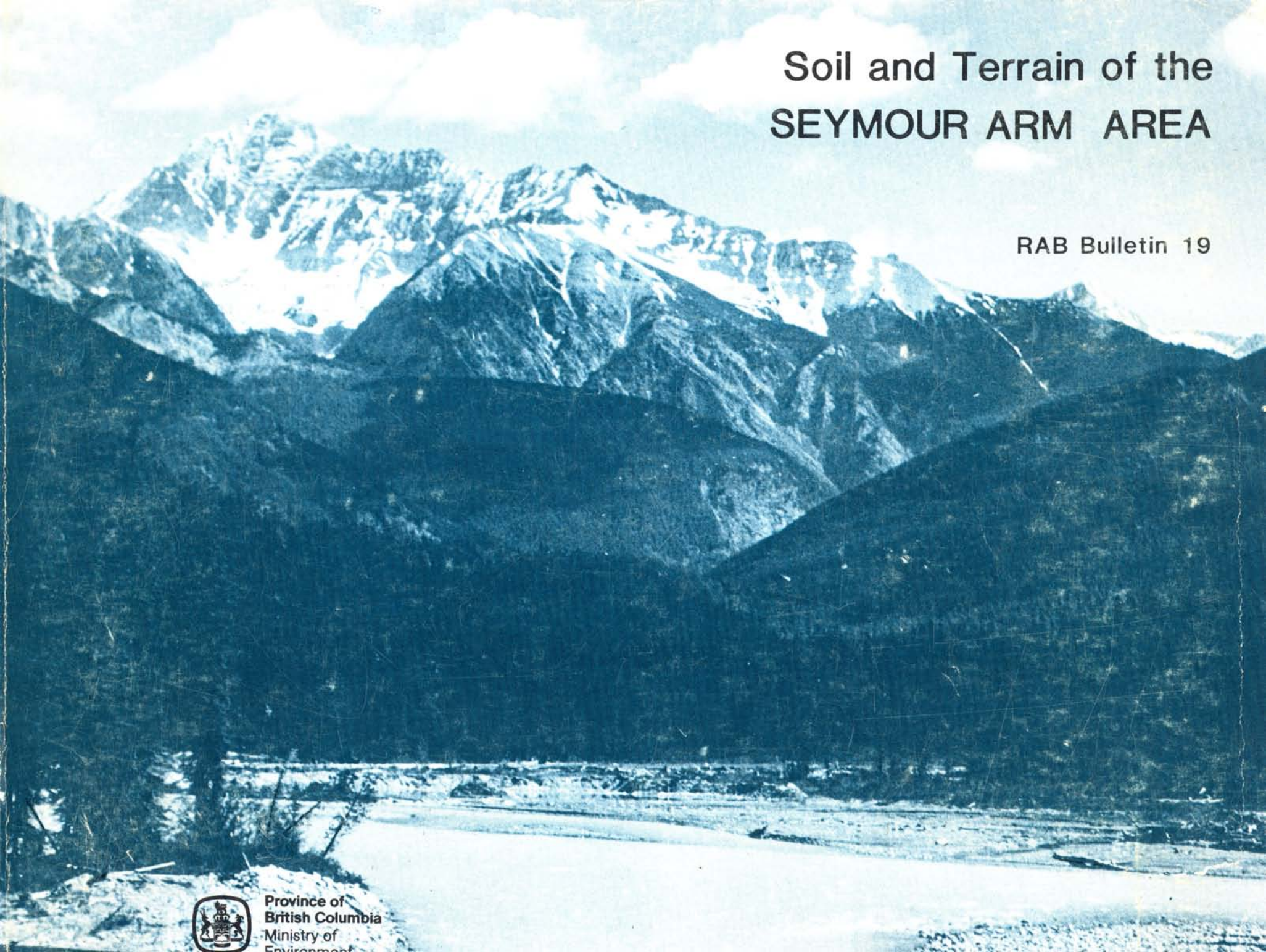
Soil and Terrain of the SEYMOUR ARM AREA

RAB Bulletin 19



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RAB Bulletin 19

Soil and Terrain of the SEYMOUR ARM AREA (N.T.S. MAP 82M)

Report No. 16
British Columbia Soil Survey

by R.C. Kowall
Soils Unit

KELOWNA
August 1980

Canadian Cataloguing in Publication Data

Kowall, R. C. (Ronald Charles), 1938-
Soil and terrain of the Seymour Arm area.
(N.T.S. map 82)

(RAB bulletin, ISSN 0228-5460 ; 19) (British Columbia soil survey, ISSN 0375-5886 ; report no. 16)

Bibliography: p.
ISBN 0-7719-8456-1

1. Soils - British Columbia - Seymour Arm region. 2. Land use, Rural - British Columbia - Seymour Arm region. I. British Columbia. Ministry of Environment. Resource Analysis Branch. II. Title. III. Series. IV. Series: British Columbia soil survey ; report no. 16.

S599.1.B7K68 631.4'771142 C81-092032-8

First Printing 1980.

ABSTRACT

The survey of the Seymour Arm map area is part of a continuing program to map the soil and terrain resources in the Province of British Columbia at a reconnaissance level and provides land planners and land managers with a reconnaissance inventory of the physical features found in the map area. The classification systems followed are those outlined in The System of Soil Classification for Canada (Soil Research Institute, 1973, and Agriculture Canada, 1974) and the Terrain Classification System (Environment and Land Use Committee Secretariat, 1976). Soil capability for agriculture and forestry followed the procedure as specified by the Canada Land Inventory (1965, 1970b). Other interpretations suitable for resource management and planning purposes are also presented.

The report briefly describes the soil associations occurring in the map area and provides some basic interpretations for agricultural, engineering, forestry and recreational uses. Four 1:100000 scale soil maps are included with the report which show the distribution and extent of the mapping units. Manuscript terrain and soil maps at a scale of 1:50000, and a biophysical forest zonation map at a scale of 1:250000, although they are not included in this report, are available from the Map Librarian, Resource Analysis Branch, Ministry of Environment, Parliament Buildings, Victoria, B.C. V8V 1X4.

Technical soils data, including detailed soil profile descriptions and chemical and physical analyses for 50 soil profiles are entered in the B.C. Soil Data Bank and are available upon request from the Map Librarian.

HOW TO USE THE SOIL REPORT AND MAPS

The description of the soils, the environment in which they occur, and their suitability (or limitations) for specific uses are presented in the soils report, while the soil maps display the slope classes and location, distribution and extent of the various soils. The soils described in the report are represented on the soil map by means of symbols. A soils key located on the map identifies the soil symbols and briefly describes the soils. The maps located at the back of the report should be used in combination with the report, since the report provides a more thorough description of the soils than does the map key.

The terrain maps, which may be obtained from the Map Librarian, display by means of symbols the location, distribution and extent of the various surficial geological materials. A biophysical forest zonation map, which may also be obtained, displays by means of numbers, the location and extent of the forest zones and subzones. A description of the forest zones and subzones noted in the map key is given in the report.

The soil, terrain, and biophysical forest zonation maps may be used by planners and managers in evaluating the landscape for various uses. By referring to the appropriate interpretation section, the necessary information could be transferred to the soil maps and an interpretative map for a specific use or objective could be prepared. In a similar fashion, an overlay of different interpretative maps could be derived for a landscape under study. The maps represent reconnaissance scale mapping and are intended to be used for overview planning purposes and for general management decisions. Site-specific applications will require additional on-site inspection. If the maps are used for site-specific purposes, their limitations should be fully understood.

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CHAPTER ONE

THE SEYMOUR ARM AREA

1.1 LOCATION

The Seymour Arm map area (National Topographic Series map 82M) is located in south central British Columbia between 51° and 52° north latitude and 118° and 120° west longitude and occupies an area of about 15452 km^2 (Figure 1).

1.2 PHYSIOGRAPHIC REGIONS AND BEDROCK GEOLOGY

The physiographic regions and the associated bedrock geology have been used as the first levels in subdividing the Seymour Arm map area. As outlined by Holland (1964) in Figure 2, the area consists of four physiographic regions: the Rocky Mountains and Rocky Mountain Trench, Selkirk Mountains, Monashee Mountains, and Shuswap Highlands. The bedrock geology shown in Figure 3 has been generalized from Campbell (1963) and Wheeler (1964).

The Rocky Mountains and Rocky Mountain Trench region, which has an elevational range of 745 to 2560 m above sea level, occupies a very small area in the northeast corner of the map area. The region is characterized by a flooded valley bottom (now called McNaughton Reservoir, the pondage behind Mica dam) bordered by rugged, mountainous slopes underlain generally by limestone, quartzite, slate and schist bedrock.

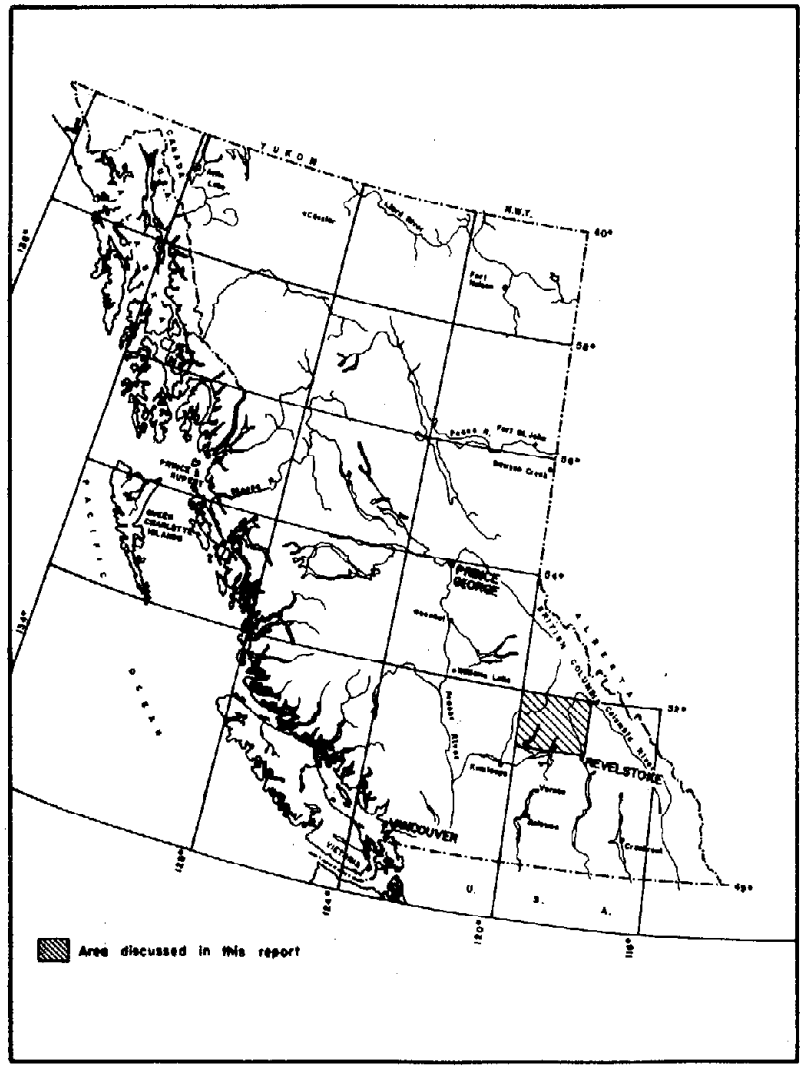

Figure 1. General map of the area covered by the survey

The Selkirk Mountain region, which is located east of the Columbia River, is characterized by rugged mountains underlain generally by slate, schist, quartzite, granite and limestone bedrock and is dissected by the tributaries of the Columbia River. Elevations range from a low of 510 m on the Columbia River to a high of 3170 m at Neptune Peak.

The Monashee Mountain region, located between the Columbia and Adams Rivers, is generally characterized by rugged mountains dissected by a multitude of streams and rivers. Some of the high alpine areas have a plateau-like surface expression. The bedrock consists predominantly of gneiss, granite, granodiorite, and quartz monzonite. Elevations range from 345 m on Seymour Arm of Shuswap Lake to 2915 m at Gordon Horne Peak.

The Shuswap Highland region is generally characterized by gently or moderately sloping plateau areas rising from 1220 m to over 2135 m, and is dissected by a system of rivers and dotted with numerous lakes. The region is underlain predominantly by gneiss, granite, granodiorite and quartz monzonite bedrock. An inclusion of phyllite, limestone, greenstone and schist bedrock is found in the lower North Thompson River area and southwestern part of the map sheet and some basalt bedrock is found in the Clearwater River and Hemp Creek areas. Elevations range from 345 m on Seymour Arm of Shuswap Lake to 2635 m at Dunn Peak.

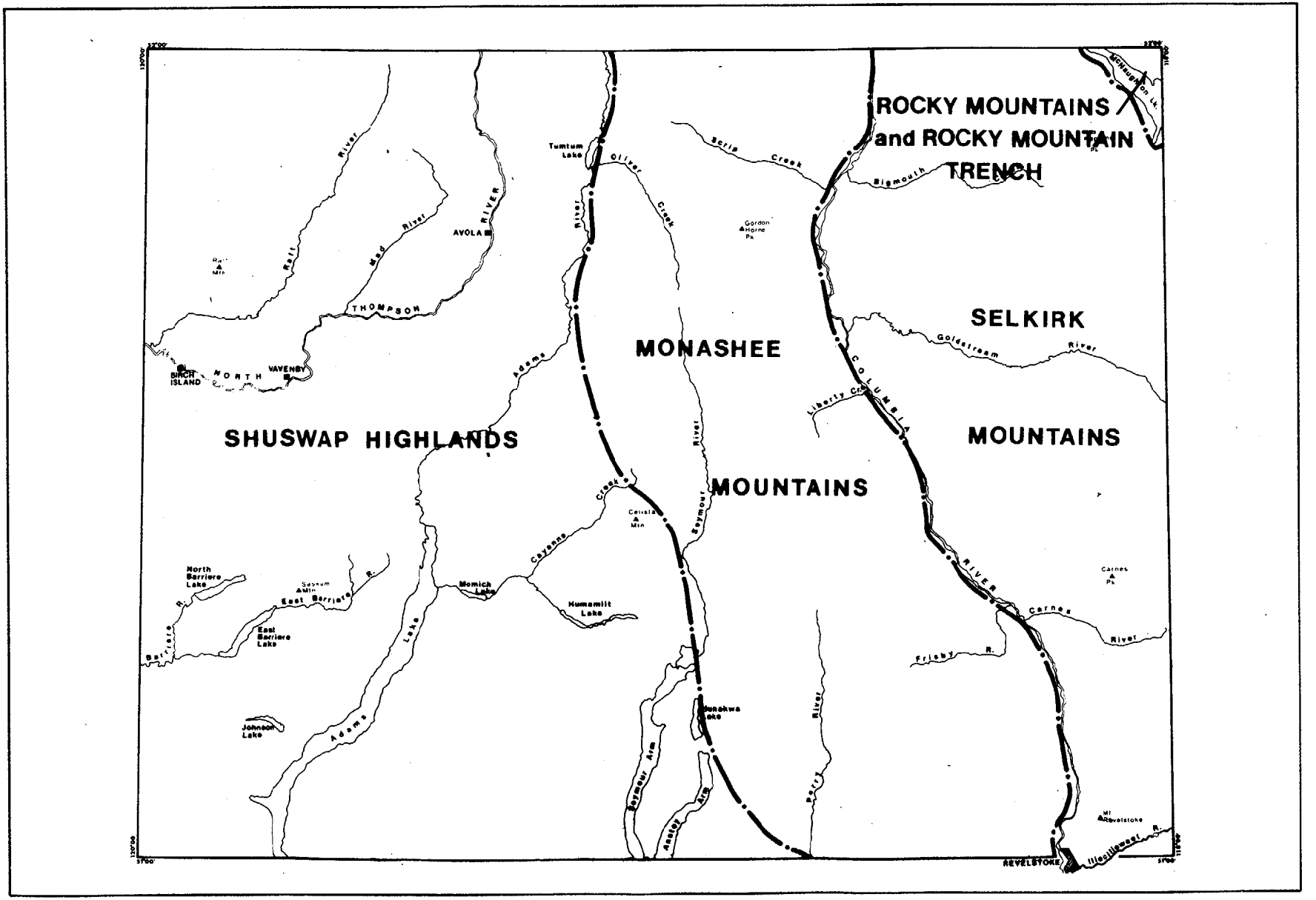

Figure 2. Physiographic regions of the Seymour Arm area

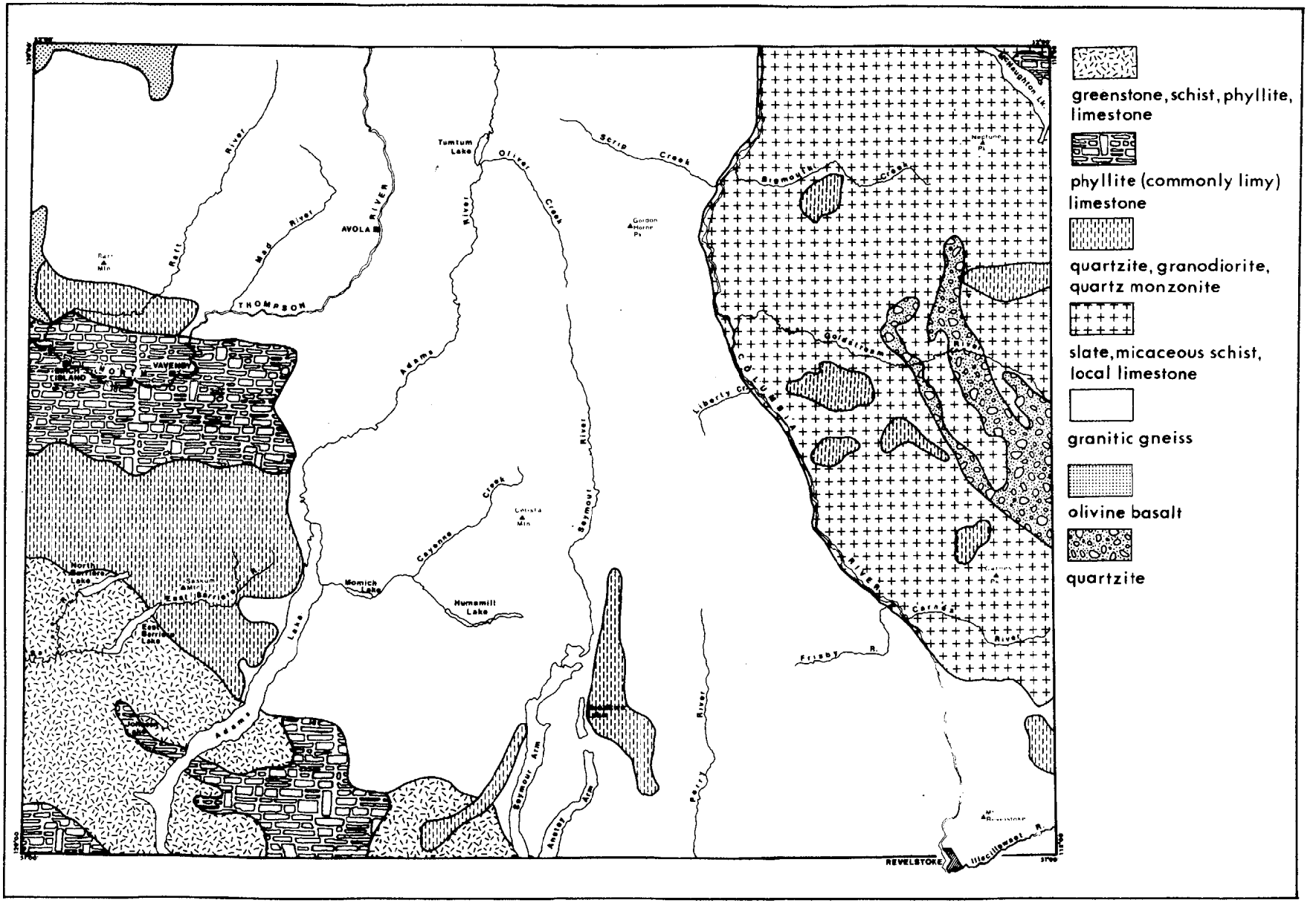

Figure 3. Generalized bedrock geology

1.3 CLIMATE

The climate of the map area is strongly influenced by the orographic effect of the mountains on the prevailing westerly air flow. Generally, the climate is characterized by warm, moderately dry summers and cool, moderately dry winters in the western half of the area, and by cool, moderately wet winters in the Columbia River area. Climate for various valley bottom locations are presented in Table 1.

Precipitation patterns are highly variable because of the topography, although generally precipitation increases from west to east, south to north and with increasing elevation. Major mountain barriers at right angles to the prevailing winds increase orographic lifting of the air mass, resulting in greater precipitation windward and less precipitation leeward of the barrier. This effect is evident in the North Thompson River Valley, where annual precipitation ranges from 366 to 584 mm depending on the orientation of the local mountain ranges. A general increase of 4.5 mm in May to September precipitation, and 9.5 mm in annual precipitation, can be expected for every 100 m in elevation.

