pussytoes	*Antennaria alpina*
alpine speedwell	*Veronica wormskjoldii*
alpine timothy	*Phleum alpinum*
alpine willowherb	*Epilobium anagallidifolium*
alpine-wintergreen	*Gaultheria humifusa*
alsike clover	*Trifolium hybridum*
arctic coltsfoot	*Petasites frigidus var. nivalis*
arctic willow	*Salix arctica*
arnica	*Arnica sp.*
arrow-leaved balsamroot	*Balsamorhiza sagitatta*
arrow-leaved coltsfoot	*Petasites sagittatus*
arrow-leaved groundsel	*Senecio triangularis*
aster	*Aster sp.*
baltic rush	*Juncus balticus*
baneberry	*Actaea rubra*
bastard toad-flax	*Geocaulon lividum*
beaked sedge	*Carex utriculata*
bentgrass	*Agrostis sp.*
black alpine sedge	*Carex nigricans*
black medic	*Medicago lupulina*
blue wildrye	*Elymus glaucus*
bluebunch wheatgrass	*Elymus spicatus*
bluegrass	*Poa. sp.*
bluejoint	*Calamagrostis canadensis*
bog cranberry	*Oxycoccus oxycoccos*
bracted lousewort	*Pedicularis bracteosa*
Brewer’s mitrewort	*Mitella breweri*
broad-leaved twayblade	*Listera convallarioides*
broad-leaved willowherb	*Epilobium latifolium*
brome	*Bromus sp.*
bulrush	*Scirpus sp.*
bunchberry	*Cornus canadensis*
burnet	*Sanguisorba sp.*
buttercup	*Ranunculus sp.*

California brome	*Bromus carinatus*
Canada goldenrod	*Solidago canadensis*
Canada thistle	*Cirsium arvense*
Canada violet	*Viola canadensis*
Canby's lovage	*Ligusticum canbyi*
clasping twistedstalk	*Streptopus amplexifolius*
clubmoss	*Lycopodium sp.*
Columbia brome	*Bromus vulgaris*
columbine	*Aquilegia sp.*
common cattail	*Typha latifolia*
common dandelion	*Taraxacum officinale*
common harebell	*Campanula rotundifolia*
common horsetail	*Equisetum arvense*
common mare's-tail	*Hippuris vulgaris*
common mitrewort	*Mitella nuda*
common timothy	*Phleum pratense*
coralroot	*Corallorhiza sp.*
cow-parsnip	*Heracleum lanatum*
cow-wheat	*Melampyrum lineare*
creeping bentgrass	*Agrostis stolonifera*
creeping-snowberry	*Gaultheria hispidula*
crowberry	*Empetrum nigrum*
Cusick's bluegrass	*Poa cusickii*
cut-leaved daisy	*Erigeron compositus var. glabratus*
diverse-leaved cinquefoil	*Potentilla diversifolia*
Drummond's rush	*Juncus drummondii*
dwarf blueberry	*Vaccinium caespitosum*
dwarf rattlesnake orchid	*Goodyera repens*
dwarf scouring-rush	*Equisetum scirpoides*
dwarf snow willow	*Salix reticulata ssp. nivalis*
early blue violet	*Viola adunca*
false bugbane	*Trautvettaria caroliniensis*
false melic	*Schizachne purpurascens*
false Solomon's-seal	*Smilacina racemosa*
fescue	*Festuca sp.*
field chickweed	*Cerastium arvense*
field mint	*Mentha arvensis*
field pussytoes	*Antennaria neglecta*
fireweed	*Epilobium angustifolium*
five-leaved bramble	*Rubus pedatus*
fleabane	*Erigeron sp.*
four-angled mountain-heather	*Cassiope tetragona*
fowl mannagrass	*Glyceria striata*

foxtail muhly	*Muhlenbergia andina*
fringed brome	*Bromus ciliatus*
fringed grass-of-Parnassus	*Parnassia fimbriata*
globeflower	*Trollius laxus*
golden fleabane	*Erigeron aureus*
golden sedge	*Carex aurea*
graceful cinquefoil	*Potentilla gracilis*
grass	*Poaceae*
great burdock	*Arctium lappa*
great northern aster	*Aster modestus*
green sorrel	*Rumex acetosa*
green wintergreen	*Pyrola chlorantha*
green-flowered bog orchid	*Platanthera hyperborea*
ground-cedar	*Lycopodium complanatum*
grouseberry	*Vaccinium scoparium*
hair bentgrass	*Agrostis scabra*
hawkweed	*Hieracium sp.*
heart-leaved arnica	*Arnica cordifolia*
heart-leaved twayblade	*Listera cordata*
Holboell's rockcress	*Arabis holboellii*
Hooker's fairybells	*Disporum hookeri*
Hornemann's willowherb	*Epilobium hornemannii*
Indian hellebore	*Veratrum viride*
Kentucky bluegrass	*Poa pratensis*
kidney-leaved violet	*Viola renifolia*
kinnikinnick	*Arctostaphylos uva-ursi*
lady fern	*Athyrium filix-femina*
large round-leaved rein orchid	*Platanthera orbiculata*
large-leaved avens	*Geum macrophyllum*
leafy aster	*Aster foliaceus*
leatherleaf saxifrage	*Leptarrhena pyrolifolia*
lemonweed gromwell	*Lithospermum ruderale*
Lindley's aster	*Aster ciliolatus*
lingonberry	*Vaccinium vitis-idaea*
long-leaved phlox	*Phlox longifolia*
lousewort	*Pedicularis sp.*
low bilberry	*Vaccinium myrtillus*
low northern sedge	*Carex concinna*
Lyall's goldenweed	*Haplopappus lyallii*
marsh cinquefoil	*Potentilla palustris*
marsh horsetail	*Equisetum palustre*
marsh muhly	*Muhlenbergia glomerata*
meadow arnica	*Arnica chamissonis*

meadow horsetail	*Equisetum pratense*
Merten's rush	*Juncus mertensiana*
mitrewort	*Mitella sp.*
moss campion	*Silene acaulis*
mountain arnica	*Arnica latifolia*
mountain death-camas	*Zigadenus elegans*
mountain hairgrass	*Vahlodia atropupurea*
mountain holly fern	*Polystichum lonchitis*
mountain sweet-cicely	*Osmorhiza chilensis*
mountain-heather	*Phyllodoce sp.*
nagoonberry	*Rubus arcticus*
narrow-leaved hawkweed	*Hieracium umbellatum*
netted willow	*Salix reticulata*
nodding brome	*Bromus anomalus*
nodding onion	*Allium cernuum*
nodding trisetum	*Trisetum cernuum*
nodding wood-reed	*Cinna latifolia*
northern bedstraw	*Galium boreale*
northern goldenrod	*Solidago multiradiata*
northern scouring-rush	*Equisetum variegatum*
northwestern sedge	*Carex concinnoides*
oak fern	*Gymnocarpium dryopteris*
one-flowered cinquefoil	*Potentilla uniflora*
one-leaved foamflower	*Tiarella trifoliata var. unifoliata*
one-sided wintergreen	*Orthilia secunda*
orange hawkweed	*Hieracium aurantiacum*
orchid	*Platanthera sp.*
paintbrush	*Castilleja sp.*
palmate-leaved coltsfoot	*Petasites frigidus var. palmatus*
partridgefoot	*Luetkea pectinata*
pearly everlasting	*Anaphalis margaritacea*
pinegrass	*Calamagrostis rubescens*
pink mountain-heather	*Phyllodoce empetriformis*
pink wintergreen	*Pyrola asarifolia*
Piper's woodrush	*Luzula piperi*
prince's pine	*Chimaphila umbellata*
purple peavine	*Lathyrus nevadensis*
pussytoes	*Antennaria sp.*
queen's cup	*Clintonia uniflora*
rattlesnake-plantain	*Goodyera oblongifolia*
red clover	*Trifolium pratense*
red columbine	*Aquilegia formosa*
red-stemmed saxifrage	*Saxifraga lyallii*

redtop	*Agrostis gigantea*
Richardson's sedge	*Carex richardsonii*
Rocky Mountain fescue	*Festuca saximontana*
roseroot	*Sedum integrifolium*
Ross' sedge	*Carex rossii*
rosy pussytoes	*Antennaria microphylla*
rosy twistedstalk	*Streptopus roseus*
rough fescue	*Festuca campestris*
rough-fruited fairybells	*Disporum trachycarpum*
rough-leaved ricegrass	*Oryzopsis asperifolia*
round-leaved alumroot	*Heuchera cylindrica*
rounded-leaved violet	*Viola orbiculata*
running clubmoss	*Lycopodium clavatum*
rush	*Juncus sp.*
rush aster	*Aster borealis*
sainfoin	*Onobrychis viciaefolia*
saxifrage	*Saxifraga sp.*
scarlet paintbrush	*Castilleja miniata*
Scouler's hawkweed	*Hieracium scouleri*
scouring-rush	*Equisetum hyemale*
sedge	*Carex sp.*
selaginella	*Selaginella sp.*
sheathed sedge	*Carex vaginata*
showy aster	*Aster conspicuus*
showy pussytoes	*Antennaria pulcherrima*
showy sedge	*Carex spectabilis*
shrubby penstemon	*Penstemon fruticosus*
sibbaldia	*Sibbaldia procumbens*
sickletop lousewort	*Pedicularis racemosa*
silky phacelia	*Phacelia sericea*
single delight	*Moneses uniflora*
Sitka valerian	*Valeriana sitchensis*
skunk-cabbage	*Lysichiton americanum*
slender hawkweed	*Hieracium gracile*
slender sedge	*Carex lasiocarpa*
small bedstraw	*Galium trifidum*
small twistedstalk	*Streptopus streptopoides*
small yellow water buttercup	*Ranunculus gmelinii*
small-flowered paintbrush	*Castilleja parviflora*
small-flowered willowherb	*Epilobium leptocarpum*
small-flowered willowherb	*Epilobium minutum*
small-flowered woodrush	*Luzula parviflora*
small-leaved montia	*Montia parvifolia*

soft-leaved sedge	*Carex disperma*
soft-stemmed bulrush	*Scirpus validus*
speedwell	*Veronica sp.*
spike trisetum	*Trisetum spicatum*
spike-like goldenrod	*Solidago spathulata*
spikenard sedge	*Carex nardina*
spiny wood fern	*Dryopteris expansa*
spotted saxifrage	*Saxifraga bronchialis*
spreading dogbane	*Apocynum androsaemifolium*
star-flowered false Solomon's-seal	*Smilacina stellata*
stiff clubmoss	*Lycopodium annotinum*
stiff needlegrass	*Stipa occidentalis*
stream violet	*Viola glabella*
streambank butterweed	*Senecio pseudaureus*
subalpine buttercup	*Ranunculus eschscholtzii*
subalpine daisy	*Erigeron peregrinus*
sweet coltsfoot	*Petasites frigidus*
sweet-scented bedstraw	*Galium triflorum*
thistle	*Cirsium sp.*
thread-leaved sandwort	*Arenaria capillaris*
three-leaved foamflower	*Tiarella trifoliata*
tiger lily	*Lilium columbianum*
timber milk-vetch	*Astragalus miser*
timber oatgrass	*Danthonia intermedia*
trailing raspberry	*Rubus pubescens*
twinflower	*Linnaea borealis*
two-toned sedge	*Carex albonigra*
umber pussytoes	*Antennaria umbrinella*
violet	*Viola sp.*
Wallace's selaginella	*Selaginella wallacei*
water sedge	*Carex aquatilis*
western bog-laurel	*Kalmia microphylla*
western fescue	*Festuca occidentalis*
western groundsel	*Senecio integerrimus*
western meadowrue	*Thalictrum occidentale*
western mountain aster	*Aster occidentalis*
western paintbrush	*Castilleja occidentalis*
western pasqueflower	*Anemone occidentalis*
western tea-berry	*Gaultheria ovatifolia*
white bog orchid	*Platanthera dilitata*
white clover	*Trifolium repens*
white hawkweed	*Hieracium albiflorum*
white mountain-avens	*Dryas octopetala*

white mountain-heather	*Cassiope mertensiana*
wild ginger	*Asarum caudatum*
wild lily-of-the-valley	*Maianthemum canadense*
wild sarsaparilla	*Aralia nudicaulis*
wild strawberry	*Fragaria virginiana*
wildrye	*Elymus sp.*
willow	*Salix sp.*
wood strawberry	*Fragaria vesca*
woodrush	*Luzula sp.*
woolly pussytoes	*Antennaria lanata*
woolly sedge	*Carex lanuginosa*
yarrow	*Achillea millefolium*
yarrow	*Achillea millefolium var. alpicola*
yellow columbine	*Aquilegia flavescens*
yellow glacier lily	*Erythronium grandiflorum*
yellow hedysarum	*Hedysarum sulphurescens*
yellow mountain-avens	*Dryas drummondii*
yellow mountain-heather	*Phyllodoce glanduliflora*
yellow salsify	*Tragopogon dubius*