Regional temperatures generally decrease from west to east, south to north and with increasing elevation. South to southwest aspects are warmer than north or northeast aspects. The changes in thermal accumulation (growing degree days) with elevation for various locations in the region are indicated in Table 1 along with valley bottom growing degree day and freeze free period data. In general, regional freeze free periods will decrease by 6.5 days for every 100 m increase in elevation. Because of cold air pooling, valley bottom locations usually experience shorter freeze free periods than lower valley slopes, which have better air drainage.

Climatic moisture deficits are greatest in the Barriere River area, although no deficit is likely to occur above 1500 m. Generally, no climatic deficits will occur above 900 m in the other localities listed in Table 1.

A network of short-term (1971-1973) climate stations had been located and was maintained in the western half of the map area. Climate maps and data are available from the Air Management Branch, Ministry of Environment, Parliament Buildings, Victoria, B.C.

1.4 BIOPHYSICAL FOREST ZONATION

The biophysical forest subzone map was compiled from forest cover maps obtained from the Canadian Cellulose Company for Tree Farm Licence No. 23, and from the B.C. Ministry of Forests for the Public Sustained Yield Units which cover the remainder of the area. During the field survey, the biophysical forest subzone separations were checked along with the soils and terrain. The biophysical regions, zones and subzones are based on criteria developed by the Vegetation Section of the Resource Analysis Branch (Walmsley and van Barneveld, 1977) and are comparable to the Biogeoclimatic Units developed by Krajina (1965, 1969). Table 2 shows the comparison between the Biophysical Forest Zonation and

Table 1

Climate data for various valley bottom locations

Location	Annual Ppt. (mm)	May-Sept. Ppt. (mm)	Snowfall (cm)	GDD (°C)	FFP (days)	CMD (mm)	GDD (per 100 m)
Southern Adams Lake (Hindu Point)	465	218	127	1832	134	228	- 90
Northern Adams Lake	668	323	160	1460	103	203	- 90
Junction of Barriere and Last Barriere Rivers	498	234	86	1421	97	330	-130
Seymour Arm	688	274	194	1667	130		-110
North Thompson River Valley*	495 (366-584)	238 (177-279)	130 (103-158)	1333 (1153-1525)	95 (80-115)	260 (142-356)	- 80
Clearwater River Valley	650	314	157	1111	80	142	- 80
Revelstoke	1080	293	411				
Mica Creek	1579	353	834				

Note.

GDD = growing degree days above 5.6°C.
FFP = freeze free period.
CMD = climatic moisture deficit (potential evapotranspiration minus precipitation).
GDD = change in GDD with elevation (GDD per 100 m).

* For the North Thompson River Valley an average value is followed by a range in parentheses.

Table 2

Comparison of the Resource Analysis Branch's Biophysical Forest Zonation and Krajina's Biogeoclimatic Units

BIOPHYSICAL FOREST ZONATION	BIOGEOCLIMATIC UNITS
DRY INTERIOR REGION Interior Rocky Mountain Douglas-fir Zone Lodgepole pine subzone Ponderosa pine subzone Subalpine Engelmann Spruce - Alpine Fir Zone Lodgepole pine subzone Rocky Mountain Douglas-fir - lodgepole pine subzone	CANADIAN CORDILLERAN FOREST REGION Interior Douglas-fir Zone Subzone b Subzone a CANADIAN CORDILLERAN SUBALPINE FOREST REGION Engelmann Spruce - Subalpine Fir Zone Subzone a Subzone a
INTERIOR WET BELT REGION Interior Western Hemlock - Western Red Cedar Zone Rocky Mountain Douglas-fir - lodgepole pine subzone Lodgepole pine - Engelmann spruce - alpine fir subzone Subalpine Mountain Hemlock Zone (subzones have not been determined) Subalpine Engelmann Spruce - Alpine Fir Zone Lodgepole pine - whitebark pine subzone Krummholz subzone Alpine Tundra Zone (subzones have not been determined)	CANADIAN CORDILLERAN FOREST REGION Interior Western Hemlock Zone Subzones a and b Subzones a and b CANADIAN CORDILLERAN SUBALPINE FOREST REGION Engelmann Spruce - Subalpine Fir Zone Subzone a Engelmann Spruce - Subalpine Fir Zone Subzone a Subzone b ALPINE REGION Alpine Tundra Zone Subzone b

the Biogeoclimatic Zones. Tree species names conform to Taylor and MacBryde (1977).

Dry Interior Region-Interior Rocky Mountain Douglas-fir Zone

The Interior Rocky Mountain Douglas-fir zone occupies a small area in the southwest corner of the map area. This zone, in which Rocky Mountain Douglas-fir is the climax species, occurs below an elevation of 1400 m, with Rocky Mountain Douglas-fir, lodgepole pine, common paper birch, trembling aspen, black cottonwood and ponderosa pine being the main tree species. This zone was distinguished from the Interior Western Hemlock-Western Red Cedar zone by the absence of western hemlock. When the forest zonation in 82M was being evaluated in 1974, the criteria for and the actual number of regions, zones and subzones was in an evolving state. Therefore, some of the Interior Rocky Mountain Douglas-fir zone, which has western red cedar occurring in it, is now placed in the Interior Wet Belt region, Interior Western Red Cedar zone, Rocky Mountain Douglas-fir subzone.

The Lodgepole pine subzone occupies only a small area in the southwest corner of the map area, at elevations up to about 1400 m. Within the map area, this subzone is dominant in the zone and has no ponderosa pine growing in it. Rocky Mountain Douglas-fir and lodgepole pine are the dominant tree species with scattered amounts of trembling aspen, common paper birch and western red cedar. Black cottonwood is found along stream embankments.

The Ponderosa pine subzone just enters the map area, and is found on south-facing slopes west of Forest Lake and the lower part of Fadear Creek at elevations below 1370 m. This subzone is distinguished by having ponderosa pine growing in it and, in this area, the only other species found are Rocky Mountain Douglas-fir and lodgepole pine.

Dry Interior Region-Subalpine Engelmann Spruce-Alpine Fir Zone

The Subalpine Engelmann Spruce-Alpine Fir zone, in which Engelmann spruce and alpine fir are the climax species, occurs in the southwestern corner of the map area at elevations between 1200 and 1700 m. Other species occurring in this zone are lodgepole pine, Rocky Mountain Douglas-fir and western red cedar. This zone is distinguished by the dominance of alpine fir and/or Englemann spruce and by its elevational range.

The Lodgepole pine subzone occurs in two small locations at elevations between 1300 and 1550 m. This subzone is characterized by the presence of lodgepole pine in association with Engelmann spruce and alpine fir and by the absence of Rocky Mountain Douglas-fir.

The Rocky Mountain Douglas-fir-lodgepole pine subzone is characterized by the presence of Rocky Mountain Douglas-fir along with Engelmann spruce and alpine fir at elevations between 1200 and 1700 m. Lodgepole pine is also commonly found in this subzone.

Interior Wet Belt Region-Interior Western Hemlock-Western Red Cedar Zone

The Interior Western Hemlock-Western Red Cedar zone, in which western hemlock and western red cedar will become the climax species, occurs in the valley bottoms below elevations of 1700 m. As mentioned in the Rocky Mountain Douglas-fir zone, since the criteria for regions, zones and subzones was evolving, the Interior Western Hemlock-Western Red Cedar zone has a much broader definition than it does in the present classification. Now parts of the lower North Thompson valley, lower Barriere River and southern Adams Lake that have no western hemlock, would be classified as the Interior Western Red Cedar zone. Some locations in the Columbia River valley that are devoid of western red cedar would be classified as the Interior Western Hemlock zone.

The Rocky Mountain Douglas-fir-lodgepole pine subzone is located throughout most of the map area in the valley bottoms and lower slopes up to an elevation of about 1500 m and is the dominant subzone in this zone. There are many tree species associated with this subzone and, in many instances, because of history, the climax species of western hemlock and western red cedar may not be in the present stand, and seral stands of Douglas-fir, western white pine, lodgepole pine, common paper birch, trembling aspen and black cottonwood may exist. This is especially true in the western portion of the map area, whereas in the Columbia River area, western hemlock and western red cedar are usually evident in all stands. Ponderosa pine, Engelmann spruce or alpine fir are not found in this subzone.

The Lodgepole pine-Engelmann spruce-alpine fir subzone is located in the transition area between the Interior Western Hemlock-Western Red Cedar and the Subalpine Engelmann Spruce-Alpine Fir zones, and is characterized by having Engelmann spruce and alpine fir as seral species and western hemlock and western red cedar as the climax species. Other seral species occurring in this subzone are Rocky Mountain Douglas-fir, western white pine, common paper birch and lodgepole pine. This subzone is found on the western side of the Monashee Mountains and throughout the Shuswap Highlands at elevations between 1200 to 1700 m.

Interior Wet Belt Region-Subalpine Mountain Hemlock Zone

The Subalpine Mountain Hemlock zone is located in the Columbia, Perry and upper Seymour River areas above the Interior Western Hemlock-Western Red Cedar zone between elevations of 1200 and 1700 m. This zone was delineated on the assumption that the hemlock in the hemlock-alpine fir forest types was mountain hemlock. Where field examination took place, mountain hemlock was the hemlock species noted. As this zone has not had sufficient work done in it, no subzones have been delineated. This zone has mountain hemlock as the climax species. Other tree species found in this zone are Engelmann spruce and alpine fir.

Interior Wet Belt Region-Subalpine Engelmann Spruce-Alpine Fir Zone

The Subalpine Engelmann Spruce-Alpine Fir zone, in which Engelmann spruce and alpine fir are the climax species, occurs throughout the whole area at elevations between 1200 and 2300 m.

Other species found in this zone are lodgepole pine, mountain hemlock and whitebark pine.

The Lodgepole pine-whitebark pine subzone is located at elevations between 1200 and 2000 m in the Shuswap Highlands and 1400 and 2000 m in the remainder of the map area. This subzone reaches its greatest extent in the Shuswap Highlands, where the upland topography is characterized by gently or moderately sloping plateau areas. This subzone is characterized by the absence of Rocky Mountain Douglas-fir. Associated with Engelmann spruce and alpine fir is lodgepole pine and whitebark pine west of the Monashee Mountains and mountain hemlock in the Columbia River area.

The Krummholz subzone is characterized by shrubby trees, predominantly alpine fir with some Engelmann spruce, occurring in clumps and is located just below the Alpine Tundra zone. This subzone usually occurs between elevations of 1800 to 2300 m.

Interior Wet Belt Region-Alpine Tundra Zone

The Alpine Tundra zone, which is located above the Subalpine Engelmann Spruce-Alpine Fir zone, is characterized by the presence of herbs, shrubs, grasses and mosses and the absence of trees. This zone, which occurs throughout the map area above the elevation of 1700 m, is most prevalent in the rugged, steeply sloping areas of the Monashee and Selkirk Mountains. As this zone has had insufficient work done in it, no subzones have been delineated.

1.5 SURFICIAL GEOLOGY

During the last glaciation, an ice mass some 1800 to 2100 m thick overrode most of the area, leaving only the higher peaks unglaciated. After the retreat and melting of the ice mass, most of the area was left covered by glacial deposits. Valley bottoms throughout the area have the deepest deposits, which are predominantly fluvioglacial in origin. Although these deposits are usually gravelly in nature, they may be sandy or capped with sands. In a few locations, silty glaciolacustrine deposits occur, notably at Seymour Arm, Brennan Creek on Adams Lake and near Vavenby. Recent fluvial deposits occur along stream and river courses. Where the flow velocity is slow on the larger rivers, like the North Thompson and Columbia, silty deposits occur, but with increasing velocities, the textures change to sands and then to gravels.

The morainal deposits, which includes basal till, are most abundant in the Shuswap Highlands where the topography is relatively gentle. In all probability, morainal deposits also occurred in the mountains but have subsequently eroded away until now they are largely restricted to the gentler slopes. The morainal materials derived predominantly from granitoid textured bedrocks are generally gravelly sandy loam in texture and those derived predominantly from felsitic textured bedrocks are generally gravelly loam or gravelly silty loam in texture.

Colluvium is most abundant in the Monashee and Selkirk Mountains where gravitational processes are very active on the steep slopes. The lower slopes in the narrow valleys are usually characterized by the accumulation of the colluvial materials whereas shallow deposits occur upslope. Colluvium is usually coarse and poorly consolidated, and has been derived from the bedrock immediately upslope.

Organic deposits, which are small in size and extent, are scattered throughout the area, but most commonly in the Shuswap Highlands. Ice and exposed bedrock are most prevalent in the alpine areas, especially in the Monashee and Selkirk Mountains. However, outcrops of rock may occur at all elevations throughout the map area.

CHAPTER 2
MAPPING METHODOLOGY AND SOIL DESCRIPTIONS

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2.1 FIELDWORK

Prior to the commencement of the fieldwork, preliminary assessment of the terrain and access was undertaken on 1:70000 scale aerial photographs and 1:50000 and 1:250000 N.T.S. sheets. The terrain was pretyped on the aerial photographs, making separations based on the inferred soil texture, parent material genesis, surface expression and erosional modification of the surficial materials and on slope, soil moisture and forest zones. The terrain was symbolled according to Fulton's Landform scheme as reported by Alley (1973) which is the precursor to the terrain classification manual later produced by the E.L.U.C. Secretariat (1976). The bedrock geology maps by Campbell (1963) and Wheeler (1964) were used to aid in estimating some of the soil characteristics such as texture, soil reaction, carbonate content and soil development, whereas the physiographic map by Holland (1964) was used to divide the map area into it's respective physiographic units. Additional soils data in the Mt. Revelstoke area was provided by Knapik and Coen (1974).

The survey was started in 1972 on a reconnaissance basis by J. Senyk and H. Hirvonen of the Canadian Forest Service, N. Gough of the Ministry of Agriculture, and the author. The surveyors mapped and field checked an area of about 15452 km^2 during a four month field season. Fieldwork consisted of traversing all passable roads by truck and of spot checking inaccessible areas by helicopter. The actual terrain units identified in the field were checked against those pretyped, and mapping lines and symbols were adjusted as necessary. Initially, many stops were made to characterize the soils, but as familiarity with the terrain characteristics increased, the number of examinations or spot checks were reduced. The information from the spot checks was put directly on the photograph in the form of a terrain symbol, texture, soil development or other identifying characteristic. Checks, in which the site was described in more detail on a soils description sheet, were identified by a number on the photograph. Over 80 truck and 15 helicopter sampling point checks were made, with the parent material, horizonation, depth, drainage, slope, elevation, rockiness, aspect and associated vegetation examined, described and noted. Many of the terms used are defined in the Glossary of Terms in Soil Science (Agriculture Canada, 1976). To assist in classifying the soil profile development, the "B" horizon of the soil profiles from the sampling point checks was sampled for laboratory analysis. From the resultant data, the soil profile development was described according to the System of Soil Classification for Canada (Soil Research Institute, 1973). Forest capability plots were measured to determine the potential productivity of the soil mapping units to produce wood fiber. Each soil mapping unit was also assessed to determine its agricultural capability.

During the 1973 field season, the author checked the mapping

undertaken in 1972, and sampled and described in detail 53 representative soil profiles. The morphological and landscape characteristics were described using terminology approved by the Canadian Soil Information System (1975). Representative soil profiles were located throughout the map area and were chosen to show the relationship between soil profile developments and terrain units in as many physiographic regions and biophysical forest zones and subzones as was feasible. For each soil profile, laboratory analyses were performed on all soil horizons sampled to determine their chemical characteristics. The water holding capacity of the soil profile was assessed by determining the field capacity and wilting point in each horizon thicker than 10 cm. Thin horizons were sampled with the thicker ones. For the parent material (subsoil), a particle size analysis was performed on the fraction less than 76 mm. Also, the Atterberg limits were determined on the parent material. The chemical and physical soil data, as well as the descriptive information on the soil and landscape, have been coded and entered into the B.C. Soil Data Bank and are available upon request from the Map Librarian, Resource Analysis Branch, Ministry of Environment, Parliament Buildings, Victoria, B.C. The chemical data is not included in this report but the physical data is presented in Table 7 in the Engineering Interpretation section.

2.2 MAPPING METHODOLOGY

Upon completion of pretyping the aerial photographs, field checking, adjusting the pretyped lines where necessary, sampling and laboratory analyses, the terrain maps were developed. The terrain boundaries from the aerial photographs were transferred to map bases, and the polygons (map delineations) were symbolled according to Fulton's Landform scheme as reported by Alley (1973). The mapping previously done by Achard (1969-1970) for the valley bottom deposits of the Columbia River was incorporated into the terrain mapping, although it was generalized to fit the scale of this reconnaissance survey.

Using the terrain maps as a base, the soil maps were produced. For the study area, both the terrain and soil maps were mapped to the same detail, that is, they both have coincident lines delineating the areas. A soils legend was constructed using the soil association as the basic mapping unit to identify and group the various soils occurring in the map area.

By definition, a soil association is composed of related soil subgroups that have developed on similar soil parent materials and under similar climatic conditions (in this case, as expressed by vegetation). When interpreted as an expression of climate, the forest zone becomes a useful mapping tool which provides additional boundary limits for each soil association. In areas of limited access, the extent of a soil association is often determined by air photo interpretation of vegetation and landform patterns extrapolated from relatively few point data sources. This linkage between forest zone, inferred climate and soil association provides a sound ecological basis for land use planning.

A further stratification used in this survey area was

subdivision of the soil association into components based on observed (or inferred) distribution of various soil subgroup profiles over the landscape. Map units were differentiated according to the occurrence of different proportions of soil subgroup profiles. For each map unit, the identified profiles usually occur in a predictable geographic pattern reflecting topographic position and related drainage conditions on a given landscape. The synthesis of a soil association is depicted in the Figure 4.

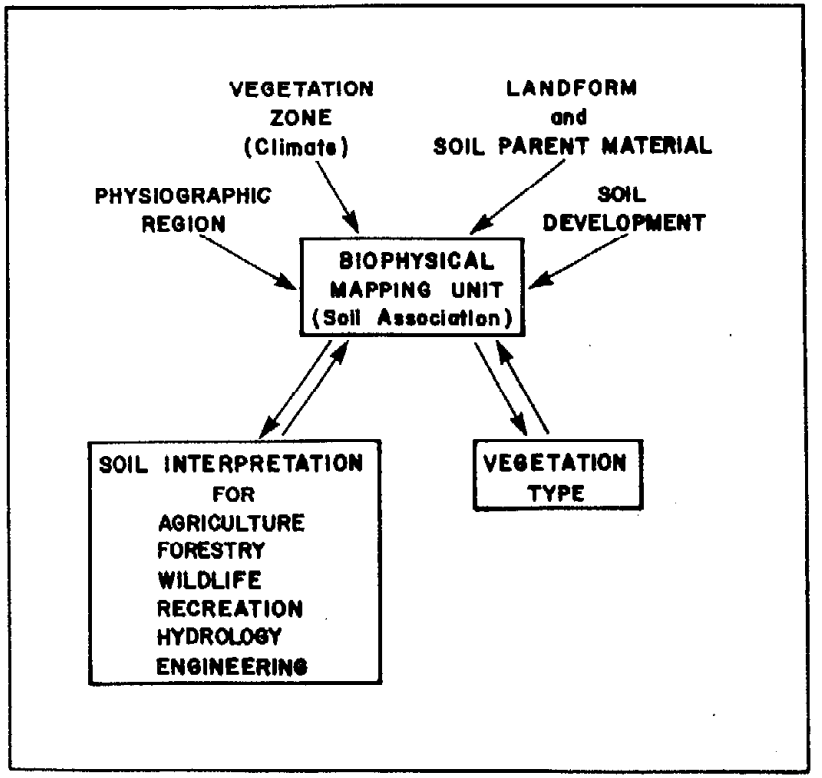


Figure 4. Synthesis of a biophysical mapping unit

The most common soil of a soil association component generally consists of one (or sometimes two) soil subgroup. In some cases soil subgroups of more than one soil great group occur together.

The less common soils of a soil association component include a different soil subgroup and/or seepage phases. They represent an important part of the soil association component but do not, singly or combined, occupy the majority. The seepage phases represent seepage sites and include gleyed variations of the appropriate soils within a soil association.

On uniform soil parent material, the basic mapping unit (soil association component) is sometimes similar to a soil series, but generally the mapping unit consists of two or more soil subgroups.

Map units are delineations on the map and have symbols which identify the soil association component therein. These components consist of the soil association abbreviation plus a subscript number, e.g. KX_1, KX_2. The soil association component numbers, which are depicted in Figure 5, are explained as follows:

Component number 1, which is considered to be the most common soil developed on a deep material that is well to moderately well drained and having a single soil profile development (soil subgroup).