MOSSES & LIVER-WORTS

	Barbilophozia floerkei
	Barbilophozia hatcheri
	Barbilophozia lycopodioides
	Barbilophozia sp.
	Brachythecium sp.
	Campylium stellatum
	Climacium dendroides
	Cratoneuron commutatum
	Dicranum muehlenbeckii
	Dicranum sp.
	Drepanocladus sp.
	Hypnum circinale
	Hypnum sp.
	Lophozia sp
	Marchantia polymorpha
	Mnium sp.
	Plagiochila aspleniformis
	Plagiomnium rostratum
	Plagiomnium sp.
	Pohlia sp.
	Polytrichum commune
	Polytrichum sp.
	Racomitrium ericoides
	Racomitrium fasciculare
	Racomitrium sp.
	Rhizomnium nudum
	Rhizomnium sp.
	Sphagnum sp.
awned haircap moss	*Polytrichum piliferum*
broom moss	*Dicranum scoparium*
coastal leafy moss	*Plagiomnium insigne*
common leafy moss	*Plagiomnium medium*
common red sphagnum	*Sphagnum capillifolium*
curly heron's-bill moss	*Dicranum fuscescens*
electrified cat's-tail moss	*Rhytidiadelphus triquetrus*
false-polytrichum	*Timmia austriaca*
fire moss	*Ceratodon purpureus*
giant water moss	*Calliergon giganteum*
glow moss	*Aulacomnium palustre*

grey rock moss	*Racomitrium canescens*
juniper haircap moss	*Polytrichum juniperinum*
knight's plume	*Ptilium crista-castrensis*
lanky moss	*Rhytidiadelphus loreus*
large leafy moss	*Rhizomnium glabrescens*
lawn moss	*Brachythecium albicans*
moss	*moss*
pipecleaner moss	*Rhytidiopsis robusta*
red-mouthed leafy moss	*Mnium spinulosum*
red-stemmed feathermoss	*Pleurozium schreberi*
sickle moss	*Drepanocladus uncinatus*
sidewalk moss	*Tortula ruralis*
step moss	*Hylocomium splendens*
stiff-leaved haircap moss	*Polytrichum alpinum*
wavy-leaved moss	*Dicranum polysetum*

LICHENS

	Alectoria sp.
	Bryoria sp.
	Cladina sp.
	Cladonia gracilis
	Cladonia sp.
	Cladonia squamosa
	Stereocaulon sp.
brimstone pixie	*Cladonia pleurota*
British soldiers	*Cladonia bellidiflora*
brown pixie cup	*Cladonia pyxidata*
common witch's hair	*Alectoria sarmentosa*
common wolf lichen	*Letharia vulpina*
cottontail coral	*Stereocaulon paschale*
dog pelt	*Peltigera canina*
freckle pelt	*Peltigera aphthosa*
greater dog pelt	*Peltigera membranacea*
greater pixie stick	*Cladonia cornuta*
grey reindeer lichen	*Cladina rangiferina*
icelandmoss	*Cetraria ericetorum*
icelandmoss lichens	*Cetraria sp.*
monk's hood	*Hypogymnia physodes*
orange-footed pixie	*Cladonia ecmocyna*
pelt lichens	*Peltigera sp.*
peppered pixie-cup	*Cladonia chlorophaea*
royal pixie-cup	*Cladonia carneola*

speckled horsehair	*Bryoria fuscescens*
spiny heath	*Cetraria aculeata*
sulphur cladonia	*Cladonia sulphurina*
woolly coral	*Stereocaulon tomentosum*

PLANTS ENCOUNTERED DURING FIELD SAMPLING IN TFL 14

Scientific to Common Names

TREES

Abies lasiocarpa	subalpine fir
Betula papyrifera	paper birch
Larix lyallii	subalpine larch
Larix occidentalis	western larch
Picea engelmannii	Engelmann spruce
Picea engelmannii x glauca	hybrid white spruce
Pinus albicaulis	whitebark pine
Pinus contorta	lodgepole pine
Pinus monticola	western white pine
Populus balsamifera ssp. trichocarpa	black cottonwood
Populus tremuloides	trembling aspen
Pseudotsuga menziesii	Douglas-fir
Thuja plicata	western redcedar
Tsuga heterophylla	western hemlock
Tsuga mertensiana	mountain hemlock

SHRUBS

Acer glabrum	Douglas maple
Alnus crispa ssp. sinuata	Sitka alder
Alnus tenuifolia	mountain alder
Amelanchier alnifolia	saskatoon
Betula glandulosa	scrub birch
Betula occidentalis	water birch
Ceanothus sanguineus	redstem ceanothus
Ceanothus velutinus	snowbrush
Clematis occidentalis	Columbia clematis
Cornus stolonifera	red-osier dogwood
Corylus cornuta	beaked hazelnut
Juniperus communis	common juniper
Juniperus scopulorum	Rocky Mountain juniper
Ledum glandulosum	trapper's rea
Ledum groenlandicum	Labrador tea
Lonicera ciliosa	western trumpet honeysuckle
Lonicera involucrata	black twinberry
Lonicera utahensis	Utah honeysuckle
Mahonia aquifolium	tall Oregon-grape
Menziesia ferruginea	false azalea
Oplopanax horridus	devil's club

Pachistima myrsinites	falsebox
Potentilla fruticosa	shrubby cinquefoil
Rhamnus alnifolia	alder-leaved buckthorn
Rhododendron albiflorum	white-flowered rhododendron
Ribes cereum	squaw currant
Ribes hudsonianum	northern blackcurrant
Ribes lacustre	black gooseberry
Ribes oxycanthoides	northern gooseberry
Rosa acicularis	prickly rose
Rosa woodsii	prairie rose
Rubus idaeus	red raspberry
Rubus parviflorus	thimbleberry
Salix barclayi	Barclay's willow
Salix bebbiana	Bebb's willow
Salix brachycarpa	short-fruited willow
Salix candida	hoary willow
Salix commutata	variable willow
Salix commutata var. puberula	variable willow
Salix drummondiana	Drummond's willow
Salix glauca	grey-leaved willow
Salix maccalliana	MacCall's willow
Salix planifolia ssp. planifolia	tea-leaved willow
Salix prolixa	Mackenzie's willow
Salix pseudomonticola	mountain willow
Salix scouleriana	Scouler's willow
Salix sp.	willow
Salix vestita	rock willow
Sambucus racemosa ssp. pubens	red elderberry
Shepherdia canadensis	soopolallie
Sorbus scopulina	western mountain-ash
Sorbus sitchensis	Sitka mountain-ash
Spiraea betulifolia	birch-leaved spirea
Symphoricarpos albus	common snowberry
Vaccinium membranaceum	black huckleberry
Vaccinium myrtilloides	velvet-leaved blueberry
Vaccinium ovalifolium	oval-leaved blueberry
Viburnum edule	highbush-cranberry

HERBS

Achillea millefolium	yarrow
Achillea millefolium var. alpicola	yarrow
Actaea rubra	baneberry

Agrostis gigantea	redtop
Agrostis humilis	alpine bentgrass
Agrostis scabra	hair bentgrass
Agrostis sp.	bentgrass
Agrostis stolonifera	creeping bentgrass
Allium cernuum	nodding onion
Anaphalis margaritacea	pearly everlasting
Anemone occidentalis	western pasqueflower
Antennaria alpina	alpine pussytoes
Antennaria lanata	woolly pussytoes
Antennaria microphylla	rosy pussytoes
Antennaria neglecta	field pussytoes
Antennaria pulcherrima	showy pussytoes
Antennaria sp.	pussytoes
Antennaria umbrinella	umber pussytoes
Apocynum androsaemifolium	spreading dogbane
Aquilegia flavescens	yellow columbine
Aquilegia formosa	red columbine
Aquilegia sp.	columbine
Arabis holboellii	Holboell's rockcress
Aralia nudicaulis	wild sarsaparilla
Arctium lappa	great burdock
Arctostaphylos uva-ursi	kinnikinnick
Arenaria capillaris	thread-leaved sandwort
Arnica chamissonis	meadow arnica
Arnica cordifolia	heart-leaved arnica
Arnica latifolia	mountain arnica
Arnica sp.	arnica
Asarum caudatum	wild ginger
Aster borealis	rush aster
Aster ciliolatus	Lindley's aster
Aster conspicuus	showy aster
Aster foliaceus	leafy aster
Aster modestus	great northern aster
Aster occidentalis	western mountain aster
Aster sp.	aster
Astragalus miser	timber milk-vetch
Astragalus sp.	
Athyrium filix-femina	lady fern
Balsamorhiza sagitatta	arrow-leaved balsamroot
Bromus anomalus	nodding brome
Bromus carinatus	California brome
Bromus ciliatus	fringed brome

Bromus sp.	brome
Bromus vulgaris	Columbia brome
Calamagrostis canadensis	bluejoint
Calamagrostis rubescens	pinegrass
Campanula rotundifolia	common harebell
Carex albonigra	two-toned sedge
Carex aquatilis	water sedge
Carex aurea	golden sedge
Carex concinna	low northern sedge
Carex concinnoides	northwestern sedge
Carex disperma	soft-leaved sedge
Carex lanuginosa	woolly sedge
Carex lasiocarpa	slender sedge
Carex nardina	spikenard sedge
Carex nigricans	black alpine sedge
Carex richardsonii	Richardson's sedge
Carex rossii	Ross' sedge
Carex sp.	sedge
Carex spectabilis	showy sedge
Carex vaginata	sheathed sedge
Carex utriculata	beaked sedge
Cassiope mertensiana	white mountain-heather
Cassiope tetragona	four-angled mountain-heather
Castilleja miniata	scarlet paintbrush
Castilleja occidentalis	western paintbrush
Castilleja parviflora	small-flowered paintbrush
Castilleja rhexifolia	alpine paintbrush
Castilleja sp.	paintbrush
Cerastium arvense	field chickweed
Chimaphila umbellata	prince's pine
Cinna latifolia	nodding wood-reed
Cirsium arvense	Canada thistle
Cirsium sp.	thistle
Clintonia uniflora	queen's cup
Corallorhiza sp.	coralroot
Cornus canadensis	bunchberry
Cryptogramma sp.	
Danthonia intermedia	timber oatgrass
Disporum hookeri	Hooker's fairybells
Disporum trachycarpum	rough-fruited fairybells
Dryas drummondii	yellow mountain-avens
Dryas octopetala	white mountain-avens
Dryopteris expansa	spiny wood fern

Elymus glaucus	blue wildrye
Elymus sp.	wildrye
Elymus spicatus	bluebunch wheatgrass
Empetrum nigrum	crowberry
Epilobium anagallidifolium	alpine willowherb
Epilobium angustifolium	fireweed
Epilobium hornemannii	Hornemann's willowherb
Epilobium latifolium	broad-leaved willowherb
Epilobium leptocarpum	small-flowered willowherb
Epilobium minutum	small-flowered willowherb
Equisetum arvense	common horsetail
Equisetum hyemale	scouring-rush
Equisetum palustre	marsh horsetail
Equisetum pratense	meadow horsetail
Equisetum scirpoides	dwarf scouring-rush
Equisetum variegatum	northern scouring-rush
Erigeron aureus	golden fleabane
Erigeron compositus var. glabratus	cut-leaved daisy
Erigeron peregrinus	subalpine daisy
Erigeron sp.	fleabane
Erythronium grandiflorum	yellow glacier lily
Festuca campestris	rough fescue
Festuca occidentalis	western fescue
Festuca saximontana	Rocky Mountain fescue
Festuca sp.	fescue
Fragaria vesca	wood strawberry
Fragaria virginiana	wild strawberry
Galium boreale	northern bedstraw
Galium trifidum	small bedstraw
Galium triflorum	sweet-scented bedstraw
Gaultheria hispidula	creeping-snowberry
Gaultheria humifusa	alpine-wintergreen
Gaultheria ovatifolia	western tea-berry
Geocaulon lividum	bastard toad-flax
Geum macrophyllum	large-leaved avens
Geum sp.	
Glyceria striata	fowl mannagrass
Goodyera oblongifolia	rattlesnake-plantain
Goodyera repens	dwarf rattlesnake orchid
Gymnocarpium dryopteris	oak fern
Haplopappus lyallii	Lyall's goldenweed
Hedysarum sulphurescens	yellow hedysarum
Heracleum lanatum	cow-parsnip

Heuchera cylindrica	round-leaved alumroot
Hieracium albiflorum	white hawkweed
Hieracium aurantiacum	orange hawkweed
Hieracium gracile	slender hawkweed
Hieracium scouleri	Scouler's hawkweed
Hieracium sp.	hawkweed
Hieracium umbellatum	narrow-leaved hawkweed
Hippuris vulgaris	common mare's-tail
Juncus balticus	baltic rush
Juncus drummondii	Drummond's rush
Juncus mertensiana	Merten's rush
Juncus sp.	rush
Kalmia microphylla	western bog-laurel
Lathyrus nevadensis	purple peavine
Leptarrhena pyrolifolia	leatherleaf saxifrage
Ligusticum canbyi	Canby's lovage
Lilium columbianum	tiger lily
Linnaea borealis	twinflower
Listera convallarioides	broad-leaved twayblade
Listera cordata	heart-leaved twayblade
Lithospermum ruderale	lemonweed gromwell
Luetkea pectinata	partridgefoot
Luzula parviflora	small-flowered woodrush
Luzula piperi	Piper's woodrush
Luzula sp.	woodrush
Lycopodium annotinum	stiff clubmoss
Lycopodium clavatum	running clubmoss
Lycopodium complanatum	ground-cedar
Lycopodium sp.	clubmoss
Lysichiton americanum	skunk-cabbage
Maianthemum canadense	wild lily-of-the-valley
Medicago lupulina	black medic
Melampyrum lineare	cow-wheat
Mentha arvensis	field mint
Mitella breweri	Brewer's mitrewort
Mitella nuda	common mitrewort
Mitella sp.	mitrewort
Moneses uniflora	single delight
Montia parvifolia	small-leaved montia
Muhlenbergia andina	foxtail muhly
Muhlenbergia glomerata	marsh muhly
Onobrychis viciaefolia	sainfoin
Orthilia secunda	one-sided wintergreen