Component number 2, which is similar to component number 1, except that it has a proportion of the less common soils developed in an

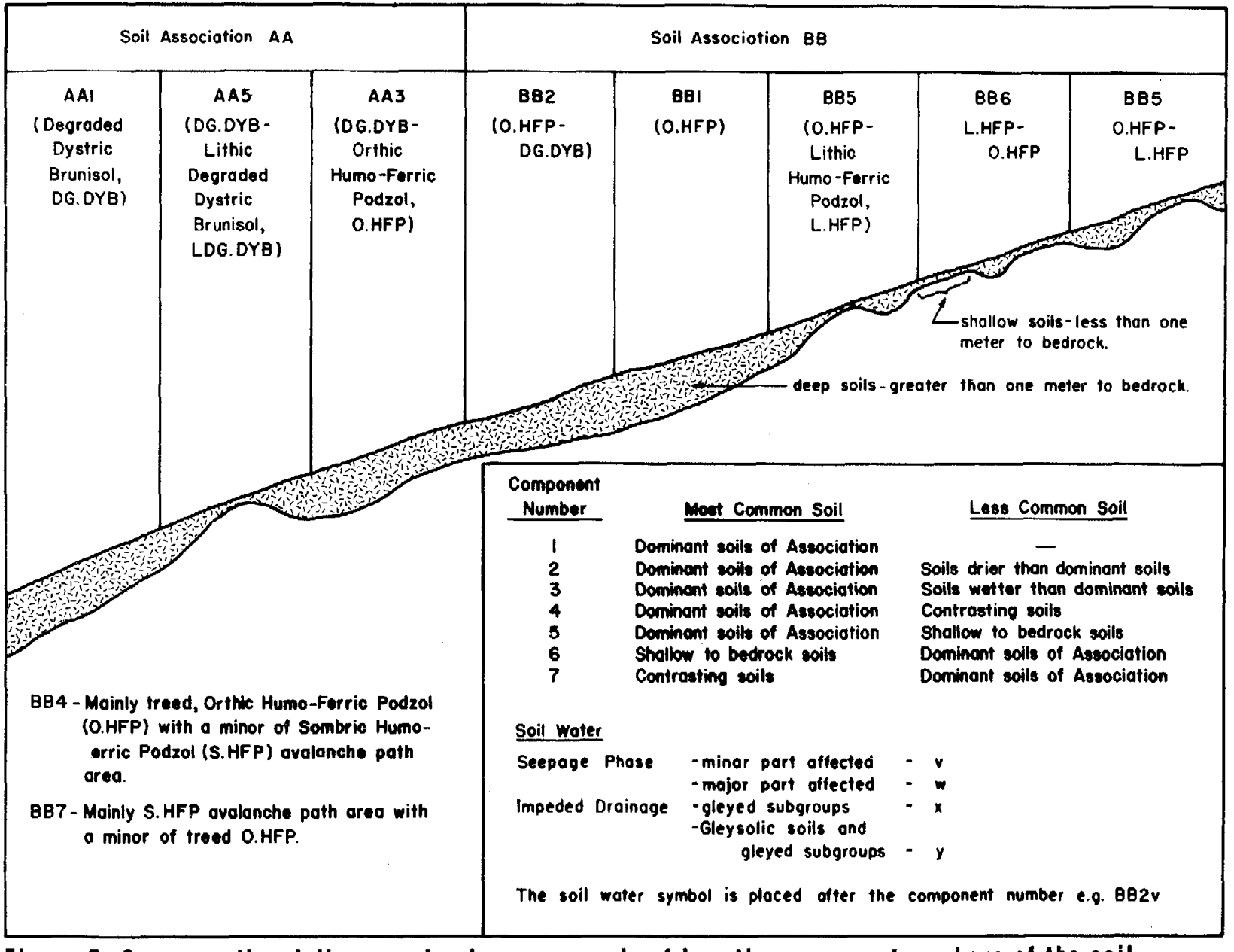


Figure 5. Cross sectional diagram showing an example of how the component numbers of the soil associations may be determined

environment that is either edaphically or climatically drier. For example, the most common soil subgroup may be Orthic Dystric Brunisol and the less common soil subgroup is Orthic Eutric Brunisol.

Component number 3, being again similar to component number 1, except that it has a proportion of the less common soil development in an environment that is either edaphically or climatically wetter. For example, the most common soil subgroup may be Orthic Dystric Brunisol and the less common soil subgroup is Orthic Humo-Ferric Podzol.

Components number 4 and 7 are located in situations where two different soil profile developments occur under similar environmental conditions. For example, in component number 4 the dominant soil development may be Orthic Dystric Brunisol occurring in stable areas of coniferous forest while the less common soil development may be Orthic Sombric Brunisol occurring in avalanche path areas where the vegetation is deciduous shrub cover. Component number 7 is the reverse of component number 4 where the avalanche path area is most common and the forested area is less common.

Components number 5 and 6 are located in areas where the depth of the soil overlying bedrock is less than one meter. Component number 5 occurs where the proportion of the deep, most common soil (for example, Orthic Dystric Brunisol) is dominant and the shallow soil (Lithic Dystric Brunisol) is less common. Component number 6 is the reverse of component number 5 where the shallow soil is most common and the deep soil is less common.

To indicate where water in the soil may be of importance, an additional symbolling scheme was used (Figure 5). In areas where a minor proportion of the map unit was interpreted to be affected by soil water seepage, a "v" was placed after the component number and, where a major part of the map unit was interpreted to be affected, a "w" was placed after the component number. Under these conditions, the soil water seepage has no visible affect on the soil profile development, allowing the soil subgroup to remain unchanged.

Areas interpreted to have a minor proportion of a gleyed soil subgroup were symbolled with an "x" and those areas interpreted to have a minor proportion of the delineated area having gleyed soil subgroups and Gleysolic soils were symbolled with a "y" after the component number. Under these conditions, the moisture characteristics are implied in the soil classification.

To describe the complexity of some landscape units, up to four soil association components were allowed. Although identifying four components in one delineated area may result in one or two of the components having an areal extent of less than 20 percent each, generally, components interpreted to have less than 20 percent were not noted. In cases where the feature could be easily identified, such as rock outcrops or organic areas, a 10 percent limit was used.

2.3 SOIL ASSOCIATION DESCRIPTIONS

In the study area, 113 soil associations were named and

described. The soils that were the same as those in the adjoining map areas of Vernon (82L) and Bonaparte River (92P) were given the same soil association name and description derived in these areas. For clarification purposes, a soil is defined as the naturally occurring, unconsolidated mineral or organic material at least 10 cm thick that occurs at the earth's surface and is capable of supporting plant growth. It is comprised of the solum, which is the upper horizons (usually A and B) of a soil in which the parent material has been modified and in which most plant roots are contained, and the parent material, which is the unconsolidated and more or less chemically weathered geological material or organic matter from which the solum has developed and is usually the C horizon. Table 4, which differentiates the soil associations by physiographic regions, major bedrock types, biophysical forest regions, zones and subzones, and genetic materials, depicts by soil association symbols how the soil associations were identified. Table 3, which folds out, explains the symbols in Tables 4 and 5. Table 5 identifies and describes in detail each of the soil associations, which are listed alphabetically according to symbol. The soil association components, which were differentiated by soil subgroup variations, have their areal extent indicated in hectares. Table 5 also serves as a map legend by providing information on genesis, texture, reaction, drainage and approximate rooting depth of each soil association together with data on surface expression, slope gradients, elevational range, biophysical forest zonation and physiographic regions. Although the textures indicated are for the parent material, they generally apply to the solum as well.

The soil association locations A to I and the associated map in Table 3 are presented to show where the group of soil associations are located. The soil association location separations were based primarily on physiographic regions, major bedrock types and climate as they affected biophysical forest regions and soil profile development. The schematic cross sectional diagrams (Figures 6 to 15) were prepared to show the relationship between the soil associations in each of the soil association locations A to I. Depicted in each diagram is the genetic material, approximate elevation range and biophysical forest zone or subzone that each soil association occurs in, as well as the physiographic region and underlying bedrock. The soil profile development indicated represents the most common subgroup of the soil association. Areas in which there is an intermixing of two biophysical forest zone symbols represent a biophysical forest subzone. This situation occurs in the Interior Western Hemlock - Western Red Cedar zone, Lodgepole pine - Engelmann spruce-alpine fir subzone and the Subalpine Engelmann Spruce - Alpine Fir zone, Rocky Mountain Douglas-fir - lodgepole pine subzone.

Table 3

Key to the Symbols for Tables 4 and 5

MAJOR SOIL DEVELOPMENT (1973)

O.DYB	-	Orthic Dystric Brunisol
DG.DYB	-	Degraded Dystric Brunisol
LDG.DYB	-	Lithic Degraded Dystric Brunisol
O.EB	-	Orthic Eutric Brunisol
L.EB	-	Lithic Eutric Brunisol
DG.EB	-	Degraded Eutric Brunisol
LDG.EB	-	Lithic Degraded Eutric Brunisol
O.SMB	-	Orthic Sombric Brunisol
L.SMB	-	Lithic Sombric Brunisol
FM.F	-	Fenmo-Fibrisol
O.GL	-	Orthic Gray Luvisol
BR.GL	-	Brunisolic Gray Luvisol
LBR.GL	-	Lithic Brunisolic Gray Luvisol
PZ.GL	-	Podzolic Gray Luvisol
LPZ.GL	-	Lithic Podzolic Gray Luvisol
TY.M	-	Typic Mesisol
O.HFP	-	Orthic Humo-Ferric Podzol
L.HFP	-	Lithic Humo-Ferric Podzol
DU.HFP	-	Duric Humo-Ferric Podzol
LDU.HFP	-	Lithic Duric Humo-Ferric Podzol
LU.HFP	-	Luvisolic Humo-Ferric Podzol
UT.HFP	-	Ortstein Humo-Ferric Podzol
SM.HFP	-	Sombric Humo-Ferric Podzol
LSM.HFP	-	Lithic Sombric Humo-Ferric Podzol
O.FHP	-	Orthic Ferro-Humic Podzol
L.FHP	-	Lithic Ferro-Humic Podzol
SM.FHP	-	Sombric Ferro-Humic Podzol
O.R	-	Orthic Regosol
L.R	-	Lithic Regosol

BIOPHYSICAL FOREST ZONATION

DRY INTERIOR REGION

Interior Rocky Mountain Douglas-fir Zone (ID)
- (a) Lodgepole pine subzone
- (b) Ponderosa pine subzone

Subalpine Engelmann Spruce - Alpine Fir Zone (SAeS-alF)
- (a) Lodgepole pine subzone
- (c) Rocky Mountain Douglas-fir - lodgepole pine subzone

INTERIOR WET BELT REGION

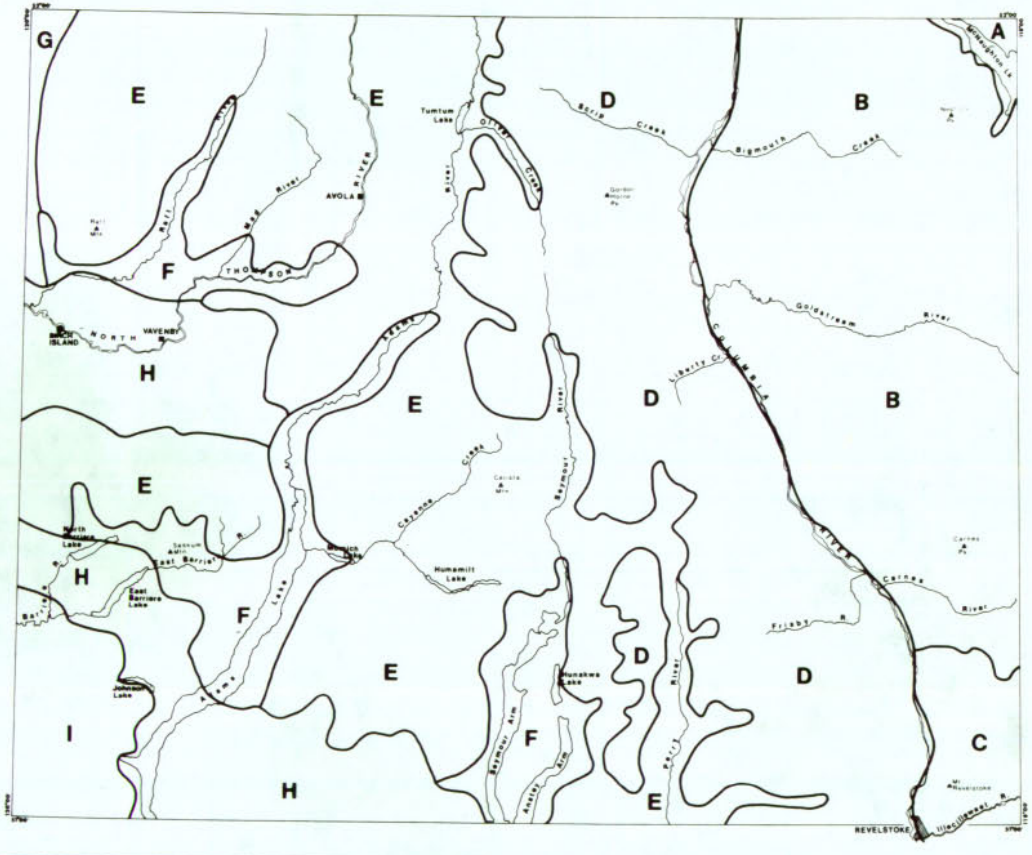
Interior Western Hemlock - Western Red Cedar Zone (IwH-wC)
- (a) Rocky Mountain Douglas-fir - lodgepole pine subzone
- (b) Lodgepole pine - Engelmann spruce - alpine fir subzone

Subalpine Mountain Hemlock Zone (SAmH)
(subzones have not been determined)

Subalpine Engelmann Spruce - Alpine Fir Zone (SAeS-alF)
- (a) Lodgepole pine - whitebark pine subzone
- (b) Krummholz subzone

Alpine Tundra Zone (At)
(subzones have not been determined)

SOIL ASSOCIATION LOCATION MAP OF 82M.



TOPOGRAPHY CLASSES (1973)

Single Slopes	Multiple Slopes	% Slope
A - depressional to level	a - nearly level	0 to 0.5
B - very gently sloping	b - gently undulating	0.5+ to 2
C - gently sloping	c - undulating	2+ to 5
D - moderately sloping	d - gently rolling	5+ to 9
E - strongly sloping	e - moderately rolling	9+ to 15
F - steeply sloping	f - strongly rolling	15+ to 30
G - very steeply sloping	g - hilly	30+ to 60
H - extremely sloping	h - very hilly	over 60

LANDFORM CLASSIFICATION (1973)

Genetic Materials		Surface Expression		Modifying Processes	
A	- Alluvial	a	- apron	-A	- Avalanched
A^G	- Fluvioglacial	b	- blanket	-M	- Mass Wasted
C	- Colluvial	f	- fan	-N	- Nivated
I	- Ice	p	- plain	-S	- Soliflucted
L^G	- Glaciolacustrine	r	- ridged		
M	- Morainal	s	- steep		
O	- Organic	t	- terraced		
R	- Bedrock	v	- veneer		

REACTION CLASSES:

acid	- pH of 5.5 or lower
neutral	- pH between 5.5 and 7.4
alkaline	- pH of 7.4 and higher

Table 4

General Key to the Soil Associations

PHYSIOGRAPHIC REGION		ROCKY MOUNTAINS AND TRENCH			SELKIRK MOUNTAINS									MONASHEE MOUNTAINS									SHUSWAP HIGHLANDS																	
MAJOR BEDROCK TYPES		Limestone, Quartizite, Slate, Schist			Slate, Schist, Quartzite, Granite, Limestone					Gneiss, Granite, Granodiorite, Quartz Monzonite				Gneiss, Granite, Granodiorite, Quartz Monzonite									Gneiss, Granite, Granodiorite, Quartz Monzonite						Basalt	Phyllite, Limestone, Greenstone, Schist												
BIO-PHYSICAL FOREST	REGION	Interior Wet Belt			Interior Wet Belt					Interior Wet Belt				Interior Wet Belt									Interior Wet Belt						IWB	Interior Wet Belt						Dry Interior					
	ZONE	At	SAeS-alF	IwH-wC	At	SAeS-alF		SAmH	IwH-wC	At	SAeS-alF		IwH-wC	At	SAeS-alF		SAmH	IwH-wC			At	SAeS-alF		IwH-wC			IwH-wC	SAeS-alF		IwH-wC			SAeS-alF	ID				
	SUBZONE		a	a		b	a		a		b	a	a		b	a		a	b	a		b	a	b	a	a	a	b	a	b	a	a	c and a	a	b			
SOIL ASSOCIATION LOCATION		A	A	A	B	B	B	B	B	C	C	C	C	D	D	D	D	D	E	E	E	E	E	E	E	F	G	H	H	H	H	H	I	I	I			
GENETIC MATERIAL		WH WC	WT WE	GA AO *	AD GT	GN SD	GN BM	GN RK	GH GM	SS HD	HH FB	HH BA BO	CS BY	SS HD	HH FB	HH RF	HH FS	HK HW	KT DN	KT CA	CD CR	CL	CN LT	KT DN	KT CA	VN	LX PE	SW	YW LP	SL	LA RT	LX AT	WB HA	H HO	HT			
Colluvial																																								
Morainal		CC		SY	SO		RR	DE	MH	TY		WS	SB	TY		TT	TE	TM	SM	ST		SK	KL SA AM	SM	ST	MT	DA ME		KF MO	TW	RD TS	RM HS	AA	AL AN	MC			
Fluvioglacial									AE				KX					AE		WD			WW		WD	KK	FG		SU			FG SF	LM	SE	SR			
Fluvial - fan									KV				KV					KV		WN					WN	SP	DU					DU HP		D	DL			
Fluvial - plain									MM AU				AS AU					MM AU		MN WY					MN WY	MN PH	BD					BD		RE	RE			
Glaciolacustrine																										LH						LH						
Organic							RA		BE							RA		BE		BE			RA		BE	BE	RL		RA			RL		RL	RL			

Table 5

Soil Association descriptions for the Seymour Arm map area

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
ALLAMORE	AA1	2240	PZ.GL		Shuswap Highlands - I, H	Subalpine Engelmann spruce-alpine fir: c and a	1220-1675	- landform varies from rolling plateaus to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly clay loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous parent material. - rooting depth is limited to about 100 cm by a Bt horizon and the moderately compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	AA1a	1220	PZ.GL					
	AA3a	10	PZ.GL	LU.HFP				
	AA5	5720	PZ.GL	LPZ.GL				
	AA5a	1200	PZ.GL	LPZ.GL				
	AA6	60	LPZ.GL	PZ.GL				
		10450						
ADAMANT	AD1	1410	SM.HFP		Selkirk Mountains - B	Alpine tundra	1830-3050	- landform consists of steep mountainous slopes with gradients as low as 15% but usually greater than 60%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are mainly derived from slate, schist, quartzite, granite or limestone bedrock. - reaction varies from an acid solum to an acid or neutral parent material. - rooting depth for the alpine vegetation is usually restricted to about 50 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	AD5	1220	SM.HFP	LSM.HFP				
	AD6	4520	LSM.HFP	SM.HFP				
		7150						
ARGENTINE	AE1	10960	O.HFP		Selkirk and Monashee Mountains - B, D	Interior western hemlock -western red cedar: a	455-1220	- landform varies from undulating terraces to steep slopes with gradients ranging between 2 and 60%. - deposits of sandy fluvioglacial materials (AE1), varying in the amount and size of the coarse fragment content, or deposits of sandy or silty glaciolacustrine materials (AE4), are located in areas of slate, gneiss, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained.
	AE4	360	O.HFP	O.R				
		11320						

1. Map component with "a" indicates that this component has a minor part (v) or major part (w) affected by seepage water in the soil profile and/or has a limited amount of impeded drainage represented by gleyed subgroups (x) or gleyed subgroups and Gleysolic soils (y).

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
ALLIE	AL1	800	BR.GL		Shuswap	Interior	580-1220	- landform consists of valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 80 cm by the Bt horizon and the moderately compact, calcareous, slowly pervious parent material or the underlying bedrock. - soils are usually moderately well drained although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	AL1a	440	BR.GL		Highlands - I	Douglas-fir: a		
	AL4	720	BR.GL	DG.EB				
	AL5	2180	BR.GL	LBR.GL				
	AL6	240	LBR.GL	BR.GL				
		4380						
ARMOUR	AM1	200	O.FHP		Shuswap	Subalpine	1525-1980	- landform varies from rolling plateaus to steep mountainous slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 80 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by impeded drainage and by downslope, subsurface seepage.
	AM1a	190	O.FHP		Highlands - E	Engelmann		
	AM4	270	O.FHP	SM.FHP		spruce - alpine		
	AM5	620	O.FHP	L.FHP		fir: a		
	AM5a	5260	O.FHP	L.FHP				
	AM6	3610	L.FHP	O.FHP				
	AM6a	2160	L.FHP	O.FHP				
		12310						
ARTISAN	AN1	6700	BR.GL		Shuswap	Interior	915-1370	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 80 cm by the Bt horizon and the moderately compact, calcareous, slowly pervious parent material or by the underlying bedrock. - soils are usually moderately well drained.
	AN2	350	BR.GL	DG.EB	Highlands - I	Douglas-fir: a		
	AN3	1710	BR.GL	PZ.GL				
	AN5	2350	BR.GL	LBR.GL				
	AN6	630	LBR.GL	BR.GL				
		11740						

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
ANEMONE	A01	1240	DG.DYB		Rocky Mountain Trench - A	Interior western hemlock - western red cedar: a	760-1370	- landform consists of steep mountainous slopes with gradients predominantly greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	A05	1080	DG.DYB	LDG.DYB				
	A06	390	LDG.DYB	DG.DYB				
		2710						
AVIS	AS1	120	O.R		Selkirk Mountains - C	Interior western hemlock - western red cedar: a	425-1525	- landform consists of undulating, floodplain terraces with slopes generally between 2 and 10%. - deposits of sandy loam or silt loam alluvial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the surficial materials varies from neutral to acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the water table. - the soils are usually single grained or granular in structure, coherent, moderately pervious and well drained.
ANGLEMONT	AT1	1440	DG.DYB		Shuswap Highlands - H	Interior western hemlock - western red cedar: a	395-1525	- landform consists of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 100 cm restricted by the depth of the strongly calcareous parent material or by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although some areas are affected by downslope, subsurface seepage.
	AT1a	840	DG.DYB					
	AT3	430	DG.DYB	O.HFP				
	AT3a	810	DG.DYB	O.HFP				
	AT4	190	DG.DYB	O.SMB				
	AT5	9090	DG.DYB	LDG.DYB				
	AT5a	670	DG.DYB	LDG.DYB				
	AT6	7990	LDG.DYB	DG.DYB				
		21460						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
ARGONAUT	AU1	2530	O.HFP		Selkirk and Monashee Mountains - B, C, D	Interior western hemlock - western red cedar: a	395-1525	- landform consists of undulating terraces having steep embankments with slopes generally between 2 and 10% except for the embankments which are usually 30 to 60%. - deposits of sandy alluvial materials, varying in the amount and size of the coarse fragment content, are located in areas of slate, schist, quartzite, granite or limestone bedrock. - reaction varies from an acid solum to a neutral or acid parent material. - rooting depth is usually unrestricted and extends to about 150 cm but some rooting restrictions may occur due to the cemented B horizon. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although there are areas that are poorly drained. - although the soil development is dominantly Orthic Humo-ferric Podzol, Ortstein Humo-Ferric Podzol development also occurs.
	AU1a	710	O.HFP					
	AU4	480	O.HFP	O.R				
		3720						
BEATON CREEK	BA1	200	O.HFP		Selkirk Mountains - C	Subalpine Engelmann spruce - alpine fir: a	1370-1675	- landform consists of steep mountainous slopes with gradients predominantly greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	BA1a	100	O.HFP					
	BA5	850	O.HFP	L.HFP				
	BA5a	180	O.HPF	L.HFP				
	BA6	2530	L.HFP	O.HFP				
		3860						
BYRD CREEK	BD1a	1440	O.R		Shuswap Highlands - G, H	Interior western hemlock - western red cedar: a	425- 915	- landform consists of undulating floodplain terraces with slopes generally between 2 and 10%. - deposits of silt loam or fine sandy loam alluvial materials overlying loamy sand or sandy alluvial materials, varying in the amount and size of the corase fragment content, are located in areas of phyllite, limestone, basalt, greenstone or schist bedrock. - reaction in the weakly calcareous parent material is neutral. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the water table. - the soils are usually porous, moderately pervious and moderately well to imperfectly drained.

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
BREWSTER	BE1	4830	SP.F		Selkirk and Monashee Mountains and Shuswap Highlands - B, D, E, F	Interior western hemlock - western red cedar: a	425-1065	- landform is flat, depressional or undulating with slopes generally less than 5%. - deposits of undecomposed organic material, commonly derived largely from mosses, located in areas of most bedrock types. - reaction is acid. - rooting depth is restricted to usually less than 50 cm by the high water table. - soils are very poorly drained.
BIGMOUTH	BM1	1070	O.HFP		Selkirk Mountains - B	Subalpine Engelmann spruce - alpine fir: a	1370-1980	- landform consists of steep mountainous slopes with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	BM5	4900	O.HFP	L.HFP				
	BM6	29130	L.HFP	O.HFP				
		35100						
BONNER	B06	880	L.HFP	O.HFP	Selkirk Mountains - C	Subalpine Engelmann spruce - alpine fir: a	1675-1980	- landform consists of steep mountainous slopes with gradients predominantly greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are areas affected by impeded drainage.
	B06a	1340	L.HFP	O.HFP				
		2220						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
BLAYLOCK	BY1	700	O.HFP		Selkirk Mountains - C	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are areas affected by downslope, subsurface seepage.
	BY1a	630	O.HFP					
	BY5	2310	O.HFP	L.HFP				
	BY5a	1110	O.HFP	L.HFP				
	BY6	3520	L.HFP	O.HFP				
		8270						
CAYENNE	CA1	14580	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a	490-1525	- landform consists of steep valley slopes with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are areas affected by downslope seepage.
	CA1a	7370	O.HFP					
	CA2	2730	O.HFP	DG.DYB				
	CA2a	460	O.HFP	DG.DYB				
	CA5	28250	O.HFP	L.HFP				
	CA5a	2010	O.HFP	L.HFP				
	CA6	28870	L.HFP	O.HFP				
		84270						
CLEMENCEAU	CC1	20	O.R		Rocky Mountains - A	Alpine tundra	1675-2440	- landform consists of lateral and terminal morainal ridges and slopes generally greater than 30%. - the recent morainal deposits, generally bouldery, gravelly sandy loam in texture, are mainly derived from limestone, quartzite, slate or schist bedrock. - reaction in the calcareous parent material varies from neutral to alkaline. - the soils are loose, porous, moderately pervious and well drained, and where vegetated allow for unrestricted rooting depths.

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
COPELAND	CD5	460	SM.HFP	LSM.HFP	Shuswap Highlands - E	Alpine tundra	1980-2590	- landform varies from rolling alpine meadows to steep mountainous slopes with gradients ranging from 5% to over 60%. - the colluvial materials, generally gravelly sandy loam in texture, are mainly derived from gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth for the alpine vegetation is usually restricted to about 50 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually moderately well drained.
	CD6	4780	LSM.HFP	SM.HFP				
		5240						
CANDLE	CL1a	140	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: b	1830-2285	- landform varies from rolling hillsides to steep mountainous slopes with gradients as low as 10% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - although the soil development is dominantly Orthic Humo-Ferric Podzol, Sombric Humo-Ferric Podzol development occurs in treeless areas.
	CL5	1340	O.HFP	L.HFP				
	CL6	5860	L.HFP	O.HFP				
		7340						
CINNEMOUSEN	CN1	1990	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: a	1220-1830	- landform varies from rolling hillsides to steep mountainous slopes with gradients as low as 10% but usually greater than 30%. - the colluvial deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are areas affected by impeded drainage and by downslope, subsurface seepage.
	CN1a	3360	O.HFP					
	CN4	980	O.HFP	SM.HFP				
	CN4a	640	O.HFP	SM.HFP				
	CN5	14070	O.HFP	L.HFP				
	CN5a	4310	O.HFP	L.HFP				
	CN6	32780	L.HFP	O.HFP				
	CN6a	2230	L.HFP	O.HFP				
		60360						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
CARNES	CR1	1060	O.R		Shuswap Highlands - E	Alpine tundra	1830-2590	- landform consists of steep talus fan or apron slopes with gradients usually greater than 60%. - the colluvial materials, generally rubbly, gravelly loamy sand in texture, are mainly derived from gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the parent material is acid. - usually these materials are unvegetated and if vegetation is established the rooting depth is usually unrestricted although the ground surface available for vegetative growth is restricted by the large blocks of rock. - the soils are loose, porous, rapidly pervious and rapidly drained.
	CR4	80	O.R	O.HFP				
		1140						
MOUNT COND	CS1	490	SM.HFP		Selkirk Mountains - C	Interior western hemlock - western red cedar: a	1065-1525	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation
	CS5	140	SM.HFP	LSM.HFP				
		630						
DUNLEAVY	D1	320	DG.EB		Shuswap Highlands - I	Interior Douglas-fir: a	425-1065	- landform consists of moderately sloping fans located in the valley bottom with gradients generally less than 30%. - deposits of silt loam or loam alluvial fan materials, varying in the amount and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 100 cm unless it is restricted by the strongly calcareous parent material. - the soils are usually stratified, moderately pervious and well drained although there are areas that are imperfectly drained.
	D1a	480	DG.EB					
	D4	140	DG.EB	O.GL				
		940						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
DRAGONFLY	DA1	20	DG.EB		Shuswap Highlands - G	Interior western hemlock - western red cedar: a	610-1035	- landform consists of valley slopes with gradients between 5 and 30%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of basalt bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous, parent material. - rooting depth is usually restricted to less than 80 cm by the moderately compact, calcareous, slowly pervious parent material. - soils are generally moderately well drained although there are areas of imperfect drainage.
	DA1a	40	DG.EB					
		60						
DOWNIE	DE1	330	O.HFP		Selkirk Mountains - B	Subalpine mountain hemlock	1220-1675	- landform consists of steep mountainous slopes with gradients ranging generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained.
	DE5	5900	O.HFP	L.HFP				
	DE6	2930	L.HFP	O.HFP				
		9160						
DORRELL	DL1	50	DG.EB		Shuswap Highlands - I	Interior Douglas-fir: b	670- 915	- landform consists of moderately sloping fans located in the valley bottom with gradients generally less than 30%. - deposits of silt loam or loam alluvial fan materials, varying in the amount and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous subsoil. - rooting depth is usually unrestricted and extends to about 100 cm unless it is restricted by the strongly calcareous parent material. - the soils are usually stratified, moderately pervious and well drained
	DL4	110	DG.EB	O.R				
		160						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
DUDGEON	DN1	2580	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: b	1220-1675	- landform consists of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are areas affected by downslope, subsurface seepage.
	DN1a	3030	O.HFP					
	DN4	160	O.HFP	SM.HFP				
	DN5	10010	O.HFP	L.HFP				
	DN6	22000	L.HFP	O.HFP				
		37780						
DUNCAN CREEK	DU1	520	O.EB		Shuswap Highlands - G, H	Interior western hemlock - western red cedar: a	425-1005	- landform consists of moderately sloping fans located in the valley bottom with gradients generally less than 30% but having gully embankment slopes of up to 60%. - deposits of sandy loam, loamy sand or sand alluvial fan materials, varying in the amoung and size of the coarse fragment content, are located in areas of basalt, phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm unless it is restricted by the strongly calcareous parent material. - the soils are usually stratified, moderately pervious and well drained although there are areas that are imperfectly drained.
	DU1a	640	O.EB					
	DU3	160	O.EB	O.DYB				
		1320						
FRISBY	FB1	40	O.FHP		Monashee and Selkirk Mountains - D, C	Subalpine Engelmann spruce - alpine fir: b	1830-2285	- landform varies from rolling to steep mountainous slopes with gradients generally varying betwen 10 and 60%. - the colluvial deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are some areas affected by impeded drainage. - although the soil development is dominantly Orthic Ferro-Humic Podzol, Sombric Ferro-Humic Podzol development occurs in treeless areas.
	FB5	1890	O.FHP	L.FHP				
	FB5a	1210	O.FHP	L.FHP				
	FB6	17020	L.FHP	O.FHP				
	FB6a	1190	L.FHP	O.FHP				
		21350						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
FROG	FG1	830	O.EB		Shuswap	Interior	425-1370	- landform is variable, ranging from undulating or rolling terraces to gullied embankments or steep valley slopes with gradients generally less than 60%. - deposits of very gravelly sand and interstratified sandy fluvioglacial materials are located in areas of basalt, phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm unless it is restricted by the strongly calcareous parent material. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained.
	FG3	460	O.EB	O.DYB	Highlands -	western hemlock		
	FG4	170	O.EB	O.R	G, H	- western red		
	FG5	60	O.EB	L.EB		cedar: a		
		1520						
FISSURE	FS1	2740	O.HFP		Monashee	Subalpine	1220-1675	- landform consists of steep mountainous slopes with gradients as low as 20% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	FS1a	1020	O.HFP		Mountains - D	mountain		
	FS5	11650	O.HFP	L.HFP		hemlock		
	FS6	15040	L.HFP	O.HFP				
		30450						
GOOSEGRASS	GA1	160	O.SB		Rocky	Interior	760-1370	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.
	GA5	700	O.SB	L.SB	Mountain	western hemlock		
		860			Trench - A	- western red		
						cedar: a		

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
GRIFFITH	GH1	3760	SM.HFP		Selkirk Mountains - B	Interior western hemlock - western red cedar: a	760-1525	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation
	GH5	370	SM.HFP	LSM.HFP				
	GH6	120	LSM.HFP	SM.HFP				
		4250						
GOLDSTREAM	GM1	13890	O.HFP		Selkirk Mountains - B	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients predominantly greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	GM5	13890	O.HFP	L.HFP				
	GM6	14210	L.HFP	O.HFP				
		41990						
GORMAN	GN1	7480	SM.HFP		Selkirk Mountains - B	Subalpine mountain hemlock, Subalpine Engelmann spruce - alpine fir: a and b	1220-1980	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.
	GN5	7800	SM.HFP	LSM.HFP				
	GN6	9730	LSM.HFP	SM.HFP				
		25010						

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
GANNETT	GT1	12080	O.R		Selkirk Mountains - B	Alpine tundra	1830-3050	- landform consists of steep talus fan or apron slopes with gradients usually greater than 60%. - the colluvial materials, generally rubbly, gravelly loamy sand in texture, are mainly derived from slate, schist, quartzite, granite or limestone bedrock. - reaction in the parent material varies from acid to neutral. - usually these materials are unvegetated and if vegetation is established the rooting depth is usually unrestricted although the ground surface available for vegetated growth is restricted by the large blocks of rock. - the soils are loose, porous, rapidly pervious and rapidly drained.
	GT6	200	L.R	O.R				
		12280						
HEMP	H1	870	DG.EB		Shuswap Highlands - I	Interior Douglas-fir: a	425-1220	- landform consists of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 80 cm restricted by the depth of the strongly calcareous parent material or by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	H5	1910	DG.EB	LDG.EB				
	H6	1200	LDG.EB	DG.EB				
		3980						
HALLAMORE	HA1	40	O.HFP		Shuswap Highlands - I, H	Subalpine Engelmann spruce - alpine fir: c and a	1220-1675	- landform varies from rolling plateaus to steep valley slopes with gradients ranging from as low as 10% to greater than 60%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	HA5	1730	O.HFP	L.HFP				
	HA6	950	L.HFP	O.HFP				
		2720						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
HAGGARD	HD1	12500	O.R		Monashee Mountains - D	Alpine tundra	1675-2745	- landform consists of steep talus fan or apron slopes with gradients usually greater than 60%. - the colluvial materials, generally rubbly, gravelly loamy sand in texture, are mainly derived from gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the parent material is acid. - usually these materials are unvegetated and if vegetation is established the rooting depth is usually unrestricted although the ground surface available for vegetated growth is restricted by the large blocks of rock. - the soils are loose, porous, rapidly pervious and rapidly drained.
HOLDICH	HH1	10630	SM.HFP		Monashee and Selkirk Mountains - D, C	Subalpine mountain hemlock, Subalpine Engelmann spruce - alpine fir: a and b	1220-1890	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.
	HH4	1280	SM.HFP	O.R				
	HH5	7440	SM.HFP	LSM.HFP				
	HH6	11350	LSM.HFP	SM.HFP				
		30700						
HOSKINS	HK1	3680	SM.HFP		Monashee Mountains - D	Interior western hemlock - western red cedar: a	580-1525	- landform consists of steep avalanche path slopes with gradients usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.
	HK5	200	SM.HFP	LSM.HFP				
	HK6	40	LSM.HFP	SM.HFP				
		3920						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
HOOLIGAN	HO1	20	DG.DYB		Shuswap	Interior	915-1370	- landform consits of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 80 cm restricted by the depth of the strongly calcareous parent material or by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	HO5	1830	DG.DYB	LDG.DYB	Highlands - I	Douglas-fir: a		
	HO6	930	LDG.DYB	DG.DYB				
		2780						
HUPEL	HP1	160	O.DYB		Shuswap	Interior	425-1065	- landform consists of moderately sloping fans located in the valley bottom with gradients generally less than 30%. - deposits of sandy loam, loamy sand or sand alluvial fan materials, varying in the amount and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm unless it is restricted by the strongly calcareous parent material. - the soils are usually stratified, moderately pervious and well drained although some areas are affected by downslope, subsurface seepage.
	HP1a	240	O.DYB		Highlands - H	western hemlock		
	HP2	930	O.DYB	O.EB		- western red		
	HP3	110	O.DYB	O.HFP		cedar: a		
	HP3a	50	O.DYB	O.HFP				
	HP4	30	O.DYB	O.R				
		1520						
HOBSON	HS1	8130	BR.GL		Shuswap	Interior	395-1525	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam, gravelly loam or gravelly clay loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 100 cm by the Bt horizon and the moderately compact, calcareous, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained, although there are areas imperfectly drained or affected by downslope, subsurface seepage.
	HS1a	2220	BR.GL		Highlands - H	western hemlock		
	HS3	10700	BR.GL	O.HFP		- western red		
	HS3a	5300	BR.GL	O.HFP		cedar: a		
	HS5	12720	BR.GL	LBR.GL				
	HS5a	1760	BR.GL	LBR.GL				
	HS6	380	LBR.GL	BR.GL				
		41210						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
HEATHROW	HT1	50	DG.EB		Shuswap Highlands - I	Interior Douglas-fir: b	580-1370	- landform consists of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 80 cm restricted by the depth of the strongly calcareous parent material or by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	HT5	510	DG.EB	LDG.EB				
	HT6	40	LDG.EB	DG.EB				
		600						
HANAKWA	HW1	3930	O.HFP		Monashee Mountains - D	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained, although there are some areas affected by downslope, subsurface seepage.
	HW1a	680	O.HFP					
	HW5	5890	O.HFP	L.HFP				
	HW6	6270	L.HFP	O.HFP				
		16770						
ICE	I	31970						- permanent ice and snow fields.
KEEFER	KF1	3810	O.HFP		Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: a	1220-1830	- landform varies from rolling plateaus to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	KF1a	4490	O.HFP					
	KF2a	160	O.HFP	BR.GL				
	KF4	400	O.HFP	SM.HFP				
	KF5	10380	O.HFP	L.HFP				
	KF5a	780	O.HFP	L.HFP				
	KF6	3630	L.HFP	O.HFP				
		23650						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
KWIKOIT	KK1	11200	O.DYB		Shuswap Highlands - F	Interior western hemlock - western red cedar: a	365-1370	- landform varies from undulating terraces to steep slopes with gradients ranging between 2 and 60%. - deposits of sandy fluvioglacial material, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	KK1a	2710	O.DYB					
	KK2	570	O.DYB	O.EB				
	KK3	6400	O.DYB	O.HFP				
	KK3a	1010	O.DYB	O.HFP				
	KK4	630	O.DYB	O.R				
		22520						
KOSTAL	KL1	8500	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: a	1220-1980	- landform consists of rolling and hummocky plateaus with slopes ranging between 5 and 60%. - the ablated morainal deposits, generally bouldery, gravelly sandy loam in texture, are associated with areas of gneiss, granitic, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm but some rooting restrictions may occur due to the compactness of the parent material. - soils are generally moderately pervious and well drained although there are areas of impeded drainage.
	KL1a	14620	O.HFP					
	KL5	6360	O.HFP	L.HFP				
	KL5a	2470	O.HFP	L.HFP				
	KL6	960	L.HFP	O.HFP				
	KL6a	430	L.HFP	O.HFP				
		33340						
KITSON	KT1	4050	SM.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a and b	610-1675	- landform consists of steep avalanche path slopes with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.
	KT4	20	SM.HFP	O.R				
	KT5	820	SM.HFP	LSM.HFP				
	KT6	160	LSM.HFP	SM.HFP				
		5050						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
KIRBYVILLE	KV1	2200	O.HFP		Selkirk and Monashee Mountains - B, C, D	Interior western hemlock - western red cedar: a	455-1065	- landform consists of moderately sloping fans located in the valley bottom with gradients generally ranging between 5 and 30%. - deposits of sandy loam or sand alluvial fan material, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, slate, schist, quartzite, granite, or limestone bedrock. - reaction varies from an acid solum to a neutral or acid parent material. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, stratified, coherent, moderately pervious, and well drained although there are areas affected by impeded drainage and by downslope, subsurface seepage.
	KV1a	1780	O.HFP					
	KV4	530	O.HFP	O.R				
		4510						
KUSKANAX	KX1	780	O.HFP		Selkirk Mountains - C	Interior western hemlock - western red cedar: a	490- 760	- landform varies from rolling terraces to steep slopes with gradients ranging between 5 and 60%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction varies from an acid solum to a neutral parent material. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained.
LEAGUE	LA5	150	O.HFP	L.HFP	Shuswap Highlands - H	Interior western hemlock - western red cedar: a	760-1370	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 10 and 60%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone, or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	LA6	1610	L.HFP	O.HFP				
		1760						

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
LICHEN	LH1	1000	O.GL		Shuswap Highlands - F, H	Interior western hemlock - western red cedar: a	375- 760	- landform consists of a rolling and undulating plain having steeply sloping sides with gradients generally between 2 and 15% but may be as high as 30%. - deposits of silt loam glaciolacustrine materials are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction varies from an acid solum to a neutral parent material. - rooting depth is usually restricted to less than 100 cm by the platy, compact, slowly pervious parent material. - soils are usually moderately well drained.
	LH3	430	O.GL	BR.GL				
		1430						
LATREMOUILLE	LM1	510	O.HFP		Shuswap Highlands - I, H	Subalpine Engelmann spruce - alpine fir: a and c	1370-1740	- landform consists of gently rolling hillsides with gradients generally between 5 and 60%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in an area of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral parent material. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although some areas are imperfectly drained.
	LM1a	230	O.HFP					
	LM2	430	O.HFP	DG.DYB				
		1170						
LUPINE	LP1	1290	O.FHP		Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: a	1525-1980	- landform varies from rolling plateaus to steep mountainous slopes with gradients generally varying between 5 and 60%. - the colluvial materials, generally gravelly loam or gravelly sandy loam in texture, associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although some areas are imperfectly drained.
	LP1a	280	O.FHP					
	LP4	780	O.FHP	SM.FHP				
	LP5	4610	O.FHP	L.FHP				
	LP6	2770	L.FHP	O.FHP				
	LP7	510	SM.FHP	O.FHP				
	LP7a	220	SM.FHP	O.FHP				
		10460						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
LOST	LT1	240	O.FHP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: a	1525-1980	- landform varies from strongly rolling plateaus to steep mountainous slopes with gradients generally greater than 15%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are some areas affected by impeded drainage and by downslope, subsurface seepage.
	LT1a	140	O.FHP					
	LT4	1190	O.FHP	SM.FHP				
	LT5	3220	O.FHP	L.FHP				
	LT5a	2270	O.FHP	L.FHP				
	LT6	19520	L.FHP	O.FHP				
	LT6a	1790	L.FHP	O.FHP				
	LT7	1120	SM.FHP	O.FHP				
		29490						
LAXITY	LX1	370	O.EB		Shuswap Highlands - G, H	Interior western hemlock - western red cedar: a	455-1370	- landform consists of steeply sloping valley walls with gradients as low as 15% but generally greater than 30%. - the colluvial materials, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of basalt, phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 80 cm restricted by the depth of the strongly calcareous parent material or by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	LX3	30	O.EB	DG.DYB				
	LX5	2870	O.EB	L.EB				
	LX6	880	L.EB	O.EB				
		4150						
MCLURE	MC4	140	BR.GL	DG.EB	Shuswap Highlands - I	Interior Douglas-fir: b	580- 915	- landform consists of steeply sloping valley walls with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly clay loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 80 cm by the Bt horizon and the moderately compact, calcareous, slowly pervious parent material. - soils are usually well drained.