Oryzopsis asperifolia	rough-leaved ricegrass
Osmorhiza chilensis	mountain sweet-cicely
Oxycoccus oxycoccos	bog cranberry
Parnassia fimbriata	fringed grass-of-Parnassus
Pedicularis bracteosa	bracted lousewort
Pedicularis racemosa	sickletop lousewort
Pedicularis sp.	lousewort
Penstemon fruticosus	shrubby penstemon
Petasites frigidus	sweet coltsfoot
Petasites frigidus var. nivalis	arctic coltsfoot
Petasites frigidus var. palmatus	palmate-leaved coltsfoot
Petasites sagittatus	arrow-leaved coltsfoot
Phacelia sericea	silky phacelia
Phleum alpinum	alpine timothy
Phleum pratense	common timothy
Phlox longifolia	long-leaved phlox
Phyllodoce empetriformis	pink mountain-heather
Phyllodoce glanduliflora	yellow mountain-heather
Phyllodoce sp.	mountain-heather
Platanthera orbiculata	large round-leaved rein orchid
Platanthera dilitata	white bog orchid
Platanthera hyperborea	green-flowered bog orchid
Platanthera sp.	orchid
Poa alpina	alpine bluegrass
Poa cusickii	Cusick’s bluegrass
Poa pratensis	Kentucky bluegrass
Poa. sp.	bluegrass
Poaceae	grass
Polygonum viviparum	alpine bistort
Polystichum lonchitis	mountain holly fern
Potentilla diversifolia	diverse-leaved cinquefoil
Potentilla gracilis	graceful cinquefoil
Potentilla palustris	marsh cinquefoil
Potentilla uniflora	one-flowered cinquefoil
Pyrola asarifolia	pink wintergreen
Pyrola chlorantha	green wintergreen
Ranunculus eschscholtzii	subalpine buttercup
Ranunculus gmelinii	small yellow water buttercup
Ranunculus sp.	buttercup
Rubus arcticus	nagoonberry
Rubus pedatus	five-leaved bramble
Rubus pubescens	trailing raspberry
Rumex acetosa	green sorrel

Salix arctica	arctic willow
Salix reticulata	netted willow
Salix reticulata ssp. nivalis	dwarf snow willow
Salix sp.	willow
Sanguisorba sp.	burnet
Saxifraga bronchialis	spotted saxifrage
Saxifraga lyallii	red-stemmed saxifrage
Saxifraga sp.	saxifrage
Schizachne purpurascens	false melic
Scirpus sp.	bulrush
Scirpus validus	soft-stemmed bulrush
Sedum integrifolium	roseroot
Selaginella sp.	selaginella
Selaginella wallacei	Wallace's selaginella
Senecio integerrimus	western groundsel
Senecio pseudaureus	streambank butterweed
Senecio sp.	
Senecio triangularis	arrow-leaved groundsel
Sibbaldia procumbens	sibbaldia
Silene acaulis	moss campion
Smilacina racemosa	false Solomon's-seal
Smilacina stellata	star-flowered false Solomon's-seal
Solidago canadensis	Canada goldenrod
Solidago multiradiata	northern goldenrod
Solidago sp.	
Solidago spathulata	spike-like goldenrod
Stipa occidentalis	stiff needlegrass
Stipa sp.	
Streptopus amplexifolius	clasping twistedstalk
Streptopus roseus	rosy twistedstalk
Streptopus streptopoides	small twistedstalk
Taraxacum officinale	common dandelion
Thalictrum occidentale	western meadowrue
Tiarella trifoliata	three-leaved foamflower
Tiarella trifoliata var. unifoliata	one-leaved foamflower
Tragopogon dubius	yellow salsify
Trautvettaria caroliniensis	false bugbane
Trifolium hybridum	alsike clover
Trifolium pratense	red clover
Trifolium repens	white clover
Trisetum cernuum	nodding trisetum
Trisetum spicatum	spike trisetum
Trollius laxus	globeflower

Typha latifolia	common cattail
Vaccinium caespitosum	dwarf blueberry
Vaccinium myrtillus	low bilberry
Vaccinium scoparium	grouseberry
Vaccinium vitis-idaea	lingonberry
Vahlodia atropupurea	mountain hairgrass
Valeriana sitchensis	Sitka valerian
Veratrum viride	Indian hellebore
Veronica sp.	speedwell
Veronica wormskjoldii	alpine speedwell
Viola adunca	early blue violet
Viola canadensis	Canada violet
Viola glabella	stream violet
Viola orbiculata	rounded-leaved violet
Viola renifolia	kidney-leaved violet
Viola sp.	violet
Zigadenus elegans	mountain death-camas

MOSSES & LIVER-WORTS

Aulacomnium palustre	glow moss
Barbilophozia floerkei	
Barbilophozia hatcheri	
Barbilophozia lycopodioides	
Barbilophozia sp.	
Brachythecium albicans	lawn moss
Brachythecium sp.	
Calliergon giganteum	giant water moss
Campylium stellatum	
Ceratodon purpureus	fire moss
Climacium dendroides	
Cratoneuron commutatum	
Dicranum fuscescens	curly heron’s-bill moss
Dicranum muehlenbeckii	
Dicranum polysetum	wavy-leaved moss
Dicranum scoparium	broom moss
Dicranum sp.	
Drepanocladus sp.	
Drepanocladus uncinatus	sickle moss
Hylocomium splendens	step moss
Hypnum circinale	
Hypnum sp.	

Lophozia sp	
Marchantia polymorpha	
Mnium sp.	
Mnium spinulosum	red-mouthed leafy moss
moss	moss
Plagiochila aspleniformis	
Plagiomnium insigne	coastal leafy moss
Plagiomnium medium	common leafy moss
Plagiomnium rostratum	
Plagiomnium sp.	
Pleurozium schreberi	red-stemmed feathermoss
Pohlia sp.	
Polytrichum alpinum	stiff-leaved haircap moss
Polytrichum commune	
Polytrichum juniperinum	juniper haircap moss
Polytrichum piliferum	awned haircap moss
Polytrichum sp.	
Ptilium crista-castrensis	knight's plume
Racomitrium canescens	grey rock moss
Racomitrium ericoides	
Racomitrium fasciculare	
Racomitrium sp.	
Rhizomnium glabrescens	large leafy moss
Rhizomnium nudum	
Rhizomnium sp.	
Rhytidiadelphus loreus	lanky moss
Rhytidiadelphus triquetrus	electrified cat's-tail moss
Rhytidiopsis robusta	pipecleaner moss
Sphagnum capillifolium	common red sphagnum
Sphagnum sp.	
Timmia austriaca	false-polytrichum
Tortula ruralis	sidewalk moss

LICHENS

Alectoria sarmentosa	common witch's hair
Alectoria sp.	
Bryoria fuscescens	speckled horsehair
Bryoria sp.	
Cetraria aculeata	spiny heath
Cetraria ericetorum	icelandmoss
Cetraria sp.	icelandmoss lichens
Cladina rangiferina	grey reindeer lichen

Cladina sp.	
Cladonia bellidiflora	British soldiers
Cladonia carneola	royal pixie-cup
Cladonia chlorophaea	peppered pixie-cup
Cladonia cornuta	greater pixie stick
Cladonia ecmocyna	orange-footed pixie
Cladonia gracilis	
Cladonia pleurota	brimstone pixie
Cladonia pyxidata	brown pixie cup
Cladonia sp.	
Cladonia squamosa	
Cladonia sulphurina	sulphur cladonia
Hypogymnia physodes	monk's hood
Letharia vulpina	common wolf lichen
Peltigera aphthosa	freckle pelt
Peltigera canina	dog pelt
Peltigera membranacea	greater dog pelt
Peltigera sp.	pelt lichens
Stereocaulon paschale	cottontail coral
Stereocaulon sp.	
Stereocaulon tomentosum	woolly coral

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Appendix II ECOSYSTEM UNIT CORRELATION TABLE

BEC	BC MoF Site Series (Braumand l et. al 1992)	Steamboat Mountain TEM Map Code	Brewer Creek TEM (Kernagha n et al. 1997)	E. Columbia Lk TEM (Marcoux et al 1997)	Stoddard Cr. TEM Marcoux et al (1996)	(Kootenay National Park (Achuff et. al. 1984)	COMMENTS
IDFdm2	02	AW	AW	AW	AW		
	03	DS	DS	DS	DS		
	01	DT	DT	DT	DT		
	07	SH	SH	SH	SH		
	04	SP	SP	SP	SP		
	05	SS	SS	SS	SS		
MSdk	00	AC	AC	AC			
	03	LJ	LJ	LJ	LJ		
	04	LP	LP	LP	LP		
	07	SB	SB	SB	SB		
	01	SG	SG	SG	SG		
	06	SH	SH	SH	SH		
	05	SS	SS	SS	SS		
	02	SW	SW	SW	SW		
ESSdk	00	AC	AC	AC	AC		
	01	FA	FA	FA	FA		
	02	DM	DM	DM	DM		
	03	FG	FG	FG	FG		
	04	FS	FS	FS	FS		
	05	FM	FM	FM	FM		
	06	FH	FH	FH	FH		
	07	WS	WS	WS	WS		
ESSFdku	00	FS	AC		AC		ESSFdku was formally known as ESSFunn in Brewer TEM and as part of ESSFdk in the MOF Field Guide
	‘00	FA	ACjy		ACjy		
	00	PV	AC				
	00	CH	AC				
	01	LG	LG		FA		
	02	PJ	PJ		DM		
		LM					
	03,04	FG	FG		FG, FS		
		LH					
		PW					
	05	HG	HG		FM		
	06	FH	FH		FH		
	07	WS	WS		FS		
ESSFdkp	00		AC				
	00	AW	AW		AW	H1	
	00	DV	DV		DV, AC	H16, L7	
	00	LM	LM		LH	O13	
	00	EM	EM		SH	O10	
	00	WF	WF		WF, FG	H17, O4	
	00	YW	YW		YW	L5	
AT	00	AW	AW		AW	H1	
	00	BP	BP			H2	

BEC	BC MoF Site Series (Braumandl et. al 1992)	Steamboat Mountain TEM Map Code	Brewer Creek TEM (Kernaghan et al. 1997)	E. Columbia Lk TEM (Marcoux et al 1997)	Stoddard Cr. TEM Marcoux et al (1996)	(Kootenay National Park (Achuff et. al. 1984)	COMMENTS
	00	SL	SL			H12	

Appendix III Site Series Descriptions

Subzone	Map Symbol	Site Series #	Site Series Name	Assumed Modifiers	Typical Conditions	Moisture Regime	Mapped Modifiers
AT	**AW**	00	Mountain-avens - Snow willow	c,s	significant slope, shallow,coarse textured soil	subxeric - mesic	d,j,k,q,v, w,z
AT	**BP**	00	Black alpine sedge - Woolly pussytoes	d,j,m	gentle slope, deep, medium textured soils	mesic - subhygric	s,v
AT	**SL**	00	Saxicolous lichen	m,v	significant slopes, very shallow, medium textured soil	xeric - subxeric	j,k,q,r,w,z
ESSFdk	**AC**	00	Avalanche Chute		avalanching unit, significant slope	subxeric - subhygric	j,k,w,y
ESSFdk	**FA**	01	Bl - Azalea - Foamflower	d, j, m	gentle slope, deep, medium-textured soils	mesic	a,c,f,g,n, s,t,w
ESSFdk	**FG**	03	Bl - Azalea - Grouseberry	d, j, m	gentle, deep, medium-textured, non-calcareous soils	subxeric - mesic	a,c,h,k,n, s,t,v,w
ESSFdk	**FH**	06	Bl - Azalea - Horsetail	d, j, m	gentle to level slope, receiving sites, deep medium-textured soils	subhygric - hygric	a,c,f,p,w
ESSFdk	**FM**	05	Bl - Azalea - Step moss	d, j, m	gentle, lower slope, moisture receiving, deep,medium-textured soils	subhygric	a,c,f,g,n, p
ESSFdk	**FS**	04	Bl - Azalea - Soopolallie	d, j, m	gentle slope, deep, medium-textured, calcareous soils	submesic - mesic	c,g,h,k,n, r,s,t,v,w
ESSFdk	**WS**	07	Willow - Sedge	d, j, m	mineral wetland, deep, medium-textured soils	subhydric	a,p
ESSFdkp	**AW**	00	Mountain-avens - Snow willow	c,j,s	gentle slopes, shallow, coarse-textured soils	submesic - mesic	d,k,n,v,w
ESSFdkp	**DV**	00	Subalpine daisy - Sitka valerian	d,j,m	gentle slopes, deep, medium textured soils ,receiving sites,disclimax	mesic - subhygric	g,s,v
ESSFdkp	**EM**	00	SeBl - White mountain-heather	d,m	significant slopes, deep, medium textured soils	mesic - submesic	c,j,k,n,s,v ,w
ESSFdkp	**LM**	00	Bl - Subalpine larch-White mountain-heather	d,j,m	gentle slopes, deep, medium textured soils ,receiving sites	mesic - subhygirc	k,s,w
ESSFdkp	**WF**	00	Whitebark pine - Subalpine fir	c,s,w	significant slopes, warm aspect shallow, coarse-textured soils	subxeric - mesic	d,j,k,v
ESSFdkp	**YW**	00	Yellow mountain-heather - Woolly pussytoes	d,m,w	significant slopes, warm aspect, deep, medium textured soils	submesic - mesic	c,g,h,j,k, s,v
ESSFdku	**CH**	00	Cow-parsnip - Indian hellebore	j	avalanching unit, gentle slope	mesic - subhygric	
ESSFdku	**FA**	00	Subalpine fir -Sitka alder	j	avalanching unit, gentle slope	mesic - subhygric	
ESSFdku	**FG**	00	Bl - Grouseberry	d, j, m	gentle, convex slope, deep, medium-textured soils	subxeric - submesic	c,h,k,n,r, s,v,w

ESSFdku	**FH**	00	Bl - Horsetail	d, j, m	gentle to level slope, receiving sites, medium textured soils	hygric	a,f,
ESSFdku	**FS**	00	Subalpine fir - Engelmann spruce		avalanching unit, significant slope	subxeric - mesic	k,w
ESSFdku	**HG**	00	Bl - Pink mountain-heather	d, j, m	gentle concave slope, deep medium-textured soils	subhygric	a,f,n,s
ESSFdku	**LG**	00	Subalpine larch - Mixed herb	d, j, m	gentle slope, deep, medium-textured soils	mesic	k,s,t,v,w
ESSFdku	**LH**	00	Subalpine larch - Mountain-heather	d, j, m	gentle slope, deep, medium-textured soils	submesic - mesic	k,n,s,v,w
ESSFdku	**LM**	00	Subalpine larch - Moss	c,k,s	significant slope, cool aspect, shallow, coarse-textured soils	subxeric - mesic	v,w
ESSFdku	**PJ**	00	Pa - Juniper	d, m, w	significant slope, warm aspect, deep, medium-textured soils	xeric - subxeric	k,s,v
ESSFdku	**PV**	00	Western pasqueflower - Sitka valerian		avalanching unit, significant slope	subxeric - submesic	k,w
ESSFdku	**PW**	00	Western pasqueflower - Arctic willow	d, j, m	gentle concave slope, deep medium-textured soils,disclimax climax	mesic - subhygric	k,n,
ESSFdku	**WS**	00	Willow - Sedge	d,j, m	mineral wetland; deep, medium-textured soils	subhydric	p
ESSFwm	**AC**	00	Avalanche Chute		avalanching unit, significant slope	subxeric - subhygric	j,k,w,y
ESSFwm	**FG**	00	BI -Pa - Grouseberry	d,m	significant slope, deep, medium textured soils	xeric - subxeric	c,j,k,s,v, w
ESSFwm	**FH**	00	Bl - False azalea - Horsetail	d,j,m	gentle slope, deep, medium textured soils	subhygric - hygric	a,c,f,k,n, p,s,t,w
ESSFwm	**FP**	00	Bl - Black huckleberry - Red-stemmed feathermoss	d,j,m	gentle slope, deep, medium textured soils	mesic - subhygric	a,c,f,g,k, n,s,t,w
ESSFwm	**FS**	00	Bl - Sedge - Sphagnum	d,j,m	level, deep, medium textured soils	subhygric	a,c,p
ESSFwm	**FV**	00	Bl - Rhododendron - Black huckleberry	d,m	significant slope, deep, medium textured soils	submesic - mesic	c,f,g,h,j,k, n,r,s,v,w
ESSFwm	**SM**	00	Sedge Marsh	j	depressional wetland, mineral soil, fluctuating water level	subhydric - hydric	p
ESSFwmp	**FA**	00	Bl - White mountain-heather - Arrow-leaved groundsel	d,j,m	gentle slope,moisture receiving; deep, medium textured soils	subhygric-hygric	a,k,p,s,v
ESSFwmp	**FM**	00	Bl - White mountain-heather - Western pasqueflower	j,m,s	crest position,shallow, medium textured soils	xeric - subxeric	c,d,g,k,n, q,r,v,w
ESSFwmp	**FS**	00	Bl - White mountain-heather -Sitka valerian	d,m	significant slope, deep, medium textured soils	submesic - mesic	c,j,k,n,s,v ,w
ESSFwmu	**FB**	00	Bl - Black huckleberry - Mountain arnica	d,j,m	gentle slope, deep, medium textured soils	mesic - subhygric	a,c,k,s
ESSFwmu	**FR**	00	Bl - White-flowered rhododendron - White mountain-heather	d,m	significant slope, deep, medium textured soils	submesic - mesic	c,j,k,r,s,v, w
ESSFwmu	**UF**	00	Avalanche chute	d,m	avalanching unit;	subxeric -	c,j,k,s,v,

					significant slope, deep, medium textured soils	mesic	w
ESSFwmu	**UG**	00	Avalanche chute - Runout zone	d,j,m	avalanching unit; gentle slope, deep, medium textured soils	mesic - subhygric	a,c,k
ESSFwmu	**WE**	00	Willow - Horsetail	d,j,m	level, deep, medium textured soils	hygric	a,c,p
ESSFwmu	**WH**	00	Pa - Black huckleberry - White mountain-heather	d,m	significant slope, deep, medium textured soils	subxeric - submesic	c,j,k,q,s,v,w
ESSFwmu	**WS**	00	Willow - Sedge	d,j,m	level, deep, medium textured soils	hygric - subhydric	a,c,f,p
ICHmk1	**DT**	03	FdPl - Pinegrass - Twinflower	d,m	significant slope; deep, medium-textured soils	subxeric	c,k,v
ICHmk1	**RF**	01	CwSxw - Falsebox	d,j,m	gentle slope; deep, medium-textured soils	mesic	c,k,s,v
ICHmk1	**SC**	08	Sedge - Cinquefoil	p	organic wetland	subhydric	
ICHmk1	**SG**	05	SxwFd - Gooseberry - Sarsaparilla	d,j,m	gentle slope; lower slope receiving position; deep, medium-textured soils	subhygric	g,k,n
ICHmk1	**SH**	07	Sxw - Horsetail	d,m	level, receiving position; deep, medium-textured soils	hygric - subhydric	n,p
ICHmk1	**SM**	00	Beaked sedge - Water sedge Marsh	j	depressional wetland, mineral soil, fluctuating water level	subhydric - hydric	p
ICHmk1	**SO**	06	Sxw - Oak fern	d,m	level, receiving position; deep, medium-textured soils	hygric	f,g,n
ICHmw1	**AC**	00	Avalanche Chute		avalanching unit, significant slope	subxeric - subhygric	k
ICHmw1	**DS**	'04	CwFd - Soopolallie - Douglas maple	d,m,w	significant slope; warm aspect. deep, medium textured soil	subxeric - submesic	v
ICHmw1	**HF**	01	HwCw - Falsebox - Feathermoss	d,j,m	gentle slope; deep, medium-textured soils	mesic	c,g,k,s,v
ICHmw1	**RD**	05	CwHw Devil's club - Lady fern	d,f,j	level, receiving position; deep, fine-textured soils	subhygric	g,k,m,s,v
ICHmw1	**RH**	07	CwHw - Horsetail	c,d	toe slope to level; deep, coarse-textured soils	subhygric - subhydric	
IDFdm2	**BH**	06	Scrub birch - Horsetail	d	wetland, mineral soil, calcareous seepage	hygric - subhygric	p
IDFdm2	**BU**	00	Great Bulrush Marsh	j	depressional wetland, mineral soil, fluctuating water level	subhydric - hydric	p
IDFdm2	**CT**	00	Cattail Marsh	j	wetland, mineral soil	hydric	
IDFdm2	**DS**	03	Fd - Snowberry - Balsamroot	d, m, w	significant slope, warm aspect; deep, medium-textured soils	subxeric - submesic	j,s,v
IDFdm2	**DT**	01	FdPl - Pinegrass - Twinflower	d, j, m	gentle slope, deep, medium-textured soils	mesic	c,f,h,k,n,s,v,w
IDFdm2	**SH**	07	Sxw - Horsetail	c, d	level, moist, deep, coarse-textured fluvial, calcareous seepage	hygric - subhydric	a,m,p

IDFdm2	**SM**	00	Beaked sedge - Water sedge Marsh	j	depressional wetland, mineral soil, fluctuating water level	subhydric - hydric	p
IDFdm2	**SP**	04	FdLw - Spruce - Pinegrass	d, f. j	gentle slope; moisture receiving; deep, fine-textured soils	mesic - subhygric	a,c,g,k,m,n,s,t
IDFdm2	**SS**	05	SxwAt - Sarsaparilla	f	lower slope; receiving position, fine-textured soils	subhygric - hygric	a,c,g,m,n,t
MSdk	**AC**	00	Avalanche Chute		avalanching unit; significant slope	subxeric - subhygric	j,k,w,y
MSdk	**CT**	00	Cattail Marsh	j	wetland, mineral soil	hydric	
MSdk	**LJ**	03	Pl - Juniper - Pinegrass	d, m, w	significant slope, warm aspect; deep, medium - textured soils	xeric - submesic	c,s,v,z
MSdk	**LP**	04	Pl - Oregon-grape - Pinegrass	d, j, m,	gentle slopes; deep medium-textured soils	submesic - mesic	c,f,g,h,k,n,r,s,t,v,w
MSdk	**SB**	07	Sxw - Scrub birch - Sedge	p	open treed bog; organic soil	subhydric	
MSdk	**SG**	01	Sxw - Soopolallie - Grouseberry	d, j, m	gentle slope; deep, medium-textured soils	mesic	c,f,g,h,k,n,r,s,t,v,w
MSdk	**SH**	06	Sxw - Dogwood - Horsetail	d, m	level; moisture receiving sites; deep, medium-textured soils	hygric	a,c,f,g,n,p,s
MSdk	**SM**	00	Beaked sedge - Water sedge Marsh	j	depressional wetland, mineral soil, fluctuating water level	subhydric - hydric	p
MSdk	**SS**	05	Sxw - Soopolallie - Snowberry	d, j, m	lower slope, receiving sites; deep, medium-textured soils	subhygric	a,c,f,g,k,n,t,w
MSdk	**WS**	00	Willow- Sedge		mineral wetland	subhydric	

Anthropogenic Units Applied to All Subzones

all subzones	**BA**		Barren		land devoid of vegetation due to extreme climate or edaphic conditions	variable	
all subzones	**CF**		Cultivated Field		flat or gently rolling, subject to human agricultural practices	variable	
all subzones	**CL**		Cliff		steep, vertical or overhanging rock	variable	q,z
all subzones	**ES**		Exposed Soil		exposed soil	variable	k,w
all subzones	**GB**		Gravel Bar		unconsolidated fluvial materials on active floodplain	variable	
all subzones	**GL**		Glacier		glacier	variable	
all subzones	**LA**		Lake		lake >2m deep	variable	
all subzones	**MI**		Mine		unvegetated area used for extraction of mineral ores.	variable	

all subzones	**MO**		Moraine		unvegetated glacial drift	variable	k,r,w
all subzones	**MS**		Rubbly Mine Spoils		discarded overburden or waste rock	variable	
all subzones	**OW**		Shallow Open Water		shallow open water <2m deep	variable	
all subzones	**PD**		Pond		small water body >2m deep and <50 ha.	variable	
all subzones	**PG**		Patterned Ground		unvegetated land surface with a distinctive arrangment of stones or microtopography due to the effects of ground freezing	variable	
all subzones	**RG**		Rock Glacier		angular rocky ridges with interstitial ice	variable	k,w
all subzones	**RM**		Reclaimed Mine		a mined area that has plant communities composed of a mixture of agronomic or native grasses, forbs and shrubs.		k,
all subzones	**RI**		River		river	variable	
all subzones	**RO**		Rock Outcrop		gentle to steep rock outcrop	variable	h,k,q,r,w,z
all subzones	**RP**		Road Surface		road surface	variable	
all subzones	**RR**		Rural		residences and human developments	variable	
all subzones	**RU**		Rubble		gentle coarse textured materials	variable	k,r,w
all subzones	**TA**		Talus		graviationally deposited materials	variable	k,q,r,w
all subzones	**TS**		Mine Tailings		solid waste materials produced in mining or milling of ore.	variable	