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
MURTLE	ME2	400	BR.GL	O.EB	Shuswap Highlands - G	Interior western hemlock - western red cedar: a	915-1065	- landform consists of rolling terrain located in the valley bottom with slopes usually between 10 and 30%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of basalt bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 80 cm by the Bt horizon and the moderately compact, calcareous, slowly pervious parent material. - soils are generally moderately well drained.
	ME5	40	BR.GL	LBR.GL				
		440						
MOMICH	MH1	8220	DU.HFP		Selkirk Mountains - B	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients usually between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by downslope, subsurface seepage.
	MH1a	3340	DU.HFP					
	MH5	11320	DU.HFP	LDU.HFP				
	MH6	1150	LDU.HFP	DU.HFP				
		24030						
MAMMOTH	MM1	300	O.R		Selkirk and Monashee Mountains - B, D	Interior western hemlock - western red cedar: a	455-1220	- landform consists of undulating floodplain terraces with slopes generally less than 5%. - deposits of sandy alluvial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, slate, schist, quartzite, granite and limestone bedrock. - reaction in the parent material varies from neutral to acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the water table. - the soils are usually single grained in structure, coherent, rapidly pervious and rapidly drained although there are areas of impeded drainage.
	MM1a	1320	O.R					
	MM4	160	O.R	O.HFP				
		1780						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
MCNOMEE	MN1	3470	O.R		Monashee Mountains and Shuswap Highlands - E, F	Interior western hemlock - western red cedar: a	395-1160	- landform consists of undulating floodplain terraces with slopes generally less than 5%. - deposits of sandy alluvial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the water table. - the soils are usually single grained in structure, coherent, rapidly pervious and rapidly drained although there are areas of impeded drainage.
	MN1a	3040	O.R					
	MN4	370	O.R	O.HFP				
		6880						
MULHOLLAND	MO1	270	O.FHP		Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: a	1525-1980	- landform varies from rolling plateaus to steep mountainous slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by the downslope, subsurface seepage.
	MO1a	130	O.FHP					
	MO5	1990	O.FHP	L.FHP				
	MO5a	840	O.FHP	L.FHP				
	MO6	440	L.FHP	O.FHP				
	MO7	240	SM.FHP	O.FHP				
		3910						
MESSITER	MT1	9610	BR.GL		Shuswap Highlands - F	Interior western hemlock - western red cedar: a	365-1525	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 5 and 60%. - the basal till deposits, generally gravelly sandy loam or gravelly loam in texture, are associated with areas or gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 120 cm by the Bt horizon, the strongly, compact, slowly pervious parent material or the underlying bedrock. - soils are generally well drained or are affected by downslope, subsurface seepage. - although the soil development is dominantly Brunisolic Gray Luvisol, Degraded Dystric Brunisol development also occurs.
	MT1a	3680	BR.GL					
	MT3	6140	BR.GL	O.HFP				
	MT3a	2930	BR.GL	O.HFP				
	MT5	19320	BR.GL	LBR.GL				
	MT5a	5400	BR.GL	LBR.GL				
	MT6	4100	LBR.GL	BR.GL				
		51180						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
PRINCE	PE1	40	DG.EB		Shuswap Highlands - G	Interior western hemlock - western red cedar: a	610-1035	- landform consists of steeply sloping valley walls with gradients as low as 15% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of basalt bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually less than 80 cm restricted by the depth of the strongly calcareous parent material. - the soils are loose, porous, moderately pervious and usually well drained.
PUKEASHUN	PH1	840	O.DYB		Shuswap Highlands - F	Interior western hemlock - western red cedar: a	425-1065	- landform consists of undulating terraces having steep embankments with slopes generally less than 10% except for the embankments which have slopes between 30 and 60%. - deposits of sandy alluvial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although there are areas affected by impeded drainage.
	PH1a	180	O.DYB					
	PH2	320	O.DYB	O.EB				
	PH3	60	O.DYB	O.HFP				
	PH4	280	O.DYB	O.R				
	PH4a	970	O.DYB	O.R				
		2650						
RAYONIER	RA1	8570	SP.F		Selkirk Mountains and Shuswap Highlands - B, E, H	Subalpine Engelmann spruce - alpine fir: a	1220-1980	- landform is flat, depressional or undulating with slopes generally less than 5%. - deposits of undecomposed organic material, commonly derived largely from mosses, located in areas of most bedrock types. - reaction is acid. - rooting depth is restricted to usually less than 50 cm by the high water table. - soils are very poorly drained.

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
ROUND	RD1a	90	PZ.GL		Shuswap Highlands - H	Interior western hemlock - western red cedar: a	700-1525	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 100 cm by the Bt horizon, the moderately compact, calcareous, slowly pervious parent material or the underlying bedrock. - soils are generally moderately well drained.
	RD2	720	PZ.GL	BR.GL				
	RD3	660	PZ.GL	LU.HFP				
	RD3a	410	PZ.GL	LU.HFP				
	RD5	2730	PZ.GL	LPZ.GL				
	RD6	500	LPZ.GL	PZ.GL				
		5110						
RENNIE	RE1	440	O.R		Shuswap Highlands - I	Interior Douglas-fir: a and b	550- 610	- landform consists of undulating to rolling floodplain terraces with slopes generally less than 15%. - deposits of silt loam or fine sandy loam alluvial materials overlying sand alluvial materials located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction in the strongly calcareous parent material is alkaline. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the water table. - the soils are usually porous, moderately pervious and well drained although there are areas affected by impeded drainage.
	RE1a	240	O.R					
		680						
RATCHFORD	RF1	880	O.HFP		Monashee Mountains - D	Subalpine Engelmann spruce - alpine fir: a	1370-1980	- landform consists of steep mountainous slopes with gradients as low as 15% but generally greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite, or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	RF5	6590	O.HFP	L.HFP				
	RF5a	920	O.HFP	L.HFP				
	RF6	38230	L.HFP	O.HFP				
	RF6a	1500	L.HFP	O.HFP				
		48120						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
RUDDOCK	RK1	1400	O.HFP		Selkirk Mountains - B	Subalpine mountain hemlock	1220-1675	- landform consists of steep mountainous slopes with gradients predominantly greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	RK5	7500	O.HFP	L.HFP				
	RK6	27700	L.HFP	O.HFP				
		36600						
RAIL	RL1	170	TY.M		Shuswap Highlands - G, H, I	Interior western hemlock - western red cedar: a Interior Douglas fir: a and b	365- 915	- landform is flat, depressional or undulating with slopes generally less than 5%. - deposits of organic material at an intermediate stage of decomposition located in areas of basalt, phyllite, limestone, greenstone or schist bedrock. - reaction is acid. - rooting depth is restricted to usually less than 50 cm by the high water table. - soils are very poorly drained.
ROSERIM	RM3	50	O.EB	BR.GL	Shuswap Highlands - H	Interior western hemlock - western red cedar: a	455-1370	- landform consists of steeply sloping valley walls with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually restricted to less than 80 cm by the moderately compact, calcareous, slowly pervious parent material or by the underlying bedrock. - soils are generally well drained.
	RM5	670	O.EB	L.EB				
		720						
ROCK OUTCROP	RO	172380			all areas	all zones	all elevations	- areas generally having less than 10 cm of soil or organic material overlying bedrock and in most instances the bedrock is exposed.

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
REMILLARD	RR1	480	O.HFP		Selkirk Mountains - B	Subalpine Engelmann spruce - alpine fir: a	1370-1980	- landform consists of steep mountainous slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite, or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained.
	RR5	7840	O.HFP	L.HFP				
	RR6	2320	L.HFP	O.HFP				
		10640						
ROTTACHER	RT2	210	O.HFP	DG.DYB	Shuswap Highlands - H	Interior western hemlock - western red cedar: a	1005-1525	- landform consists of steeply sloping valley walls with gradients generally greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	RT5	2320	O.HFP	L.HFP				
		2530						
SNOOKWA	SA1	4780	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: a	1220-1830	- landform varies from rolling plateaus to steep mountainous slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by impeded drainage or by downslope, subsurface seepage.
	SA1a	11060	O.HFP					
	SA2a	130	O.HFP	BR.GL				
	SA5	18630	O.HFP	L.HFP				
	SA5a	27870	O.HFP	L.HFP				
	SA6	11080	L.HFP	O.HFP				
	SA6a	3840	L.HFP	O.HFP				
		77390						

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
STUBBS	SB1	520	O.HFP		Selkirk Mountains - C	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained.
	SB5	2420	O.HFP	L.HFP				
	SB5a	470	O.HFP	L.HFP				
	SB6	880	L.HFP	O.HFP				
		4290						
SANDFORD	SD1a	230	O.FHP		Selkirk Mountains - B	Subalpine Engelmann spruce - alpine fir: b	1830-2285	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of slate, schist, quartzite, granite or limestone bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - although the soil development is dominantly Orthic Humo-Ferric Podzol, Sombric Humo-Ferric Podzol development occurs in treeless areas.
	SD5	1560	O.FHP	L.FHP				
	SD6	4540	L.FHP	O.FHP				
		6330						
STRUTHERS	SE1	1480	O.EB		Shuswap Highlands - I	Interior Douglas-fir: a	580-1280	- landform varies from rolling terraces to steep valley slopes with gradients generally between 5 and 60%. - deposits of very gravelly sand and interstratified sand fluvioglacial materials are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a generally neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm unless it is restricted by the strongly calcareous parent material. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained.
	SE3	1670	O.EB	O.DYB				
	SE3a	470	O.EB	O.DYB				
		3620						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
SAUFF	SF1	4640	O.DYB		Shuswap Highlands - H	Interior western hemlock - western red cedar: a	425-1370	- landform varies from rolling hillsides to steep valley slopes with gradients generally between 5 and 60%. - deposits of sandy fluvioglacial materials, varying in the amoung and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although there are some areas affected by downslope, subsurface seepage.
	SF1a	260	O.DYB					
	SF2	1920	O.DYB	O.EB				
	SF2a	640	O.DYB	O.EB				
	SF3	2130	O.DYB	O.HFP				
	SF3a	140	O.DYB	O.HFP				
		9730						
SASKUM	SK1	170	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: b	1890-2195	- landform consists of rolling plateaus with slopes generally between 10 and 30%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained. - although the soil development is dominantly Orthic Humo-Ferric Podzol, Sombric Humo-Ferric Podzol development occurs in treeless areas.
	SK6	100	L.HFP	O.HFP				
		270						
SPILLMAN	SL2	50	O.HFP	DG.DYB	Shuswap Highlands - H	Interior western hemlock - western red cedar: b	1220-1675	- landform consists of steeply sloping valley walls with gradients as low as 15% but is usually greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	SL5	840	O.HFP	L.HFP				
	SL6	900	L.HFP	O.HFP				
		1790						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
SAMATOSUM	SM1	2450	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: b	1220-1675	- landform consists of steeply sloping valley walls with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	SM1a	5110	O.HFP					
	SM2	860	O.HFP	BR.GL				
	SM2a	360	O.HFP	BR.GL				
	SM5	8760	O.HFP	L.HFP				
	SM5a	2050	O.HFP	L.HFP				
	SM6	5190	L.HFP	O.HFP				
	SM6a	320	L.HFP	O.HFP				
		25100						
SORCERER	SO1	7620	O.R		Selkirk Mountains - B	Alpine tundra	1830-3050	- landform consists of lateral and terminal morainal ridges with slopes usually greater than 30%. - the recent morainal deposits, generally bouldery, gravelly sandy loam or bouldery gravelly silty clay loam in texture and associated sandy or very gravelly sand frontal fluvioglacial deposits are mainly derived from slate, schist, quartzite, granite or limestone bedrock. - reaction in the parent material varies from acid to neutral. - the soils are loose, porous, moderately pervious and well drained, and where vegetated allow for unrestricted rooting depths.
	SO4	610	O.R	SM.HFP				
	SO5	160	O.R	L.R				
		8390						
STUKEMAPTEN	SP1	1320	O.DYB		Shuswap Highlands - F	Interior western hemlock - western red cedar: a	365-1160	- landform consists of moderately sloping fans located in the valley bottom with gradients usually between 5 and 30%. - deposits of sand or sandy loam alluvial fan materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, stratified, coherent, moderately pervious and well drained although there are some areas affected by downslope, subsurface seepage.
	SP1a	400	O.DYB					
	SP3	370	O.DYB	O.HFP				
	SP3a	410	O.DYB	O.HFP				
	SP4	1150	O.DYB	O.R				
		3650						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
SUCCOUR	SR1	50	DG.EB		Shuswap Highlands - I	Interior Douglas-fir: b	550- 610	- landform varies from undulating or rolling terraces to steep slopes with gradients generally ranging between 2 and 30%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from a neutral solum to an alkaline, strongly calcareous parent material. - rooting depth is usually unrestricted and extends to about 150 cm unless it is restricted by the strongly calcareous parent material. - the soils are generally single grained in structure, coherent and rapidly drained.
SOARDS	SS1	100	SM.HFP		Monashee and Selkirk Mountains - D, C	Alpine tundra	1830-2745	- landform consists of steep mountainous slopes with gradients as low as 10% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are mainly derived from gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth for the alpine vegetation is usually restricted to about 50 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	SS5	8080	SM.HFP	LSM.HFP				
	SS6	140	LSM.HFP	SM.HFP				
		8320						
SUNSET	ST1	8280	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a	565-1525	- landform varies from rolling terrain to steep valley slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are affected by downslope, subsurface seepage.
	ST1a	5540	O.HFP					
	ST2	2090	O.HFP	BR.GL				
	ST2a	740	O.HFP	BR.GL				
	ST5	12600	O.HFP	L.HFP				
	ST5a	3640	O.HFP	L.HFP				
	ST6	6080	L.HFP	O.HFP				
		38970						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
SPECTRUM	SU1	3130	O.HFP		Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: a	1220-1890	- landform consists of gently to strongly rolling slopes and steep embankments with gradients generally between 5 and 30% except for the embankments which have slopes up to 60%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained although there are areas affected by impeded drainage.
	SU1a	610	O.HFP					
	SU2	170	O.HFP	DG.DYB				
	SU2a	630	O.HFP	DG.DYB				
	SU4	460	O.HFP	SM.HFP				
	SU5	230	O.HFP	L.HFP				
	SU7	150	SM.HFP	O.HFP				
		5380						
SAWTOOTH	SW6	280	LSM.HFP	SM.HFP	Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: b	1830-2135	- landform varies from rolling plateaus to steep mountainous slopes with gradients generally between 15 and 60%. - the colluvial materials, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - although the soil development is dominantly Sombric Humo-Ferric Podzol, Orthic Humo-Ferric Podzol development occurs in treed areas.
SYMOND	SY1	290	BR.GL		Rocky Mountain Trench - A	Interior western hemlock - western red cedar: a	760-1370	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth is usually restricted to less than 100 cm by the Bt horizon, the strongly compact, slowly pervious parent material or the underlying bedrock. - soils are generally well drained.
	SY5	460	BR.GL	LBR.GL				
		750						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
TANGIER	TE1	320	O.HFP		Monashee Mountains - D	Subalpine mountain hemlock	1220-1675	- landform consists of steep mountainous slopes with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with and located in areas of gneiss, granite, granodiorite, or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are affected by impeded drainage or by downslope, subsurface seepage.
	TE1a	540	O.HFP					
	TE5	7200	O.HFP	L.HFP				
	TE5a	1020	O.HFP	L.HFP				
	TE6	1840	L.HFP	O.HFP				
		10920						
TUMTUM	TM1	8300	DU.HFP		Monashee Mountains - D	Interior western hemlock - western red cedar: a	455-1525	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with the areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious subsoil or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by downslope, subsurface seepage.
	TM1a	5220	DU.HFP					
	TM5	6560	DU.HFP	LDU.HFP				
	TM5a	1250	DU.HFP	LDU.HFP				
	TM6	200	LDU.HFP	DU.HFP				
		21530						
TSUIUS	TS1	260	O.HFP		Shuswap Highlands - H	Interior western hemlock - western red cedar: a	1005-1525	- landform consists of steeply sloping valley walls with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam, gravelly loam or gravelly silt loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous subsoil. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although some areas are affected by downslope, subsurface seepage.
	TS1a	940	O.HFP					
	TS4	360	O.HFP	SM.HFP				
	TS5	1840	O.HFP	L.HFP				
		3400						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
TRIDENT	TT1	170	O.HFP		Monashee Mountains - D	Subalpine Engelmann spruce - alpine fir: a	1370-1980	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas affected by impeded drainage.
	TT1a	640	O.HFP					
	TT5	3810	O.HFP	L.HFP				
	TT5a	2720	O.HFP	L.HFP				
	TT6	5960	L.HFP	O.HFP				
	TT6a	260	L.HFP	O.HFP				
		13560						
TSIKUSTUM	TW1	980	O.HFP		Shuswap Highlands - H	Interior western hemlock - western red cedar: b	1220-1675	- landform consists of steeply sloping valley walls with gradients generally between 10 and 60%. - the basal till deposits, generally gravelly loam or gravelly sandy loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction varies from an acid solum to a neutral, weakly calcareous parent material. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious subsoil or by the underlying bedrock. - soils are generally moderately well drained.
	TW2	610	O.HFP	BR.GL				
	TW5	1120	O.HFP	L.HFP				
	TW6	260	L.HFP	O.HFP				
		2970						
TROPHY	TY1	6290	O.R		Monashee and Selkirk Mountains - D, C	Alpine tundra	1675-2745	- landform consists of lateral and termainal morainal ridges with slopes generally greater than 30%. - the recent morainal deposits, generally bouldery, gravelly sandy loam in texture, are mainly derived from gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the parent material is acid. - the soils are loose, porous, moderately pervious and usually well drained, and where vegetated allow for unrestricted rooting depth.
	TY4	160	O.R	O.HFP				
		6450						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
VERMELIN	VN1	2650	DG.DYB		Shuswap Highlands - F	Interior western hemlock - western red cedar: a	365-1525	- landform consists of steeply sloping valley walls with gradients as low as 10% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained although there are some areas affected by downslope, subsurface seepage.
	VN1a	1310	DG.DYB					
	VN2	450	DG.DYB	DG.EB				
	VN3	2720	DG.DYB	O.HFP				
	VN3a	2160	DG.DYB	O.HFP				
	VN5	11280	DG.DYB	LDG.DYB				
	VN5a	580	DG.DYB	LDG.DYB				
	VN6	18280	LDG.DYB	DG.DYB				
		39430						
WEBB	WB1	90	O.R		Shuswap Highlands - I	Subalpine Engelmann spruce - alpine fir: c and a	1220-1370	- landform consists of steep, talus fan or apron slopes with gradients generally greater than 60%. - the colluvial materials, generally rubbly, gravelly loamy sand in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the parent material is neutral. - rooting depth is usually unrestricted and extends to beyond 120 cm but the ground surface available for vegetative growth is restricted by the large blocks of rock. - the soils are loose, porous, rapidly pervious and rapidly drained.
WARWICK	WC1	150	O.R		Rocky Mountains - A	Alpine tundra	1675-2440	- landform consists of steep talus fan or apron slopes with gradients generally greater than 60%. - the colluvial materials, generally rubbly, gravelly loamy sand in texture, are mainly derived from limestone, quartzite, slate or schist bedrock. - reaction in the calcareous parent material varies from neutral to alkaline. - usually these materials are unvegetated and if vegetation is established the rooting depth is usually unrestricted although the ground surface available for vegetative growth is restricted by the large blocks of rock. - the soils are loose, porous, rapidly pervious and rapidly drained.

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
WOLFENDEN	WD1	10390	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a	565-1370	- landform varies from rolling terraces to steep valley slopes with gradients generally between 5 and 30%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained, although some areas are imperfectly drained or are affected by downslope, subsurface seepage.
	WD1a	2830	O.HFP					
	WD2	4120	O.HFP	DG.DYB				
		17340						
WHITEROSE	WE6	70	L.HFP	O.HFP	Rocky Mountains - A	Subalpine Engelmann spruce - alpine fir: a	1370-1675	- landform consists of steep mountainous slopes with gradients generally greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth is usually restricted to less than 100 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
WHIRLPOOL	WH5	10	SM.HFP	LSM.HFP	Rocky Mountains - A	Alpine tundra	1675-2440	- landform consists of steep mountainous slopes with gradients generally greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are mainly derived from limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth for the alpine vegetation is usually restricted to about 50 cm by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	WH6	270	LSM.HFP	SM.HFP				
		280						

Table 5 (Cont.)

SOIL ASSOCIATION		AREA (HECTARES)	SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]		MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
WABRON	WN1	1450	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a	565-1370	- landform consists of moderately sloping fans located in the valley bottom with gradients generally less than 30%. - deposits of sand or sandy loam alluvial fan material, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, layered, coherent, moderately pervious and well drained although there are areas affected by impeded drainage and by downslope, subsurface seepage.
	WN1a	1900	O.HFP					
	WN2	820	O.HFP	DG.DYB				
	WN4	1020	O.HFP	O.R				
	WN4a	580	O.HFP	O.R				
		5770						
WHATSHAN	WS5	610	O.HFP		Selkirk Mountains - C	Subalpine Engelmann spruce - alpine fir: a	1370-1675	- landform consists of steep mountainous slopes with gradients generally between 15 and 60%. - the basal till deposits, generally gravelly sandy loam in texture, are associated with areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually restricted to less than 100 cm by the strongly compact, slowly pervious parent material or by the underlying bedrock. - soils are generally moderately well drained although there are areas that are imperfectly drained.
	WS5a	610	O.HFP	L.HFP				
	WS6	150	L.HFP	O.HFP				
		1370						
WAITABIT	WT5	70	SM.HFP	LSM.HFP	Rocky Mountains - A	Subalpine Engelmann spruce - alpine fir: a	1370-1675	- landform consists of steep avalanche path slopes with gradients generally greater than 30%. - the colluvial materials, generally gravelly sandy loam in texture, are associated with areas of limestone, quartzite, slate or schist bedrock. - reaction varies from an acid solum to a neutral or alkaline, calcareous parent material. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained. - the surface horizon (Ah) of the solum consists of an organic enriched layer derived from lush deciduous and herbaceous vegetation.

Table 5 (Cont.)

SOIL ASSOCIATION			SOIL CLASSIFICATION		PHYSIOGRAPHIC REGION AND SOIL ASSOCIATION LOCATION	BIOPHYSICAL FOREST ZONATION	ELEVATION RANGE (METERS)	SOIL CHARACTERISTICS, SURFACE EXPRESSION, SURFICIAL GEOLOGICAL MATERIALS AND COMMENTS
NAME	COMPONENT[1]	AREA (HECTARES)	MOST COMMON SOIL SUBGROUP	LESS COMMON SOIL SUBGROUP				
WARSAW	WW1	6330	O.HFP		Shuswap Highlands - E	Subalpine Engelmann spruce - alpine fir: a	1220-1830	- landform consists of gently to strongly rolling slopes with gradients generally between 5 and 30%. - deposits of sandy fluvioglacial materials, varying in the amount and size of the coarse fragment content, are located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent and rapidly drained although there are areas affected by impeded drainage.
	WW1a	3770	O.HFP					
	WW2	190	O.HFP	DG.DYB				
		10290						
WOOLSEY	WY1	1040	O.HFP		Monashee Mountains and Shuswap Highlands - E	Interior western hemlock - western red cedar: a	565- 915	- landform consists of undulating terraces having steep embankments with slopes generally less than 10% except for the embankments which have slopes between 30 and 60%. - deposits of sandy alluvial materials, varying in the amount and size of the coarse fragment content, located in areas of gneiss, granite, granodiorite or quartz monzonite bedrock. - reaction in the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 150 cm. - the soils are generally single grained in structure, coherent, rapidly pervious and rapidly drained.
	WY4	340	O.HFP	O.R				
		1380						
YEOWARD	YW1	290	O.HFP		Shuswap Highlands - H	Subalpine Engelmann spruce - alpine fir: a	1220-1830	- landform varies from rolling plateaus to steep mountainous slopes with gradients as low as 10% but usually greater than 30%. - the colluvial materials, generally gravelly sandy loam or gravelly loam in texture, are associated with areas of phyllite, limestone, greenstone or schist bedrock. - reaction of the solum and parent material is acid. - rooting depth is usually unrestricted and extends to about 120 cm unless it is restricted by the underlying bedrock. - the soils are loose, porous, moderately pervious and usually well drained.
	YW5	6900	O.HFP	L.HFP				
	YW6	6900	L.HFP	O.HFP				
		14090						

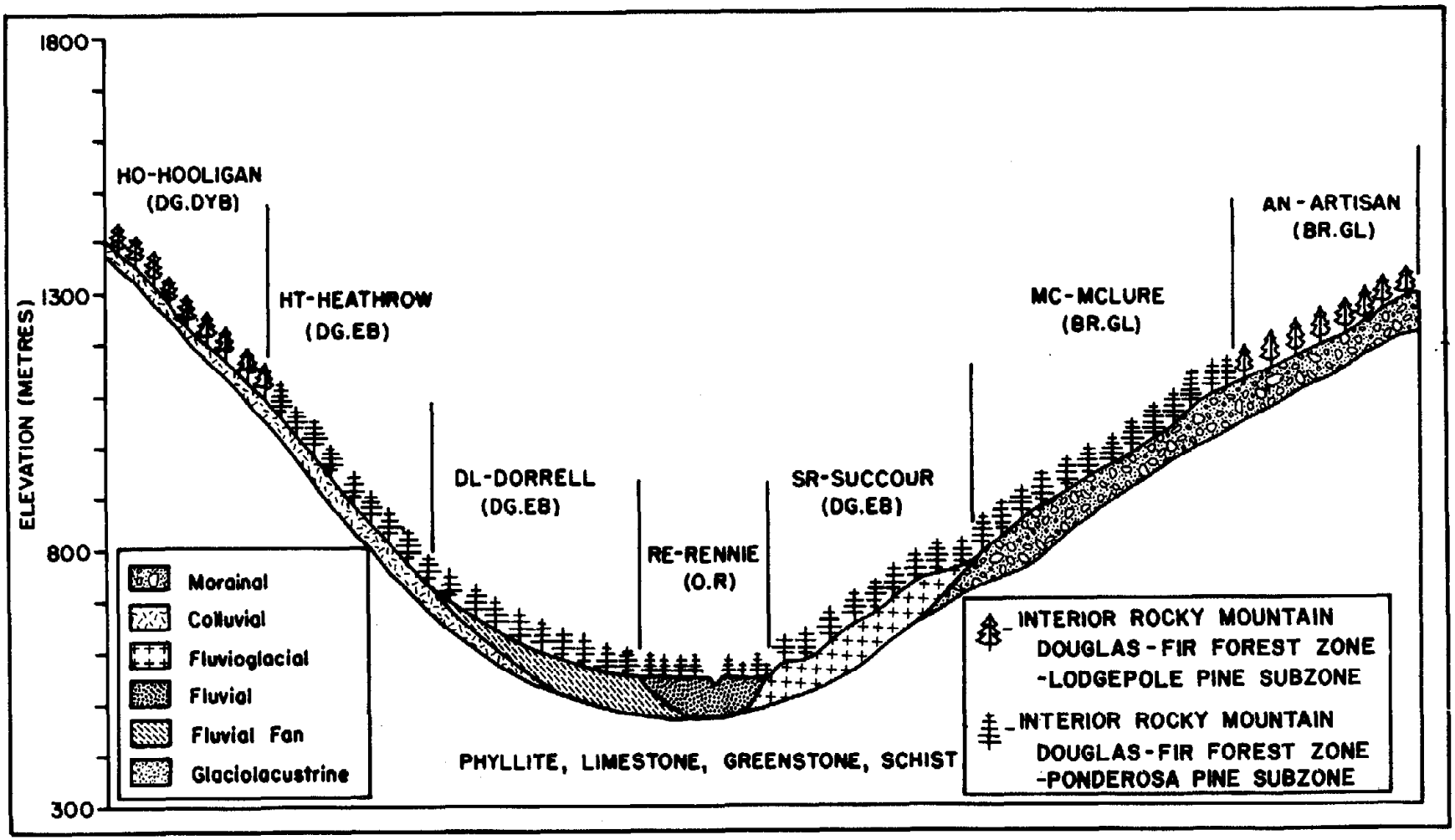


Figure 6. Soil associations located in area I of the Shuswap Highlands in the drier portion of the Interior Rocky Mountain Douglas-fir forest zone

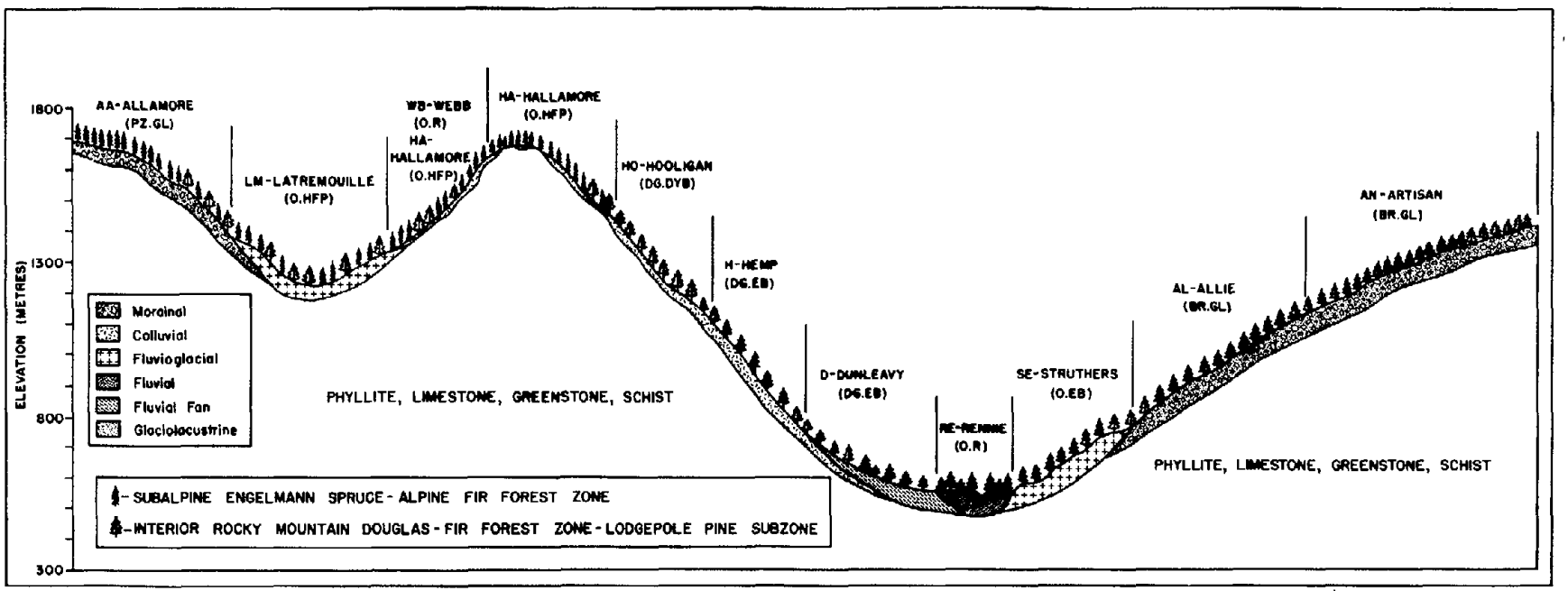


Figure 7. Soil associations located in area I of the Shuswap Highlands in the wetter portions of the Interior Rocky Mountain Douglas-fir forest zone