Appendix IV WORKING LEGENDS

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Appendix V PLOT DATABASES

(spi_ful.mdb)
(spi_gif.mdb)
(spi_vis.mdb)
(spi_cwd.mdb)

Appendix VI SIBEC MENSURATION DATA

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
9800006	5651195	521530.0	ESSFwm	00	RV	w	5	1	Pl	27.6	28.1	88	Branch (not within a year to pith)
9800006			ESSFwm	00	RV	w	5	2	Pl	25.1	25.9	99	
9800006			ESSFwm	00	RV	w	5	3	Pl	26.8	25.5	98	
9800030	5642818	519310.0	ESSFdk	03	FG	k	5	1	Bl	20.0	25.4	86	
9800030			ESSFdk	03	FG	k	5	2	Bl	21.6	24.8	84	
9800030			ESSFdk	03	FG	k	5	3	Bl	19.3	23.7	81	
9800030			ESSFdk	03	FG	k	5	4	Bl	22.0	26.2	87	
9800030			ESSFdk	03	FG	k	5	5	Se	23.2	29.8	87	
9800030			ESSFdk	03	FG	k	5	7	Se	19.7	26.9	87	
9800030			ESSFdk	03	FG	k	5	8	Se	21.1	27.6	84	
9800842	5633899	509441.8	ESSFdk	04	FS	ct	4	1	Pl	22.3	27.0	70	
9800842			ESSFdk	04	FS	ct	4	2	Pl	20.3	22.8	68	
9800842			ESSFdk	04	FS	ct	4	3	Pl	20.0	26.3	70	
9800846	5649189	521724.0	MSdk	04	LP	ct	5	1	Pl	20.1	17.3	75	
9800846			MSdk	04	LP	ct	5	2	Pl	20.1	17.3	74	
9800846			MSdk	04	LP	ct	5	3	Pl	20.6	20.7	71	
9800846			MSdk	04	LP	ct	5	4	Pl	19.5	17.9	73	
9800884	5644271	520320.5	MSdk	01	SG	k	6	1	Fd	30.7	57.0	69	Branch (not within a year to pith)
9800884			MSdk	01	SG	k	6	2	Fd	29.6	56.7	73	Branch (72yrs.+1 yr. to pith)
9800884			MSdk	01	SG	k	6	3	Fd	28.0	45.4	66	
9800884			MSdk	01	SG	k	6	4	Fd	27.4	47.3	67	
T40	5635217	50884	ESSFdk	03	FG	t	4	1	Pl	18.7	22.4	69	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
		0.0											
T40			ESSFdk	03	FG	t	4	2	Pl	20.6	22.9	69	
T40			ESSFdk	03	FG	t	4	3	Pl	17.4	22.8	68	
T40			ESSFdk	03	FG	t	4	4	Pl	20.4	22.5	69	
T87	5644177	522805.0	MSdk	01	SG	nk	5	1	Sx	24.6	32.2	64	
T87			MSdk	01	SG	nk	5	2	Sx	22.6	30.3	59	
T87			MSdk	01	SG	nk	5	3	Sx	23.6	34.4	66	
T197	5650691	507487.0	MSdk	01	SG		6	1	Sx	28.5	51.1	80	
T197			MSdk	01	SG		6	2	Sx	30.4	52.0	70	
T197			MSdk	01	SG		6	3	Sx	30.4	61.9	79	
T250	5648748	507152.0	MSdk	04	LP		5	1	Fd	30.3	40.5	94	
T250			MSdk	04	LP		5	2	Fd	29.4	39.7	94	
T250			MSdk	04	LP		5	4	Fd	28.1	34.6	97	
T880	5644683	521330.0	MSdk	01	SG	k	6	1	Sx	23.8	37.0	68	
T880			MSdk	01	SG	k	6	2	Sx	25.3	37.4	62	
T880			MSdk	01	SG	k	6	3	Sx	28.0	36.5	73	
T880			MSdk	01	SG	k	6	4	Sx	27.4	37.8	71	
T883	5644131	523044.7	MSdk	05	SS	f	6	1	Sx	37.4	57.1	96	
T883			MSdk	05	SS	f	6	2	Sx	30.9	40.6	92	
T883			MSdk	05	SS	f	6	3	Sx	35.1	49.7	95	
T884	5643842	523540.0	MSdk	06	SH	f	6	1	Sx	38.2	53.0	107	
T884			MSdk	06	SH	f	6	3	Sx	39.1	51.7	102	
T884			MSdk	06	SH	f	6	4	Sx	43.0	63.3	108	
T899	5648969	515636.3	MSdk	06	SH	f	6	1	Sx	28.9	43.5	73	
T899			MSdk	06	SH	f	6	2	Sx	33.7	45.5	82	
T899			MSdk	06	SH	f	6	3	Sx	33.9	56.8	85	
T899			MSdk	06	SH	f	6	4	Sx	33.2	45.3	80	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T903	5643610	523795.0	MSdk	05	SS		5	1	Pl	31.3	28.5	97	
T903			MSdk	05	SS		5	2	Pl	27.5	26.4	98	
T903			MSdk	05	SS		5	3	Pl	27.8	26.9	98	
T903			MSdk	05	SS		5	4	Pl	28.1	27.2	97	
T914	5646174	519518.3	MSdk	01	SG	ct	5	1	Pl	27.5	31.9	68	
T914			MSdk	01	SG	ct	5	2	Pl	30.0	36.4	76	
T914			MSdk	01	SG	ct	5	3	Pl	27.9	32.4	72	
T914			MSdk	01	SG	ct	5	4	Pl	30.6	31.3	72	
T915	5645851	519589.7	MSdk	05	SS		6	1	Sx	36.3	56.2	87	
T915			MSdk	05	SS		6	2	Sx	36.2	66.5	85	
T915			MSdk	05	SS		6	3	Sx	36.7	54.0	85	
T916	5646250	519443.6	MSdk	03	LJ		6	1	Fd	23.1	44.7	60	
T916			MSdk	03	LJ		6	3	Fd	22.1	42.6	56	
T916			MSdk	03	LJ		6	4	Fd	25.3	52.7	63	
T917	5647695	517516.0	MSdk	03	LJ		5	2	Pl	26.9	31.2	94	
T917			MSdk	03	LJ		5	3	Pl	26.6	31.3	97	
T917			MSdk	03	LJ		5	4	Pl	28.3	31.5	83	
T922	5642793	518964.3	ESSFdk	04	FS	k	5	1	Se	24.0	35.5	83	
T922			ESSFdk	04	FS	k	5	2	Se	19.3	29.4	73	Not pith (71yrs.+2yrs. to pith)
T922			ESSFdk	04	FS	k	5	3	Se	20.7	27.7	69	Not pith (68yrs.+1yr. to pith)
T922			ESSFdk	04	FS	k	5	4	Se	19.5	26.2	79	Not pith (78yrs.+1yr. to pith)
T922			ESSFdk	04	FS	k	5	5	Bl	22.7	26.3	71	
T922			ESSFdk	04	FS	k	5	6	Bl	20.0	27.2	67	Branch (not within a year to pith)
T922			ESSFdk	04	FS	k	5	8	Bl	19.5	24.0	63	
T930	5643075	524146.5	MSdk	01	SG	k	5	1	Sx	29.9	34.9	84	
T930			MSdk	01	SG	k	5	2	Sx	28.9	36.0	85	
T930			MSdk	01	SG	k	5	3	Sx	29.3	34.0	80	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T930			MSdk	01	SG	k	5	4	Sx	31.1	37.7	78	Branch (not within a year to pith)
T931	5643177	524940.4	MSdk	05	SS	fn	6	1	Sx	33.5	38.1	77	
T931			MSdk	05	SS	fn	6	2	Sx	34.7	39.0	78	
T931			MSdk	05	SS	fn	6	3	Sx	29.9	38.7	81	Branch (not within a year to pith)
T931			MSdk	05	SS	fn	6	4	Sx	31.1	38.3	81	
T946	5653712	521546.2	MSdk	04	LP	ks	6	1	Fd	29.7	48.4	89	
T946			MSdk	04	LP	ks	6	2	Fd	31.7	59.2	95	
T946			MSdk	04	LP	ks	6	3	Fd	30.5	58.8	93	
T946			MSdk	04	LP	ks	6	4	Fd	29.1	45.6	85	
T1040	5654505	521715.0	ICHmk1	05	SG		6	1	Sx	32.8	35.0	89	
T1040			ICHmk1	05	SG		6	2	Sx	33.0	41.3	92	
T1040			ICHmk1	05	SG		6	3	Sx	31.2	42.1	92	
T1040			ICHmk1	05	SG		6	4	Sx	30.9	35.7	90	
T1040			ICHmk1	05	SG		6	5	Fd	36.7	54.2	81	Not pith (80yrs.+1yr. to pith)
T1040			ICHmk1	05	SG		6	7	Fd	39.4	58.7	95	
T1040			ICHmk1	05	SG		6	8	Fd	38.1	54.4	94	
T1041	5654199	522351.0	ICHmk1	01	RF		5	1	Fd	30.7	35.3	97	
T1041			ICHmk1	01	RF		5	2	Fd	30.6	35.4	103	
T1041			ICHmk1	01	RF		5	3	Fd	31.7	38.3	101	
T1041			ICHmk1	01	RF		5	4	Fd	30.3	44.9	103	
T1072	5648940	524824.6	MSdk	01	SG	f	5	1	Pl	26.5	28.3	74	
T1072			MSdk	01	SG	f	5	2	Pl	27.3	27.0	70	
T1072			MSdk	01	SG	f	5	3	Pl	23.8	27.7	78	
T1278	5651497	519701.9	MSdk	04	LP	w	5	1	Pl	24.8	25.2	73	
T1278			MSdk	04	LP	w	5	2	Pl	27.4	25.8	73	
T1278			MSdk	04	LP	w	5	3	Pl	27.4	28.9	71	
T1278			MSdk	04	LP	w	5	4	Pl	28.3	27.1	73	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1279	5653202	518861.9	MSdk	05	SS	t	5	2	Fd	23.3	31.2	90	
T1279			MSdk	05	SS	t	5	4	Sx	29.1	34.5	77	
T1279			MSdk	05	SS	t	5	5	Pl	24.8	35.9	98	
T1279			MSdk	05	SS	t	5	6	Fd	21.1	26.7	78	
T1279			MSdk	05	SS	t	5	7	Pl	25.6	27.4	100	
T1279			MSdk	05	SS	t	5	8	Pl	26.8	26.0	93	
T1279			MSdk	05	SS	t	5	9	Sx	25.2	26.9	72	
T1279			MSdk	05	SS	t	5	10	Sx	25.0	28.2	75	
T1279			MSdk	05	SS	t	5	12	Fd	22.6	34.1	81	
T1280	5654172	518897.2	MSdk	04	LP	w	5	1	Pl	22.0	19.2	71	
T1280			MSdk	04	LP	w	5	2	Pl	22.5	21.9	72	
T1280			MSdk	04	LP	w	5	3	Pl	22.9	19.1	71	
T1280			MSdk	04	LP	w	5	4	Pl	20.0	19.5	74	
T1281	5653903	518925.0	MSdk	04	LP	w	5	1	Fd	28.6	39.4	66	
T1281			MSdk	04	LP	w	5	2	Fd	25.8	36.7	57	
T1281			MSdk	04	LP	w	5	3	Fd	25.7	40.8	65	
T1281			MSdk	04	LP	w	5	4	Fd	27.0	38.7	62	
T1282	5653458	519408.9	MSdk	04	LP	w	5	1	Fd	24.4	38.5	64	
T1282			MSdk	04	LP	w	5	3	Fd	23.2	37.0	65	
T1282			MSdk	04	LP	w	5	4	Fd	23.6	36.0	59	
T1288	5652900	520545.6	MSdk	04	LP	w	5	1	Pl	22.9	22.0	100	
T1288			MSdk	04	LP	w	5	2	Pl	21.1	22.2	99	
T1288			MSdk	04	LP	w	5	3	Pl	21.5	20.8	98	
T1288			MSdk	04	LP	w	5	4	Pl	22.6	21.0	99	
T1290	5651851	52105	MSdk	04	LP		5	1	Pl	22.9	21.5	101	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
		8.6											
T1290			MSdk	04	LP		5	2	Pl	23.1	21.5	101	
T1290			MSdk	04	LP		5	3	Pl	22.6	23.2	101	
T1290			MSdk	04	LP		5	4	Pl	22.5	23.0	99	
T1507	5651777	524299.2	MSdk	04	LP		5	1	Pl	30.5	29.3	100	
T1507			MSdk	04	LP		5	2	Pl	33.8	35.9	96	
T1507			MSdk	04	LP		5	4	Pl	31.6	31.8	92	
T1507			MSdk	04	LP		5	6	Fd	33.7	41.1	95	
T1507			MSdk	04	LP		5	7	Fd	32.3	38.2	98	
T1507			MSdk	04	LP		5	8	Fd	33.9	41.9	98	
T1522	5652003	522709.2	MSdk	04	LP	s	5	1	Fd	23.9	35.7	97	
T1522			MSdk	04	LP	s	5	2	Fd	22.5	32.2	92	
T1522			MSdk	04	LP	s	5	3	Fd	23.6	34.1	96	Not pith (95yrs.+1yr. to pith)
T1522			MSdk	04	LP	s	5	4	Fd	22.4	36.7	102	
T1526	5650423	524677.4	MSdk	04	LP		5	2	Pl	28.9	31.1	99	
T1526			MSdk	04	LP		5	3	Pl	29.3	31.3	101	
T1526			MSdk	04	LP		5	4	Pl	28.2	31.0	99	
T1568	5637493	508412.7	ESSFdk	03	FG	w	5	1	Bl	22.7	29.1	63	
T1568			ESSFdk	03	FG	w	5	2	Bl	22.6	27.4	56	
T1568			ESSFdk	03	FG	w	5	4	Bl	26.7	36.1	75	
T1568			ESSFdk	03	FG	w	5	5	Se	26.2	31.6	62	
T1568			ESSFdk	03	FG	w	5	6	Se	23.4	24.7	60	
T1568			ESSFdk	03	FG	w	5	7	Se	22.3	25.4	58	
T1568			ESSFdk	03	FG	w	5	8	Se	24.1	26.0	63	
T1034	5654598	520234.4	MSdk	01	SG	k	5	1	Sx	34.8	38.8	91	
T1034			MSdk	01	SG	k	5	2	Sx	30.2	31.5	90	
T1034			MSdk	01	SG	k	5	3	Sx	28.7	34.8	93	
T1034			MSdk	01	SG	k	5	4	Sx	32.7	34.7	98	
T1034			MSdk	01	SG	k	5	5	Pl	30.0	39.1	108	
T1034			MSdk	01	SG	k	5	6	Pl	33.0	32.5	108	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1034			MSdk	01	SG	k	5	8	Pl	31.5	39.0	106	
T1038	5655068	521198.9	MSdk	01	SG	k	5	1	Fd	34.5	43.0	100	
T1038			MSdk	01	SG	k	5	2	Fd	33.0	54.7	106	
T1038			MSdk	01	SG	k	5	3	Fd	33.3	40.8	99	
T1207	5638363	530266.8	MSdk	01	SG		5	1	Pl	24.3	27.0	71	
T1207			MSdk	01	SG		5	2	Pl	27.1	28.8	71	
T1207			MSdk	01	SG		5	3	Pl	26.4	27.4	72	
T1207			MSdk	01	SG		5	4	Pl	25.8	29.6	74	
T1320	5650634	529103.6	MSdk	01	SG	f	5	1	Fd	21.5	29.0	51	
T1320			MSdk	01	SG	f	5	2	Fd	19.2	28.8	50	
T1320			MSdk	01	SG	f	5	3	Fd	20.7	31.6	50	
T1320			MSdk	01	SG	f	5	4	Fd	19.5	27.3	49	
T1327	5649966	531242.3	MSdk	01	SG		5	2	Pl	22.5	20.7	52	
T1327			MSdk	01	SG		5	3	Pl	20.5	20.8	51	
T1327			MSdk	01	SG		5	4	Pl	22.0	21.2	53	
T1342	5649921	526806.4	MSdk	01	SG	f	5	1	Pl	22.6	23.7	56	
T1342			MSdk	01	SG	f	5	2	Pl	22.5	21.1	60	
T1342			MSdk	01	SG	f	5	3	Pl	22.7	22.3	51	
T1342			MSdk	01	SG	f	5	4	Pl	23.3	21.3	55	
T1345	5650739	527335.8	MSdk	04	LP		6	1	Fd	31.5	51.0	103	
T1345			MSdk	04	LP		6	2	Fd	28.9	43.0	95	
T1345			MSdk	04	LP		6	3	Fd	27.8	37.2	88	
T1345			MSdk	04	LP		6	4	Fd	29.4	45.6	93	
T1346	5651620	526578.1	MSdk	04	LP		6M	1	Fd	28.3	37.5	103	
T1346			MSdk	04	LP		6M	2	Fd	28.8	38.0	103	
T1346			MSdk	04	LP		6M	3	Fd	30.2	44.0	100	
T1346			MSdk	04	LP		6M	4	Fd	29.0	36.4	100	
T1505	5652028	524877.1	MSdk	04	LP	v	5	1	Pl	19.9	22.8	97	
T1505			MSdk	04	LP	v	5	2	Pl	22.4	27.6	101	
T1505			MSdk	04	LP	v	5	3	Pl	22.7	26.1	107	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1505			MSdk	04	LP	v	5	4	Pl	21.8	24.1	96	