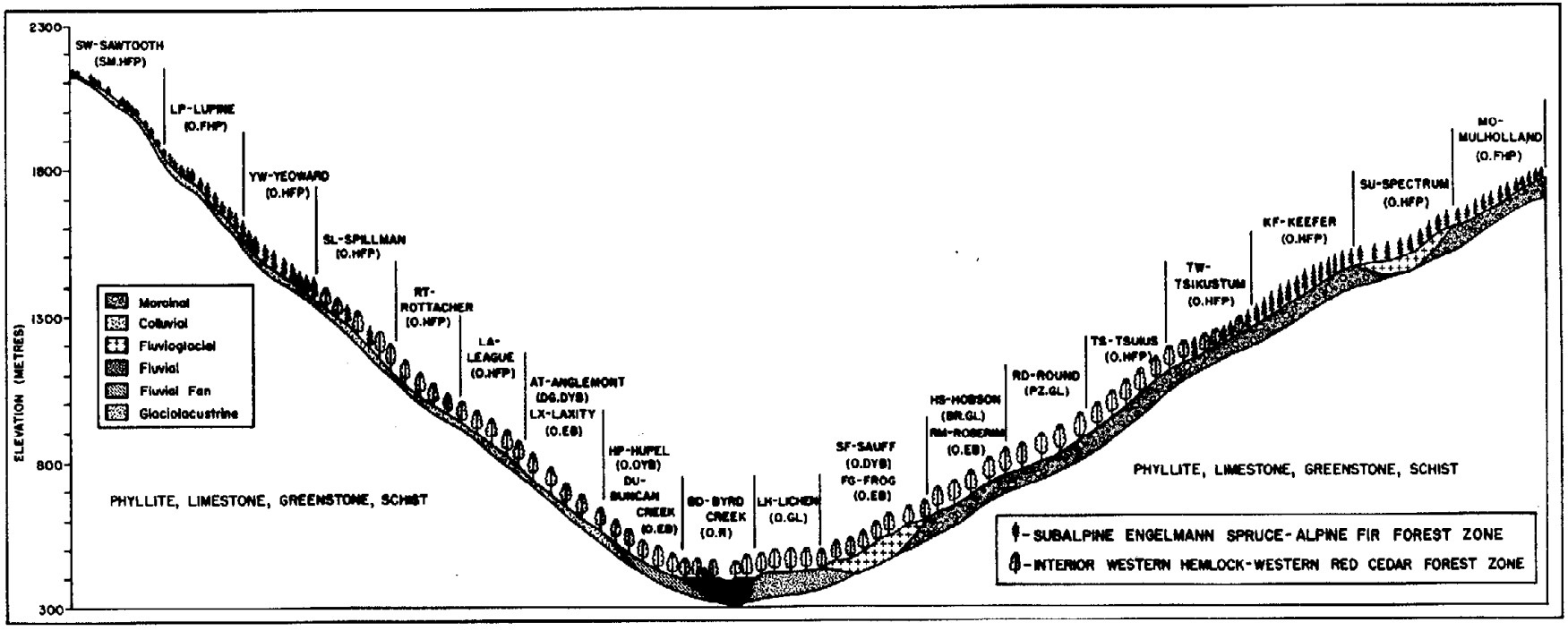


Figure 8. Soil associations located in area H of the Shuswap Highlands

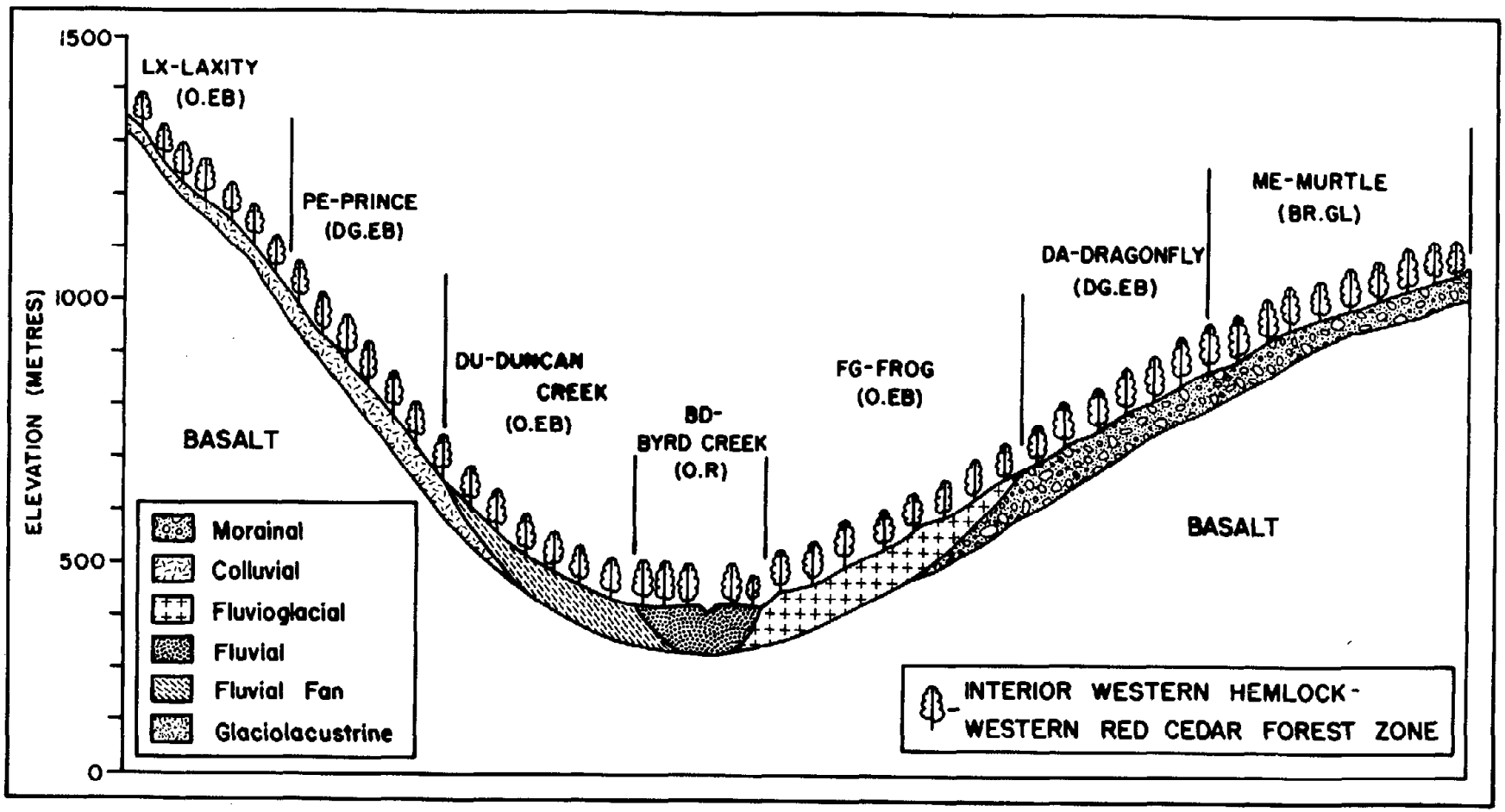


Figure 9. Soil associations located in area G of the Shuswap Highlands

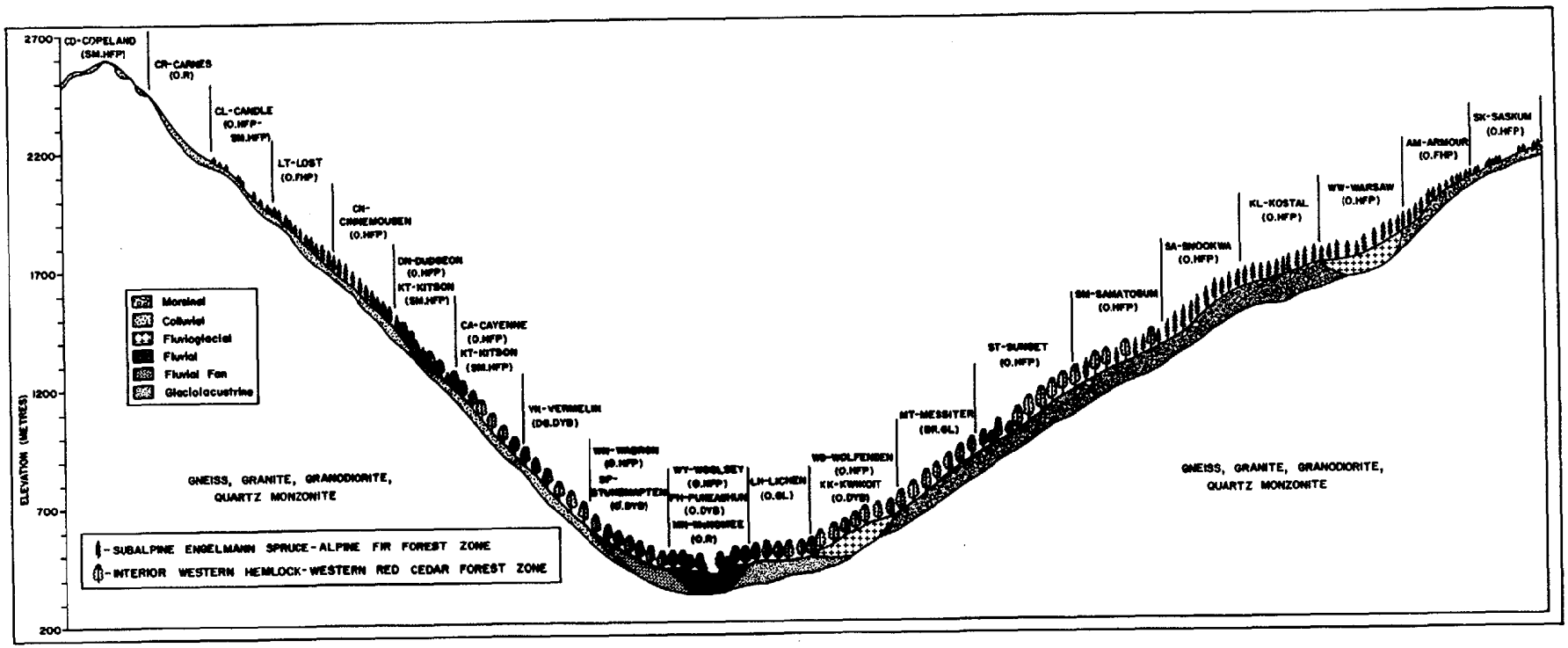


Figure 10. Soil associations locations in areas E and F of the Shuswap Highlands

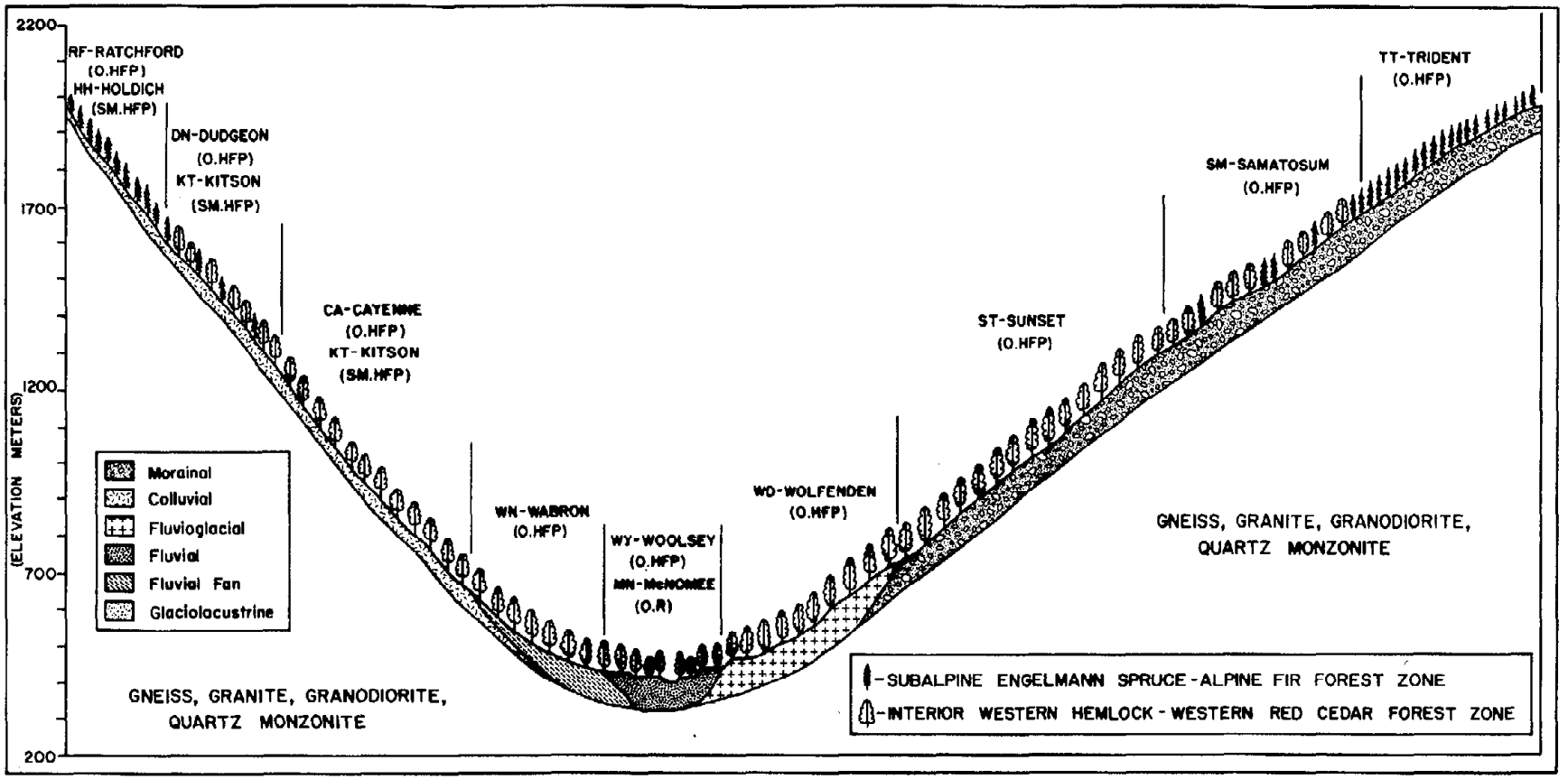


Figure 11. Soil associations located in area E of the Monashee Mountains bordering on the Shuswap Highlands

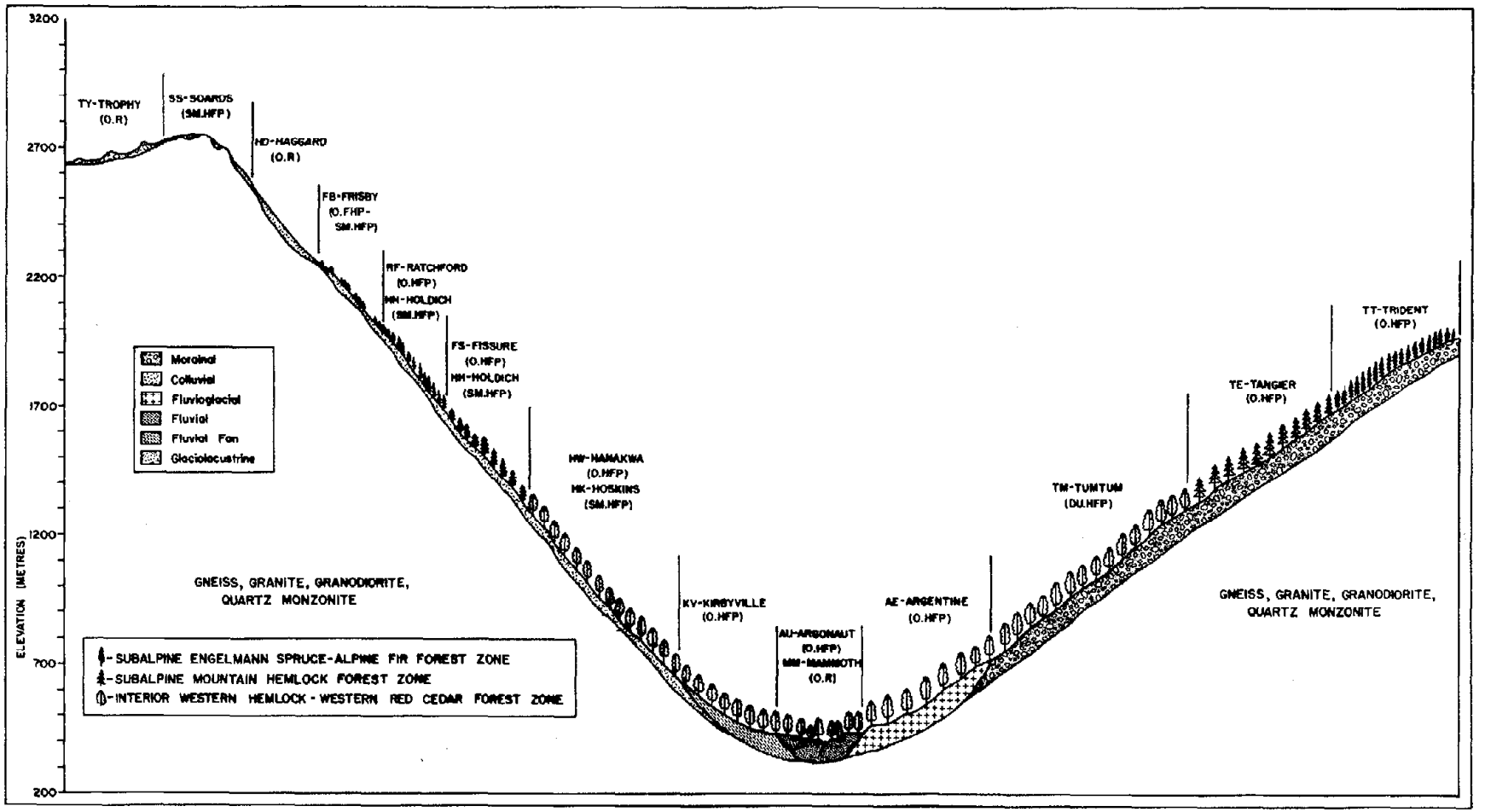


Figure 12. Soil associations located in area D of the Monashee Mountains

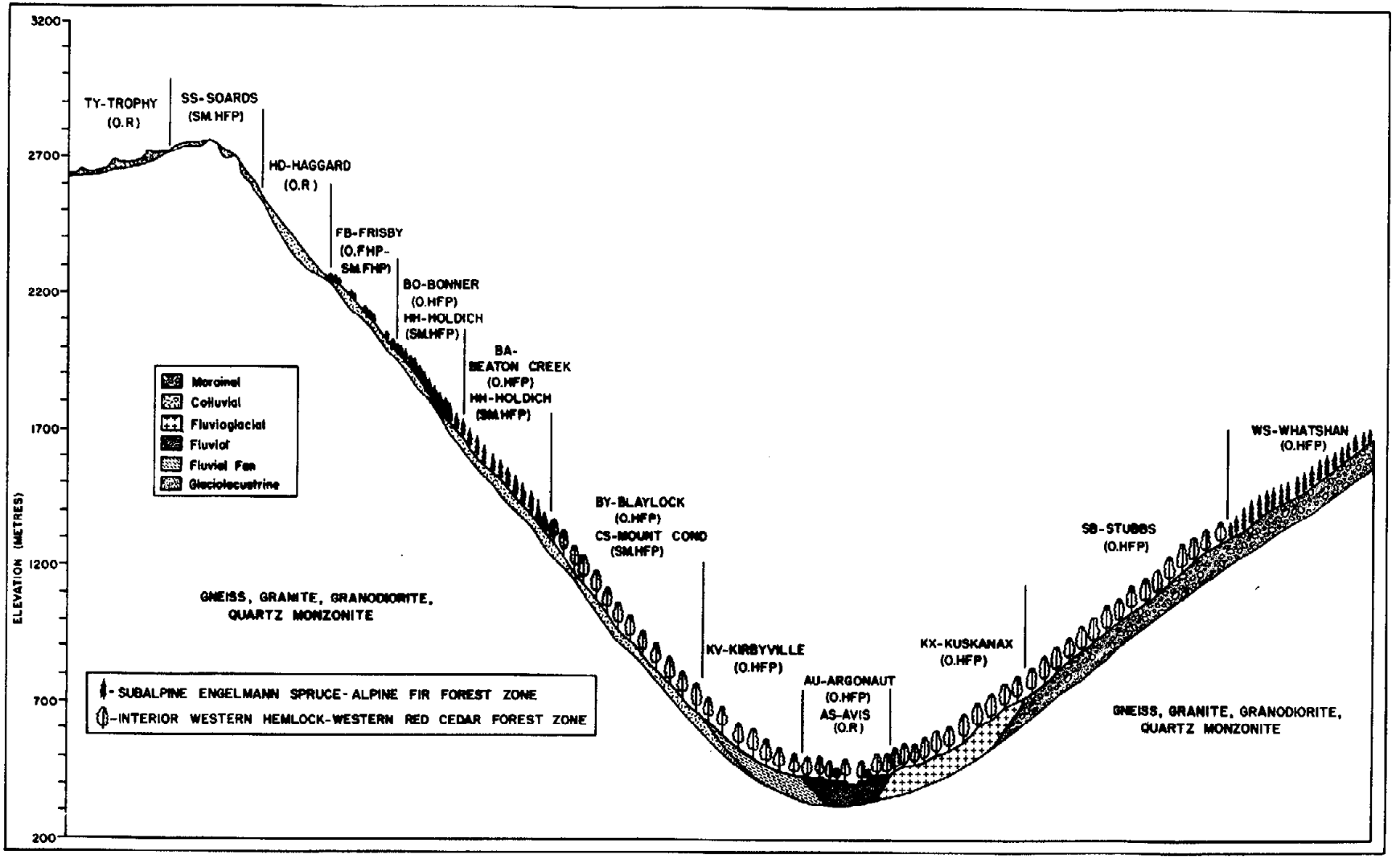


Figure 13. Soil associations located in area C of the Selkirk Mountains

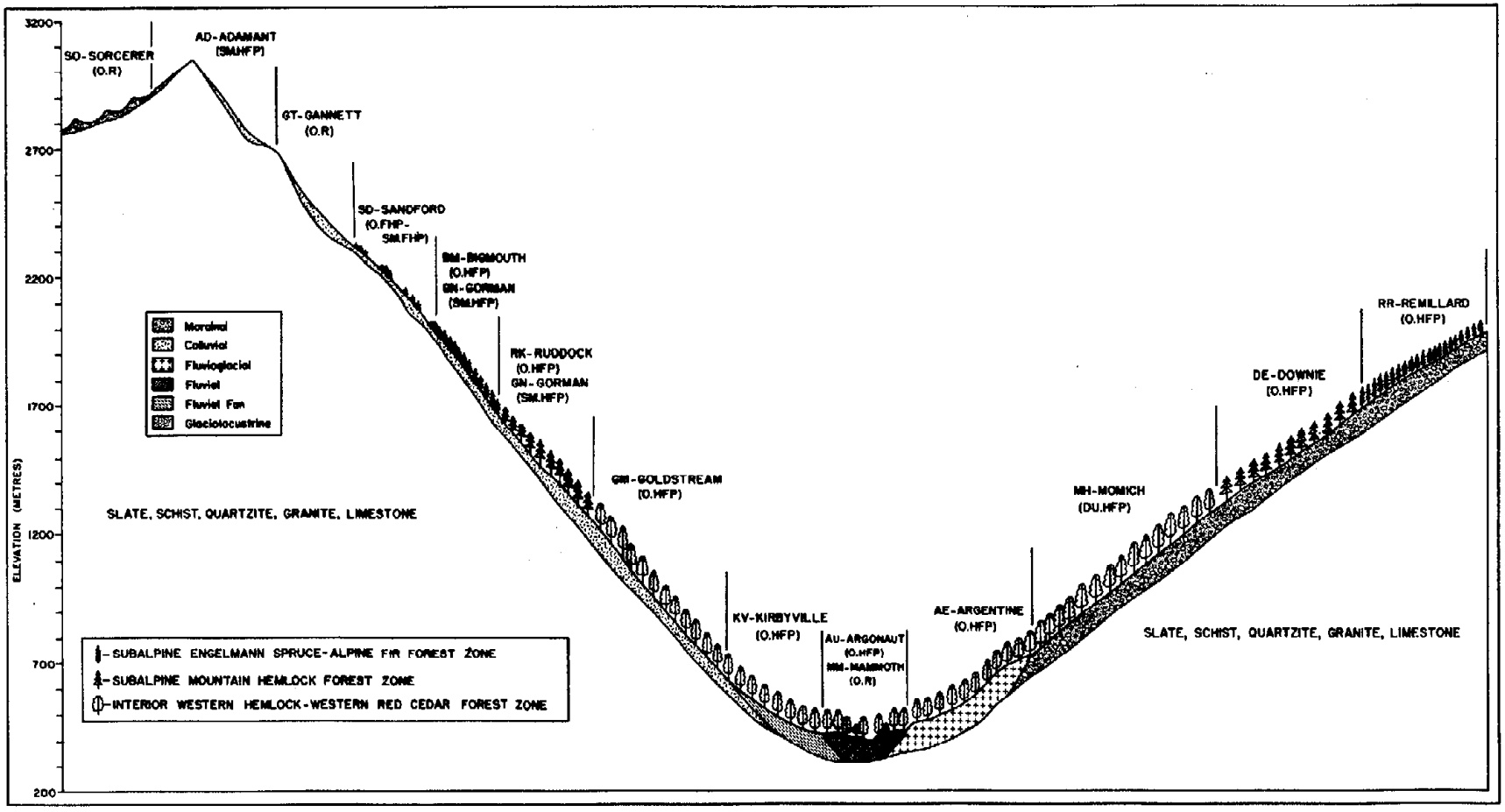


Figure 14. Soil associations located in area B of the Selkirk Mountains

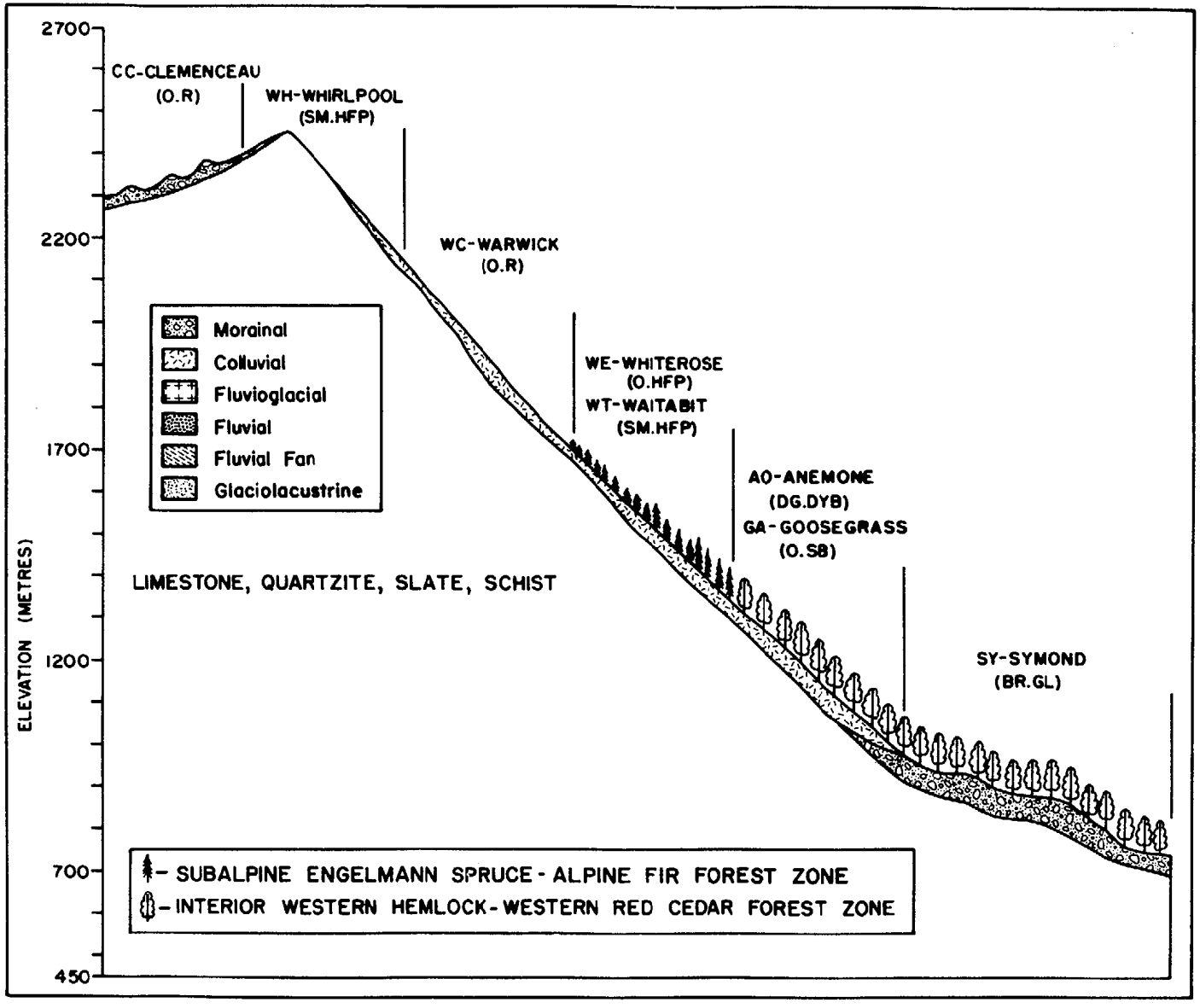


Figure 15. Soil associations located in area A of the Rocky Mountains and Rocky Mountaian Trench

CHAPTER 3
INTERPRETATIONS

CHAPTER THREE

INTERPRETATIONS

3.1 INTRODUCTION

The purpose of the Interpretations Chapter is to make the use of soils and terrain information faster and more convenient. Soil interpretations, which relate soil, terrain, climate, and/or vegetation characteristics to specific uses based on their suitabilities or limitations, are predictions about the behaviour of soils subjected to these uses. They usually pertain to the soil and terrain as a whole and not to the individual properties and qualities.