T1652	5648467	530740.6	MSdk	04	LP	f	5	1	Fd	23.1	32.0	58	
T1652			MSdk	04	LP	f	5	2	Fd	22.2	34.3	54	
T1652			MSdk	04	LP	f	5	3	Fd	23.8	36.4	56	
T1652			MSdk	04	LP	f	5	4	Fd	23.5	34.9	48	
T1656	5649285	530910.6	MSdk	04	LP		5	1	Fd	23.3	44.3	56	
T1656			MSdk	04	LP		5	2	Fd	24.1	41.6	60	
T1656			MSdk	04	LP		5	4	Fd	22.5	44.9	56	
T1658	5649648	530736.9	MSdk	04	LP	ks	5	1	Fd	15.2	23.1	53	
T1658			MSdk	04	LP	ks	5	2	Fd	15.0	26.6	49	
T1658			MSdk	04	LP	ks	5	3	Fd	17.6	23.8	53	
T1658			MSdk	04	LP	ks	5	4	Fd	17.0	21.6	56	
T1663	5650387	528163.0	MSdk	04	LP	f	5	1	Fd	22.2	27.4	50	
T1663			MSdk	04	LP	f	5	2	Fd	19.9	25.0	53	
T1663			MSdk	04	LP	f	5	3	Fd	18.4	23.1	46	
T1663			MSdk	04	LP	f	5	4	Fd	21.6	27.2	50	
9800789	5655958	519493.9	MSdk	04	LP	ck	5	2	Fd	19.3	29.5	65	
9800789			MSdk	04	LP	ck	5	3	Fd	19.2	33.9	60	
9800789			MSdk	04	LP	ck	5	4	Fd	20.3	32.9	61	
9800794	5652470	523100.0	MSdk	01	SG	k	5	1	Pl	29.5	29.0	113	
9800794			MSdk	01	SG	k	5	3	Pl	29.6	29.2	101	
9800794			MSdk	01	SG	k	5	4	Pl	34.6	32.5	112	
9800796	5654267	520965.2	MSdk	01	SG		5	1	Pl	26.9	30.8	110	
9800796			MSdk	01	SG		5	2	Pl	28.1	28.3	112	
9800796			MSdk	01	SG		5	3	Pl	27.4	27.1	113	
9800876	5644686	522324.0	MSdk	06	SH	af	6	1	Sx	29.3	60.0	76	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
9800876			MSdk	06	SH	af	6	2	Sx	31.6	55.3		Branch (not within a year to pith)
9800876			MSdk	06	SH	af	6	3	Sx	29.8	56.2	59	Branch (not within a year to pith)
9800876			MSdk	06	SH	af	6	4	Sx	31.2	60.0	71	
9800991	5654612	514584.0	MSdk	01	SG		5	1	Fd	31.0	40.4	92	
9800991			MSdk	01	SG		5	2	Fd	29.8	40.9	92	
9800991			MSdk	01	SG		5	3	Fd	30.1	40.2	99	
9800991			MSdk	01	SG		5	4	Fd	29.8	39.9	96	
T192	5646358	505461.0	ESSFwm	00	RV	ks	5	1	Pl	27.0	29.4	93	
T192			ESSFwm	00	RV	ks	5	2	Pl	26.7	30.5	98	
T192			ESSFwm	00	RV	ks	5	3	Pl	25.0	30.2	97	
9800009	5645809	504448.4	ESSFwm	00	RV	w	5	1	Pl	25.2	28.8	98	
9800009			ESSFwm	00	RV	w	5	2	Pl	26.1	28.4	97	
9800009			ESSFwm	00	RV	w	5	4	Pl	25.2	28.7	98	
9800010	5642807	504633.6	ESSFwm	00	RV	ks	5	1	Bl	27.2	42.5	86	
9800010			ESSFwm	00	RV	ks	5	3	Bl	22.0	36.2	96	
9800010			ESSFwm	00	RV	ks	5	4	Bl	22.1	26.8	82	
9800995	5657361	508281.0	ESSFwm	00	RV	k	5	2	Se	23.1	24.2	89	
9800995			ESSFwm	00	RV	k	5	3	Se	23.7	27.8	93	
9800995			ESSFwm	00	RV	k	5	4	Se	24.6	27.7	94	
T1458	5640988	533152.4	IDFdm2	01	DT		5	2	Pl	20.9	18.6	55	
T1458			IDFdm2	01	DT		5	3	Pl	20.6	19.2	55	
T1458			IDFdm2	01	DT		5	4	Pl	21.0	19.1	55	
T1457	5641298	531070.6	IDFdm2	01	DT		4	1	Pl	20.4	18.7	55	
T1457			IDFdm2	01	DT		4	2	Pl	22.2	18.8	55	
T1457			IDFdm2	01	DT		4	4	Pl	21.3	19.0	56	
T1456	5641327	531352.4	IDFdm2	01	DT		5	1	Fd	21.8	34.8	46	
T1456			IDFdm2	01	DT		5	2	Fd	22.6	30.3	46	
T1456			IDFdm2	01	DT		5	3	Fd	22.5	35.8	50	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1456			IDFdm2	01	DT		5	4	Fd	21.3	28.3	43	
T1473	5641112	531039.8	IDFdm2	01	DT		5	1	Pl	23.7	22.4	54	
T1473			IDFdm2	01	DT		5	2	Pl	26.0	25.7	54	
T1473			IDFdm2	01	DT		5	3	Pl	23.7	22.7	53	
T1473			IDFdm2	01	DT		5	4	Pl	23.9	22.5	53	
T1471	5641391	529916.3	IDFdm2	01	DT	k	5	2	Fd	22.3	22.8	63	
T1471			IDFdm2	01	DT	k	5	3	Fd	20.4	21.5	65	
T1471			IDFdm2	01	DT	k	5	4	Fd	19.7	21.6	67	
T1471			IDFdm2	01	DT	k	5	6	Pl	22.4	19.5	73	
T1471			IDFdm2	01	DT	k	5	7	Pl	22.9	19.5	74	
T1471			IDFdm2	01	DT	k	5	8	Pl	23.6	22.0	74	
T1148	5644196	536413.2	MSdk	04	LP	w	6	1	Fd	23.1	33.2	57	
T1148			MSdk	04	LP	w	6	2	Fd	22.1	32.3	58	
T1148			MSdk	04	LP	w	6	3	Fd	22.6	33.0	60	
T1148			MSdk	04	LP	w	6	4	Fd	22.8	38.0	54	
T1148			MSdk	04	LP	w	6	5	Pl	22.6	24.9	60	
T1148			MSdk	04	LP	w	6	6	Pl	20.0	23.0	59	
T1148			MSdk	04	LP	w	6	7	Pl	18.4	24.4	60	
T1144	5645815	536042.2	MSdk	04	LP	v	4	1	Pl	18.5	22.4	63	
T1144			MSdk	04	LP	v	4	2	Pl	18.6	22.5	65	
T1144			MSdk	04	LP	v	4	3	Pl	19.8	23.4	62	
T1144			MSdk	04	LP	v	4	4	Pl	18.7	22.6	63	
T1460	5637547	538518.1	IDFdm2	04	SP	m	5	2	Pl	23.3	28.6	54	
T1460			IDFdm2	04	SP	m	5	3	Pl	21.1	26.9	50	
T1460			IDFdm2	04	SP	m	5	4	Pl	20.9	28.3	52	
T1460			IDFdm2	04	SP	m	5	5	Fd	19.3	22.3	46	
T1460			IDFdm2	04	SP	m	5	6	Fd	21.8	23.6	45	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1460			IDFdm2	04	SP	m	5	7	Fd	19.1	23.5	46	
T1460			IDFdm2	04	SP	m	5	8	Fd	21.1	26.1	49	
T1459	5637006	537990.0	IDFdm2	04	SP	m	5	1	Fd	27.2	37.5	58	
T1459			IDFdm2	04	SP	m	5	2	Fd	22.1	33.4	52	
T1459			IDFdm2	04	SP	m	5	3	Fd	19.9	26.4	48	
T1459			IDFdm2	04	SP	m	5	5	Sx	25.1	29.2	52	
T1459			IDFdm2	04	SP	m	5	6	Sx	22.0	27.5	52	
T1459			IDFdm2	04	SP	m	5	7	Sx	27.0	40.3	54	
T1459			IDFdm2	04	SP	m	5	8	Sx	24.6	32.6	59	
T1695	5645428	523710.6	MSdk	01	SG	k	5M	1	Fd	28.3	36.2	71	
T1695			MSdk	01	SG	k	5M	2	Fd	28.4	34.7	72	
T1695			MSdk	01	SG	k	5M	3	Fd	27.2	35.9	74	
T1695			MSdk	01	SG	k	5M	4	Fd	28.2	34.2	74	
9800795	5649279	533127.3	IDFdm2	05	SS		6	1	Fd	26.6	42.0	83	
9800795			IDFdm2	05	SS		6	3	Fd	28.9	44.7	86	
9800795			IDFdm2	05	SS		6	4	Fd	29.4	39.3	86	
9800795			IDFdm2	05	SS		6	5	Sx	30.4	37.8	87	
9800795			IDFdm2	05	SS		6	7	Sx	30.3	33.9	83	
9800795			IDFdm2	05	SS		6	8	Sx	31.6	43.4	88	
9800797	5644041	531934.0	IDFdm2	01	DT	f	5	1	Fd	20.6	26.2	50	
9800797			IDFdm2	01	DT	f	5	2	Fd	18.6	21.6	50	
9800797			IDFdm2	01	DT	f	5	3	Fd	19.2	24.0	47	
9800797			IDFdm2	01	DT	f	5	4	Fd	20.1	22.0	50	
9800798	5647776	526830.7	IDFdm2	01	DT		5	1	Pl	22.5	20.6	65	
9800798			IDFdm2	01	DT		5	2	Pl	20.6	20.0	55	
9800798			IDFdm2	01	DT		5	3	Pl	22.2	20.1	62	
9800798			IDFdm2	01	DT		5	4	Pl	22.0	19.9	62	
9800844	5650143	529761.3	MSdk	01	SG		5	1	Fd	21.3	27.6	44	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
9800844			MSdk	01	SG		5	2	Fd	19.5	26.0	41	
9800844			MSdk	01	SG		5	3	Fd	19.8	26.5	46	
9800844			MSdk	01	SG		5	4	Fd	21.3	33.9	48	
9800861	5641536	530318.5	IDFdm2	04	SP	m	5	1	Sx	22.8	21.3	53	
9800861			IDFdm2	04	SP	m	5	2	Sx	28.5	34.7	58	
9800861			IDFdm2	04	SP	m	5	3	Sx	22.2	23.0	53	
9800861			IDFdm2	04	SP	m	5	4	Sx	24.6	26.3	52	
9800861			IDFdm2	04	SP	m	5	6	Fd	26.2	34.5	57	
9800861			IDFdm2	04	SP	m	5	7	Fd	25.5	32.3	58	
9800861			IDFdm2	04	SP	m	5	8	Fd	26.3	39.5	59	
9800862	5641352	534416.4	IDFdm2	04	SP	ck	5	1	Fd	18.0	24.0	46	
9800862			IDFdm2	04	SP	ck	5	2	Fd	17.8	22.8	46	
9800862			IDFdm2	04	SP	ck	5	3	Fd	18.3	22.7	46	
9800862			IDFdm2	04	SP	ck	5	4	Fd	18.2	23.6	44	
9800863	5653293	526335.7	IDFdm2	04	SP		5	1	Pl	21.4	19.3	55	
9800863			IDFdm2	04	SP		5	2	Pl	22.0	19.2	54	
9800863			IDFdm2	04	SP		5	3	Pl	22.4	20.2	54	
9800863			IDFdm2	04	SP		5	4	Pl	22.2	19.2	55	
9800867	5646780	533012.5	IDFdm2	03	DS	v	5	1	Fd	14.1	28.9	42	
9800867			IDFdm2	03	DS	v	5	2	Fd	15.2	24.4	49	
9800867			IDFdm2	03	DS	v	5	3	Fd	14.8	26.7	46	
9800867			IDFdm2	03	DS	v	5	4	Fd	13.1	25.6	38	
T932	5643701	532218.3	ESSFwm	00	RV	j	5	2	Pl	23.6	22.1	52	
T932			ESSFwm	00	RV	j	5	3	Pl	24.2	23.7	53	
T932			ESSFwm	00	RV	j	5	4	Pl	22.5	23.4	54	
T936	5644564	530510.0	IDFdm2	01	DT		4	1	Pl	20.6	24.3	55	
T936			IDFdm2	01	DT		4	2	Pl	22.3	24.5	40	
T936			IDFdm2	01	DT		4	3	Pl	22.3	23.9	55	
T940	5644974	53150	IDFdm2	01	DT	f	5	2	Pl	20.2	20.9	54	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
		9.6											
T940			IDFdm2	01	DT	f	5	3	Pl	21.8	22.1	54	
T940			IDFdm2	01	DT	f	5	4	Pl	22.9	21.2	52	
T1070	5648219	524412.0	IDFdm2	01	DT	cw	5	1	Pl	17.0	16.9	70	
T1070			IDFdm2	01	DT	cw	5	3	Pl	17.7	16.9	73	
T1070			IDFdm2	01	DT	cw	5	4	Pl	20.4	15.8	74	
T1198	5646497	532816.4	IDFdm2	04	SP	m	6	1	Fd	25.5	43.3	55	
T1198			IDFdm2	04	SP	m	6	2	Fd	21.7	27.6	59	
T1198			IDFdm2	04	SP	m	6	3	Fd	24.5	29.8	57	
T1198			IDFdm2	04	SP	m	6	4	Fd	21.1	25.4	46	
T1198			IDFdm2	04	SP	m	6	5	Sx	24.0	34.6	55	
T1198			IDFdm2	04	SP	m	6	6	Sx	26.8	36.2	55	
T1198			IDFdm2	04	SP	m	6	7	Sx	23.5	29.2	58	
T1199	5646664	532817.0	IDFdm2	01	DT	k	5	1	Fd	19.2	30.1	43	
T1199			IDFdm2	01	DT	k	5	2	Fd	21.0	26.2	44	
T1199			IDFdm2	01	DT	k	5	3	Fd	21.3	35.1	55	
T1199			IDFdm2	01	DT	k	5	4	Fd	23.0	37.8	55	
T1201	5646433	532677.0	IDFdm2	05	SS		6	1	Sx	25.6	40.0	56	
T1201			IDFdm2	05	SS		6	2	Sx	24.6	35.4	56	
T1201			IDFdm2	05	SS		6	3	Sx	27.3	49.7	59	
T1202	5648025	531764.0	IDFdm2	01	DT	f	5	1	Fd	20.2	38.8	45	
T1202			IDFdm2	01	DT	f	5	3	Fd	19.6	34.8	42	
T1202			IDFdm2	01	DT	f	5	4	Fd	20.2	38.0	40	
T1203	5647658	531768.6	IDFdm2	01	DT	w	5	1	Fd	18.0	33.1	44	
T1203			IDFdm2	01	DT	w	5	2	Fd	20.6	34.9	46	
T1203			IDFdm2	01	DT	w	5	3	Fd	18.3	40.1	43	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1204	5647179	532312.3	IDFdm2	01	DT		5	1	Fd	21.9	36.2	47	
T1204			IDFdm2	01	DT		5	2	Fd	19.8	33.6	48	
T1204			IDFdm2	01	DT		5	3	Fd	22.6	36.1	46	
T1204			IDFdm2	01	DT		5	4	Fd	19.5	25.7	48	
T1204			IDFdm2	01	DT		5	5	Pl	20.3	25.7	52	
T1204			IDFdm2	01	DT		5	7	Pl	20.6	24.3	54	
T1204			IDFdm2	01	DT		5	8	Pl	20.6	26.3	53	
T1205	5646373	532489.5	IDFdm2	04	SP		5	1	Fd	20.8	27.5	50	
T1205			IDFdm2	04	SP		5	2	Fd	21.4	27.8	49	
T1205			IDFdm2	04	SP		5	3	Fd	21.9	30.9	49	
T1205			IDFdm2	04	SP		5	4	Fd	20.5	32.6	49	
T1322	5650056	530365.7	MSdk	04	LP	f	5	1	Pl	25.3	28.7	61	
T1322			MSdk	04	LP	f	5	2	Pl	23.0	26.8	61	
T1322			MSdk	04	LP	f	5	3	Pl	25.9	26.9	63	
T1322			MSdk	04	LP	f	5	4	Pl	26.5	24.2	62	
T1349	5649536	528577.8	IDFdm2	05	SS	m	5	1	Sx	25.9	32.9	90	
T1349			IDFdm2	05	SS	m	5	2	Sx	26.6	32.3	76	
T1349			IDFdm2	05	SS	m	5	3	Sx	28.1	34.7	72	
T1349			IDFdm2	05	SS	m	5	4	Sx	29.1	47.4	72	
T1455	5641486	529922.3	IDFdm2	04	SP	km	5	1	Fd	20.2	22.9	62	
T1455			IDFdm2	04	SP	km	5	2	Fd	22.1	22.8	68	
T1455			IDFdm2	04	SP	km	5	3	Fd	28.0	27.3	66	
T1455			IDFdm2	04	SP	km	5	5	Pl	27.1	24.7	71	
T1455			IDFdm2	04	SP	km	5	6	Pl	26.2	26.1	73	
T1455			IDFdm2	04	SP	km	5	7	Pl	24.7	23.1	74	
T1461	5636946	537984.6	IDFdm2	04	SP	m	5	2	Pl	22.5	20.9	56	
T1461			IDFdm2	04	SP	m	5	3	Pl	23.4	20.5	52	
T1461			IDFdm2	04	SP	m	5	4	Pl	22.1	22.8	54	
T1465	5641417	533326.6	IDFdm2	01	DT		4	1	Pl	19.6	16.7	55	
T1465			IDFdm2	01	DT		4	2	Pl	19.5	18.4	55	

PLOT #	NORTHING	EASTING	SUBZONE	SITE SERIES NUMBER	SITE SERIES CODE	SITE MODIFIER	STRUCTURAL STAGE	Tree #	Spp	Total Height	DBH	BH Age	COMMENTS
T1465			IDFdm2	01	DT		4	3	Pl	20.9	17.2	55	
T1465			IDFdm2	01	DT		4	4	Pl	21.0	16.1	56	
T1472	5641550	530315.7	IDFdm2	04	SP	m	5	1	Pl	21.9	27.9	65	
T1472			IDFdm2	04	SP	m	5	3	Pl	24.5	24.5	53	
T1472			IDFdm2	04	SP	m	5	4	Pl	23.3	21.5	53	
T1502	5648254	528257.7	IDFdm2	01	DT		5	1	Fd	19.5	32.3	43	
T1502			IDFdm2	01	DT		5	2	Fd	18.3	32.3	42	
T1502			IDFdm2	01	DT		5	3	Fd	17.0	36.6	41	
T1502			IDFdm2	01	DT		5	4	Fd	18.8	36.4	43	
T1503	5647535	526332.4	IDFdm2	04	SP	m	5	1	Fd	22.3	31.4	58	
T1503			IDFdm2	04	SP	m	5	2	Fd	23.5	37.2	54	
T1503			IDFdm2	04	SP	m	5	4	Fd	23.7	30.8	56	
T1592	5652311	529254.0	IDFdm2	04	SP	m	5	1	Pl	27.5	29.1	64	
T1592			IDFdm2	04	SP	m	5	2	Pl	24.3	25.9	61	
T1592			IDFdm2	04	SP	m	5	4	Pl	23.3	25.4	63	
T1592			IDFdm2	04	SP	m	5	6	Fd	25.1	34.6	62	
T1592			IDFdm2	04	SP	m	5	7	Fd	25.5	34.9	62	
T1592			IDFdm2	04	SP	m	5	8	Fd	27.8	34.4	62	
T1593	5652104	529067.9	IDFdm2	01	DT		5	1	Fd	21.2	33.4	50	
T1593			IDFdm2	01	DT		5	2	Fd	22.6	36.8	51	
T1593			IDFdm2	01	DT		5	4	Fd	27.3	34.7	49	
T1594	5652082	529446.2	IDFdm2	01	DT		5	1	Fd	18.6	24.0	46	
T1594			IDFdm2	01	DT		5	3	Fd	18.6	27.5	48	
T1594			IDFdm2	01	DT		5	4	Fd	19.0	21.7	46	
T1665	5649400	533282.9	IDFdm2	01	DT		4	1	Fd	18.0	23.8	49	
T1665			IDFdm2	01	DT		4	2	Fd	18.1	23.3	47	
T1665			IDFdm2	01	DT		4	3	Fd	20.3	22.8	48	
T1665			IDFdm2	01	DT		4	4	Fd	18.6	26.3	48	
T1668	5648106	527943.1	IDFdm2	05	SS		5	1	Sx	28.3	35.5	80	
T1668			IDFdm2	05	SS		5	2	Sx	32.0	55.5	83	
T1668			IDFdm2	05	SS		5	3	Sx	30.7	44.8	93	
T1668			IDFdm2	05	SS		5	4	Sx	29.7	49.8	80	

Appendix VII EPIPHYTE CLASSIFICATION

Epiphyte Classification by BGC Zone, Map Unit and Structural Stage

Plot Number	Zone	SubZone	MapUnit	Structural Stage	Epiphyte Class
T587	ESSF	dk	FA	6	2
T1480	ESSF	dk	FA	7	1
T1568	ESSF	dk	FG	5	1
T397	ESSF	dk	FG	5	3
T597	ESSF	dk	FG	5	1
T1485	ESSF	dk	FG	5	1
T306	ESSF	dk	FG	5	2
T423	ESSF	dk	FG	6	3
T1483	ESSF	dk	FG	7	2
T1484	ESSF	dk	FM	5	1
T515	ESSF	dk	FM	6	3
T41	ESSF	dk	FM	7	1
T352	ESSF	dk	FS	4	3
T98	ESSF	dk	FS	5	1
T766	ESSF	dk	FS	5	1
T922	ESSF	dk	FS	5	3
T762	ESSF	dk	FS	5	2
T768	ESSF	dk	FS	6	1
T783	ESSF	dk	FS	6	3
T616	ESSF	dk	FS	6	2
T510	ESSF	dku	FG	6	3
T584	ESSF	wm	FP	3	1
T769	ESSF	wm	FP	5	1
T214	ESSF	wm	FP	6	3
T567	ESSF	wm	FP	6	3
T999	ESSF	wm	FP	6	3
T797	ESSF	wm	FP	7	1
T1546	ESSF	wm	FP	7	3
T595	ESSF	wm	FV	3	0
T594	ESSF	wm	FV	5	1
T962	ESSF	wm	FV	5	3
T332	ESSF	wm	FV	6	3
T243	ESSF	wm	FV	6	3
T1015	ESSF	wm	FV	6	4
T1549	ESSF	wm	FV	6	3
T160	ESSF	wm	FV	7	4
T606	ESSF	wm	FV	7	3
T507	ESSF	wmp	FS	3	2
T405	ESSF	wmp	FS	6	1
T410	ESSF	wmu	FR	6	4
T992	ESSF	wmu	FR	6	5
T1569	ESSF	wmu	FR	7	3
T695	ICH	mw1	HF	5	1
T724	ICH	mw1	HF	5	1

Plot Number	Zone	SubZone	MapUnit	Structural Stage	Epiphyte Class
T955	ICH	mw1	HF	5	2
T958	ICH	mw1	HF	5	2
T1264	ICH	mw1	HF	5	2
T727	ICH	mw1	HF	6	2
T714	ICH	mk1	RF	5	1
T1271	ICH	mk1	RF	5	2
T1644	ICH	mk1	RF	5	1
T1520	ICH	mk1	RF	6	2
T729	ICH	mk1	SH	7	1
T1174	IDF	dm2	DS	5	2
T1218	IDF	dm2	DT	3	0
T662	IDF	dm2	DT	4	1
T936	IDF	dm2	DT	4	1
T1114	IDF	dm2	DT	4	2
T1141	IDF	dm2	DT	4	2
T1465	IDF	dm2	DT	4	1
T1665	IDF	dm2	DT	4	1
T1578	IDF	dm2	DT	4	3
T1060	IDF	dm2	DT	5	3
T1107	IDF	dm2	DT	5	2
T1116	IDF	dm2	DT	5	1
T1122	IDF	dm2	DT	5	1
T1129	IDF	dm2	DT	5	2
T1135	IDF	dm2	DT	5	1
T1199	IDF	dm2	DT	5	1
T1202	IDF	dm2	DT	5	2
T1203	IDF	dm2	DT	5	1
T1204	IDF	dm2	DT	5	2
T1456	IDF	dm2	DT	5	1
T1458	IDF	dm2	DT	5	0
T1471	IDF	dm2	DT	5	1
T1473	IDF	dm2	DT	5	1
T1593	IDF	dm2	DT	5	2
T1594	IDF	dm2	DT	5	2
T1215	IDF	dm2	DT	5	1
T1216	IDF	dm2	DT	5	3
T1251	IDF	dm2	DT	5	1
T1316	IDF	dm2	DT	5	2
T1477	IDF	dm2	DT	5	1
T1573	IDF	dm2	DT	5	3
T1575	IDF	dm2	DT	5	1
T1595	IDF	dm2	DT	5	1
T1596	IDF	dm2	DT	5	2
T1701	IDF	dm2	DT	5	2
T1305	IDF	dm2	DT	6	4
T1576	IDF	dm2	DT	6	3
T1584	IDF	dm2	DT	6	1

Plot Number	Zone	SubZone	MapUnit	Structural Stage	Epiphyte Class
T1588	IDF	dm2	DT	6	4
T1589	IDF	dm2	DT	6	3
T1661	IDF	dm2	DT	6	2
T1109	IDF	dm2	SP	4	1
T1177	IDF	dm2	SP	4	2
T932	IDF	dm2	SP	5	1
T1110	IDF	dm2	SP	5	1
T1120	IDF	dm2	SP	5	2
T1125	IDF	dm2	SP	5	2
T1130	IDF	dm2	SP	5	1
T1131	IDF	dm2	SP	5	1
T1100	IDF	dm2	SP	5	1
T1103	IDF	dm2	SP	5	1
T1105	IDF	dm2	SP	5	1
T1189	IDF	dm2	SP	5	3
T1205	IDF	dm2	SP	5	1
T1455	IDF	dm2	SP	5	0
T1459	IDF	dm2	SP	5	1
T1460	IDF	dm2	SP	5	1
T1461	IDF	dm2	SP	5	2
T1592	IDF	dm2	SP	5	2
T1214	IDF	dm2	SP	5	1
T1219	IDF	dm2	SP	5	2
T1220	IDF	dm2	SP	5	1
T1295	IDF	dm2	SP	5	1
T1529	IDF	dm2	SP	5	2
T1572	IDF	dm2	SP	5	3
T1583	IDF	dm2	SP	5	1
T1198	IDF	dm2	SP	6	1
T1112	IDF	dm2	SS	6	1
T916	MS	dk	LJ	6	4
T1149	MS	dk	LJ	6	4
T655	MS	dk	LP	3	0
T1239	MS	dk	LP	3	0
T1092	MS	dk	LP	4	1
T1144	MS	dk	LP	4	1
T1281	MS	dk	LP	5	1
T1537	MS	dk	LP	5	1
T1538	MS	dk	LP	5	1
T1539	MS	dk	LP	5	1
T645	MS	dk	LP	5	1
T794	MS	dk	LP	5	2
T1290	MS	dk	LP	5	1
T1507	MS	dk	LP	5	1
T947	MS	dk	LP	5	1
T953	MS	dk	LP	5	1
T1196	MS	dk	LP	5	1

Plot Number	Zone	SubZone	MapUnit	Structural Stage	Epiphyte Class
T1658	MS	dk	LP	5	3
T1249	MS	dk	LP	5	2
T1653	MS	dk	LP	5	4
T1690	MS	dk	LP	5	1
T1697	MS	dk	LP	5	3
T1699	MS	dk	LP	5	3
T1700	MS	dk	LP	5	2
T946	MS	dk	LP	6	2
T890	MS	dk	LP	6	1
T1151	MS	dk	LP	6	1
T1157	MS	dk	LP	6	2
T1148	MS	dk	LP	6	3
T1248	MS	dk	LP	6	4
T1600	MS	dk	LP	6	3
T1238	MS	dk	SG	3	0
T1094	MS	dk	SG	4	1
T799	MS	dk	SG	5	1
T757	MS	dk	SG	5	1
T817	MS	dk	SG	5	1
T818	MS	dk	SG	5	1
T649	MS	dk	SG	5	3
T869	MS	dk	SG	5	1
T894	MS	dk	SG	5	1
T930	MS	dk	SG	5	1
T370	MS	dk	SG	5	1
T1034	MS	dk	SG	5	3
T1207	MS	dk	SG	5	1
T1320	MS	dk	SG	5	1
T1695	MS	dk	SG	5	1
T1210	MS	dk	SG	5	1
T1244	MS	dk	SG	5	1
T245	MS	dk	SG	5	1
T1693	MS	dk	SG	5	1
T1694	MS	dk	SG	5	1
T892	MS	dk	SG	6	1
T1453	MS	dk	SG	6	1
T1454	MS	dk	SG	6	0
T517	MS	dk	SG	7	1
T1195	MS	dk	SG	7	1
T821	MS	dk	SH	5	4
T899	MS	dk	SH	6	1
T1279	MS	dk	SS	5	1
T1145	MS	dk	SS	6	2

Appendix VI ECOSYSTEM AND TERRAIN DATABASE

(tpro_spi.csv; tecp_spi.csv; tusr_spi.csv)

Appendix VII WILDLIFE SPECIES OBSERVED

The following wildlife species, or signs of them, were observed in the course of the TFL 14

BIRDS-CODE	COMMON NAME	SCIENTIFIC NAME
B-AMRO	American Robin	*Turdus migratorius*
B-BAEA	Bald Eagle	*Haliaeetus leucocephalus*
B-BCCH	Black-capped Chickadee	*Parus atricapillus*
B-BOWA	Bohemian Waxwing	*Bombycilla garrulus*
B-CHSP	Chipping Sparrow	*Spizella passerina*
B-CLNU	Clark's Nutcracker	*Nucifraga columbiana*
B-COHA	Cooper's Hawk	*Accipiter cooperi*
B-COLO	Common Loon	*Gavia immer*
B-DEJU	Dark-eyed Junco	*Junco hyemalis*
B-GBHE	Great Blue Heron	*Ardea herodias*
B-GCKI	Golden-crowned Kinglet	*Regulus satrapa*
B-GRJA	Gray Jay	*Perisoreus canadensis*
B-HETH	Hermit Thrush	*Catharus guttatus*
B-NOFL	Northern Flicker	*Coraptes auratus*
B-NOGO	Northern Goshawk	*Accipiter gentilis*
B-NOHA	Northern Harrier	*Circus cyaneus*
B-OSFL	Olive-sided Flycatcher	*Contopus borealis*
B-PISI	Pine Siskin	*Carduelis pinus*
B-PIWO	Pileated Woodpecker	*Drycopus pileatus*
B-RBNU	Red-breasted Nuthatch	*Sitta canadensis*
B-RCKI	Ruby-crowned Kinglet	*Regulus calendula*
B-RLHA	Rough-legged Hawk	*Buteo lagopus*
B-ROFI	Rosy Finch	*Leucosticte arctoa*
B-RTHA	Red-tailed Hawk	*Buteo jamaicensis*
B-RUGR	Ruffed Grouse	*Bonasa umbellus*
B-RUHU	Rufous Hummingbird	*Selasphorus rufus*
B-SOSP	Song Sparrow	*Melospiza melodia*
B-SOVI	Solitary Vireo	*Vireo solitarius*
B-SPGR	Spruce Grouse	*Dendragapus canadensis*
B-STJA	Steller's Jay	*Cyanocitta stelleri*
B-TOSO	Townsend's Solitaire	*Myadestes townsendi*
B-UCHI	Unspecified Chickadee	
B-UFIN	Unspecified Finch	
B-UGRU	Unspecified Grouse	
B-UHAW	Unspecified Hawk	
B-UHUM	Unspecified Hummingbird	
B-UKIN	Unspecified Kinglet	
B-UNUT	Unspecified Nuthatch	
B-UTHR	Unspecified Thrush	

B-UVIR	Unspecified Vireo	
B-UWOO	Unspecified Woodpecker	
B-VATH	Varied Thrush	*Ixoreus naevius*
B-WIWR	Winter Wren	*Troglodytes troglodytes*
AMPHIBIANS & MAMMALS - CODE	**SCIENTIFIC NAME**	**COMMON NAME**
A-BUBO	*Bufo boreas*	Western Toad
A-UFRO		Unspecified Frog
M-ALAL	*Alces alces*	Moose
M-BOTA	*Bos taurus*	Domestic Cow
M-CACA	*Castor canadensis*	Beaver
M-CALA	*Canis latrans*	Coyote
M-CALU	*Canis lupus*	Grey Wolf
M-CEEN	*Cervus elaphus nelsoni*	Rocky Mountain Elk
M-ERDO	*Erethizon dorsatum*	Porcupine
M-FECO	*Felis concolor*	Cougar
M-LEAM	*Lepus americanus*	Snowshoe Hare
M-MAAM	*Martes americana*	Marten
M-MACA	*Marmota caligata*	Hoary Marmot
M-OCPR	*Ochotona princeps*	Common Pika
M-ODHH	*Odocoileus hemionus hemionus*	Interior Mule Deer
M-ODVI	*Odocoileus virginiana*	White-tailed Deer
M-ORAM	*Oreamnos americanus*	Mountain Goat
M-RATA	*Rangifer tarandus pop. 1*	Woodland Caribou, southern population
M-SPCO	*Spermophilus columbianus*	Columbian Ground Spuirrel
M-SPLA	*Spermophilus lateralis*	Golden-mantled Ground Squirrel
M-TAAM	*Tamias amoenus*	Yellow-pine Chipmunk
M-TAHU	*Tamiasciurus hudsonicus*	Red Squirrel
M-TAMI	*Tamias minimus*	Least Chipmunk
M-UBEA		Unspecified Bear
M-UCHP		Unspecified Chipmunk
M-UDEE		Unspecified Deer
M-UMOU		Unspecified Mouse
M-URAM	*Ursus americanus*	Black Bear
M-URAR	*Ursus arctos*	Grizzly Bear
M-USHR		Unspecified Shrew
M-UUNG		Unspecified Ungulate
M-UVOL		Unspecified Vole
M-UWEA		Unspecified Weasel

Appendix VIII WILDLIFE SPECIES ACCOUNTS

(twlr_spi.pdf)

Appendix IX WILDLIFE RATINGS TABLES

(trat_spi.csv)