Soils and terrain, being primary resources, vary in their type of suitabilities or limitations due to the complexity of the landscape. The attributes of these primary resources should be considered when undertaking land use planning. Additional soil and terrain surveys may be necessary in situations where information necessary for planning or management is not available.

The soil associations described in this report have been interpreted for agricultural, engineering, forestry and recreational uses. The methods used for the interpretations have been obtained from other reports and are referenced in the appropriate section. Other factors, such as economic and social considerations, may also be required to implement or otherwise utilize some of the interpretations made. It must be stressed that since this survey is of a reconnaissance nature, the interpretative ratings are also based on a broad scale, and therefore are only suitable as an overview when used as an input into the planning process, and are not intended to be applied at the site specific level.

When using soil interpretative ratings, the following must be considered:

1. Interpretations do not eliminate the need for on-site evaluations by qualified professionals.
2. The interpretations consider only those parameters implicit in the definition of each soil association. Other limitations that may exist were not considered.
3. When applying the interpretations to a designated map area, the user must understand that, because of the variability in the landscape, inclusions of unmappable (due to scale) soils may be present.
4. Severe soil ratings do not necessarily imply that a site cannot be changed to remove, correct or modify the soil limitations. The use of the soils rated 'severe' depends on the kind of limitations, whether or not the soil limitation can be altered successfully and economically, and the scarcity of good sites.
5. Methods or criteria used to interpret soils for most uses are an approximation based on current information available. Users are encouraged to modify or change these methods when further experience or information warrants it.

3.2 AGRICULTURE INTERPRETATIONS

3.2.1 Introduction

Very little of the land in the Seymour Arm map area is suitable for agricultural purposes because of the extensive amount of mountainous terrain. Under present agricultural practices, less than 1.5 percent of the area is suitable for growing agricultural crops according to area determinations and reported in E.L.U.C. Secretariat and B.C. Department of Agriculture (1976). Suitable areas occur mainly on fluvial deposits in the valley bottoms of the North Thompson Valley west of Avola, the lower Barriere River, Sinmax Creek, Fadear Creek, the north end of Adams Lake, Seymour Arm and the Columbia River Valley.

3.2.2 Soil Capability Classification for Agriculture

The soil capability for agriculture classification is based on the climate and soil characteristics, and their limitations, and on the range of regionally suited crops that can be grown. Good management practices are assumed. Distance to markets, kind of roads, location, size of farms, characteristics of land ownership and cultural patterns, and the skill or resources of individual operators are not criteria for capability groupings.

The mapping for the Soil Capability for Agriculture maps, which follow the Canada Land Inventory (1965) and Runka (1973) procedures, was based on field examination of all accessible areas and air photo interpretation for inaccessible areas. The agriculture climate ratings as outlined by the Canada Land Inventory (1972), which were produced for the western half of the area by the Climatology Section of the Resource Analysis Branch, are available in map form from the Librarian, Resource Analysis Branch, and are used as the basic soil capability for agriculture ratings. If there were no soil limiting factors, the rating stayed at the same level as the agriculture climate rating, but if there were soil limiting factors, the ratings were lowered the necessary number of classes depending on the severity of the soil limiting factors. Manuscript Soil Capability for Agriculture maps for 82M/SE, SW, NE and NW with the associated reports which give a summary of the relationship between soils and capability are available from the Librarian, Resource Analysis Branch, Ministry of Environment, Parliament Buildings, Victoria, B.C. V8V 1X4. These maps are currently being published in Ottawa and will be available for distribution.

At present, the main agricultural enterprise of the area is the raising of beef cattle, with associated forage crop production. Some of the alpine and krummholz areas as well as some low elevation forested sites are suitable for extensive grazing.

Table 6 lists the soil associations rated in the various capability classes. A soil association may be rated in several capability classes because of variations in topographic and soil features.

Table 6

Agriculture Soil Capability Classes for the Soil Associations

CLASSES 3, 2 and/or 1	CLASS 4	CLASS 5	CLASS 6[A]	CLASS 6[B]	CLASS 7
Avis Argonaut Byrd Creek Dorrell Duncan Creek Dunleavy Creek Frog Hemp Hupel Kirbyville Kuskanax Kwikoit Lichen Mammoth McNomee Pukeashun Rennie Sauff Struthers Stukemapten Succour	Argentine Argonaut Avis Byrd Creek Duncan Creek Dunleavy Frog Hemp Hobson Hupel Kirbyville Kuskanax Kwikoit Lichen Mammoth McNomee Messiter Pukeashun Sauff Struthers Stukemapten Wabron Woolsey	Allamore Argentine Argonaut Artisan Byrd Creek Dorrell Dragonfly Duncan Creek Dunleavy Frog Hemp Hupel Kirbyville Kuskanax Kwikoit Laxity McNomee Murtle Pukeashun Rennie Roserim Sauff Struthers Stukemapten Succour Wabron Wolfenden Woolsey	Allie Anglemont Artisan Brewster Dorrell Dunleavy Heathrow Hemp Hobson Hooligan Hupel Kwikoit Laxity McLure McNomee Messiter Pukeashun Rail Rayonier Roserim Sauff Struthers Stukemapten Succour Sunset Vermelin Wabron Wolfenden	Adamant Armour Bigmouth Candle Cinnemousen Copeland Frisby Keefer Kostal Lost Lupine Mulholland Ratchford Remillard Sandford Saskum Sawtooth Spectrum Trident Warsaw Yeoward	Remaining Soil Associations

A. Soil associations capable only of producing perennial forage crops at low elevations - predominantly extensive native grazing in forested areas.

B. Soil associations capable only of producing perennial forage crops (native grazing) in high elevation forests or alpine areas.

3.3 ENGINEERING INTERPRETATIONS

3.3.1 Introduction

The engineering interpretation section provides generalized information on the engineering properties of the soils in the Seymour Arm map area. Methodology for interpreting soils for engineering purposes was obtained from the manuals provided by the U.S. Department of Agriculture (1971) and The Asphalt Institute (1969).

Before a particular soil is used as structural material or as foundation upon which structures are built, the user should be aware of its suitability for the intended purpose. Due to the broad scale of mapping, the value of engineering interpretations and their applicability to specific sites is limited. However, the soil maps serve as a useful aid in planning more detailed field investigations and forecasting the kinds of problems that may be encountered. Some of the terms used by the soil scientists may be unfamiliar to the engineer or may be used in a different sense. For clarification of the soil terms used, refer to Agriculture Canada (1976).

3.3.2 Data Collection and Preparation

During the field investigation, 47 engineering soil samples were obtained. The samples varied in weight from 10 to 25 kg depending on their coarse fragment content and were usually taken from the parent material at a depth of a meter or more below the soil surface. In the laboratory, the samples were wet sieved using the following sieve sizes: 3.0, 2.0, 1.5, 1.0, 0.75 and 0.375 inches and 4, 10, 20, 40, 60, 140 and 200 mesh. From the portion of the sample passing the 40 mesh, the Atterberg limits (plastic limit, liquid limit and plasticity index) were determined. The percentages of grain sizes passing each sieve size and the Atterberg limits are available upon request.

Tests for the liquid limit and plastic limit measure the effect of water on the consistence of the soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a semi-solid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material changes from the semi-solid to the plasic state. Similarily, the liquid limit is the moisture content at which the soil material changes from the plastic to the liquid state. The plasticity index is the numerical difference between the liquid limit and plastic limit. It indicates the range of moisture content within which a soil material is plastic. Coarse textured soils are usually nonplastic (NP).

The particle size distribution, Atterberg limits and organic matter content of the sample permitted the sample to be classified into the Unified and AASHO systems of soil classification. In the Unified system the soils are grouped into 15 classes. There are eight classes of coarse grained soils identified as GW, GP, GM, GC, SW, SP, SM, and SC, six classes of fine grained soils ML, CL, OL, MH, CH, and OH, and one class of organic soils Pt. According to

Table 7

Engineering Test Data

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Particle Size by Weight: Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Allamore	Ae_1+Bf	0- 20	21	6	sandy loam	45											
	Ae_2	20- 75	13	4	loam	45											
	Bt	75-105	19	8	clay loam	45											
	C	105-180+	19	9	clay loam	75	43	26	9	6	0.51	2.5	19	18	25	GP-GM	A-1-a
Argentine	Ae+Bf	0- 18	29	12	loamy sand	0											
	BC	18- 64	7	3	sand	40											
	C_1	64-105	5	2	sand	70											
	C_2	105-150+	3	2	sand	70	35	20	12	4	0.25	3.8	19	NP	NP	GP	A-1-a
Argentine	Ae+Bhf+Bf	0- 20	44	21	loamy sand	0											
	BC	20- 70	24	6	sand	0											
	C_1	70- 83	3	2	sand	0											
	C_2	83-150+	14	6	sand	0	100	100	90	37	0	0	0.13	NP	NP	SM	A-4
Artisan	Bm	0- 8	37	12	loam	15											
	Ae	8- 33	27	8	silty clay loam	15											
	Bt	33- 55	29	12	silty clay	15											
	BC	55- 70	31	9	clay loam	30											
	Cca	70- 83	25	6	loam	30											
	Ck	83+	27	7	loam	30	83	70	34	30	0	0.09	1.4	21	32	SC	A-2-6
Argonaut	Ae+Bfc_1	0- 14	16	7	loamy sand	0											
	Bfc_2	14- 40	9	7	sand	0											
	BC	40- 72	3	2	sand	0											
	AB+C_1	72-152	4	3	sand	0											
	C_2	152-180+	4	2	sand	0	100	100	54	1	0.23	0.31	0.46	NP	NP	SP	A-3

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status		Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight							Atterberg Lim.		Classification	
			Percent Water Retained at				Percent Passing Mesh				Diameter (mm) at Percentage Passing			Plastic Limit	Liquid Limit	Unified	AASHO
			0.33 bars	15 bars			4	10	40	200	10%	30%	60%				
Bigmouth	Ae+Bf_1	0- 10	32	14	sandy loam	35											
	Bf_2	10- 42	21	10	sandy loam	35											
	Bf_3	42- 87	18	5	sandy loam	35											
	C	87-150	7	2	sandy loam	70	39	30	20	10	0.074	2.0	21	NP	NP	GW-SM	A-1-a
Copeland	Bhf_2	6- 43				80	57	44	16	4	0.20	1.1	5.4	33	36	SW	A-2-4
Copeland	Ah	0- 14	53	43	loam	45											
	Bhf	14- 26	45	19	fine sandy loam	45											
	Bf_1	26- 46	28	15	fine sandy loam	45											
	Bf_2	46- 80	19	9	sandy loam	45	63	55	28	17	0	0.47	8.2	NP	NP	SM	A-2-4
Candle	Ah_1	0- 12	37	29	loam	45											
	Ah_2	12- 30	27	17	sandy loam	45											
	Bf	30- 56	17	10	sandy loam	45											
	C	56-100	20	11	sandy loam	75	27	23	14	8	0.16	6.0	27	NP	NP	GP	A-1-a
Cinnemousen	Ae+Bhf+Bm	0- 21	28	14	sandy loam	40											
	BC	21- 42	15	10	sandy loam	40											
	C	42- 57	11	8	sandy loam	65	41	33	19	12	0.054	1.5	15	NP	NP	GW-GM	A-1-a
Downie	Ae+Bhf+Bf_1	0- 25	37	19	sandy loam	45											
	Bf_2	25- 50	23	6	sandy loam	45	65	56	37	23	0	0.16	2.9	NP	NP	SM	A-2-4
Frisby	Ah+Bhf	0-17	76	26	sandy loam	60											
	Bf	17-57	19	10	sandy loam	60											
	BC	57-88	14	5	sandy loam	60											
	C	88-125+	16	5	sandy loam	60	50	37	17	6	0.17	1.1	10	NP	NP	GP-GM	A-1-a

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Particle Size by Weight: Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Goldstream	Ae+Bhf	0- 14	44	26	sandy loam	40											
	Bf	14- 35	49	29	sandy loam	40											
	BC	35- 80	14	3	sandy loam	40											
	CB	80-100	14	3	sandy loam	40											
	C	100-150	13	2	sandy loam	70	42	30	18	11	0.070	2.0	15	NP	NP	GP-GM	A-1-a
Gorman	Ahe	0- 11	53	30	loam	10											
	Bf_1	11- 29	36	16	loam	35											
	Bf_2	29- 51	24	8	loam	35											
	C	51-109+	25	6	loam	60	48	40	23	10	0.074	0.84	9.5	NP	NP	GW-GM	A-1-a
Holdich	Ah	0- 20	30	19	sandy loam	40											
	Bf	20- 37	25	14	sandy loam	40											
	BC	37- 52	11	5	sandy loam	40											
	C_1	52-160	10	4	loamy sand	55											
	C_2	160-185	4	2	loamy sand	55											
	C_3	185-250+	7	2	loamy sand	55	51	44	26	8	0.090	0.60	13	NP	NP	SP-SM	A-1-a
Hobson	Ae_1+Bm	0- 14	38	16	sandy loam	40											
	Ae_2	14- 31	17	7	sandy loam	40											
	Bt	31- 52	23	12	clay loam	40											
	BC	52- 82	20	13	clay loam	40											
	C	82-300+	20	11	clay loam	40	68	59	48	36	0	0	2.4	18	22	SM	A-4
Hobson	Bm	0- 23	25	9	sandy loam	50											
	Ae	23- 70	14	4	sandy loam	50											
	Bt	70- 95	16	8	clay loam	50											
	BC	95-120	15	4	loam	50											
	Cca+Ck	120-160+	13	4	sandy loam	50	62	48	23	9	0.84	0.68	4.3	NP	NP	SW-SM	A-1-a

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Particle Size by Weight: Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Hanakwa	$Ae+Bf_1$	0- 15	30	17	sandy loam	65											
	Bf_2	15- 40	17	10	sandy loam	65											
	BC	40- 80	7	5	loamy sand	65											
	C	80-160+	7	4	loamy sand	65	55	44	26	6	0.12	0.59	6.0	NP	NP	SP-SM	A-1-a
Kwikoit	$Ae+Bm_1$	0- 18	21	12	loamy sand	0											
	Bm_2	18- 36	9	7	sand	0											
	BC	36- 54	6	4	sand	0											
	CB	54- 84	4	2	sand	0											
	C	84-200+	3	2	sand	0	100	100	80	38	0	0	0.30	NP	NP	SM	A-4
Kwikoit	Bm	0- 23	7	4	sand	0											
	C_1	23- 60	3	2	sand	0											
	C_2	60- 85	2	1	sand	0											
	C_3	85-160	2	1	sand	0											
	C_4	160-190	2	1	sand	0	100	99	23	2	0.27	0.46	0.62	NP	NP	SP	A-1-b
	IIC	190+	3	1	sand	70											
Kostal	$Ae+Bhf_1$	0- 20	41	22	sandy loam	45											
	$Bf+Bhf_2$	20- 56	26	13	sandy loam	45											
	C_1	56-100	9	5	sandy loam	85											
	C_2	100-200+	17	8	sandy loam	85	28	15	10	6	0.42	6.4	34	NP	NP	GW-GM	A-1-a
Kirbyville	Ae+Bhf	0- 7	83	49	sandy loam	15											
	Bf	7- 27	76	37	sandy loam	15											
	BC	27- 86	20	5	fine sandy loam	15											
	C	86-120+	21	4	fine sandy loam	35	74	66	54	34	0	0	0.95	NP	NP	SM	A-2-4
Lichen	Ah+Ae	0- 20	40	28	silt loam	0											
	Bt	20- 50	48	33	silty clay loam	0											
	BC	50- 70	46	33	silt loam	0											
	C	70-300+	53	35	silt loam	0								43	66		

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Particle Size by Weight: Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Lupine	$Ae+Bf_1$	0- 18	38	17	sandy loam	0											
	Bf_2	18- 34	31	16	sandy loam	0											
	BC	34- 50	22	13	loam	0											
	C	50-140+	23	15	loam	0								22	25		
Laxity	Bm	0- 16	22	10	sandy loam	70											
	Bmk	16- 42	15	6	sandy loam	70											
	Cca	42-100	22	10	loam	70											
	IICk	100-190+	18	9	loam	70	39	28	21	16	0	2.4	18	19	20	GM	A-2-4
Momich	$Ae+Bf_1$	0- 28	24	13	sandy loam	50											
	Bf_2	28- 60	11	6	sandy loam	50											
	IIBfc	60- 74	11	5	sandy loam	50											
	IIBCc	74- 93	9	4	sandy loam	50											
	IIC	93-135+	7	2	sandy loam	50	55	50	27	11	0.061	0.55	8.4	NP	NP	SP-SM	A-1-a
Mammoth	C_1	0-17	4	2	sand	0											
	C_2	17-38	10	2	sand	65											
	C_3	38-100	2	1	sand	65											
	C_4	100-125+	2	1	sand	65	45	33	13	2	0.33	1.6	13	NP	NP	GP	A-1-a
Mammoth	C	0-100+	56	2	sand	60	56	39	13	2	0.32	2.1	5.6	NP	NP	SW	A-1-a
McNomee	Cg_1	0- 15	49	15	silt loam	0											
	Cg_2+IICg	15- 32	58	18	silt loam	0											
	IIICg	32-102+	48	9	silt loam	0	100	100	99	31	0	0	0.13	NP	NP	SM	A-2-4
Mulholland	Bhf	0- 23	43	25	loam	15											
	Bf	23- 38	33	22	sandy loam	15											
	BC	38- 53	21	14	sandy loam	60											
	C	53-150+	10	3	loamy sand	60	52	41	19	8	0.12	0.96	7.6	NP	NP	SW-SM	A-1-a

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Messiter	Ae_1+Bm	0- 20	24	9	sandy loam	40											
	Ae_2	20- 61	11	6	loamy sand	40											
	Bt	61- 91	14	10	loam	40											
	IIC	91-300+	5	3	sand	85	32	18	11	3	0.32	4.2	39	NP	NP	GW	A-1-a
Messiter	Ae+Bm	0- 18	35	16	sandy loam	40											
	BC	18- 36	17	6	sandy loam	40											
	CB	36- 61	15	6	sandy loam	40											
	C_1+C_2	61-120+	16	7	sandy loam	75	58	28	17	11	0.074	2.1	5.9	NP	NP	SP-SM	A-1-a
Messiter	Ae+Bm	0- 21	51	26	sandy loam	45											
	BC	21- 62	15	5	sandy loam	45											
	C_1	62-117	12	5	sandy loam	90											
	C_2	117-157	8	5	loamy sand	90	27	10	7	4	1.5	6.1	26	NP	NP	GP	A-1-a
Messiter	Ae_1+Bm_1	0- 18	13	6	sandy loam	35											
	Bm_2	18- 37	14	4	sandy loam	35											
	Ae_2	37- 60	9	3	sandy loam	35											
	Bt	60- 80	12	7	sandy clay loam	35											
	C	80-160+	12	8	sandy clay loam	65	50	37	13	7	0.19	1.4	7.9	17	22	GW-GM	A-1-a,A-2-4
Snookwa	Ae	0- 13	39	14	loamy sand	45											
	Bhf+Bf	13- 46	24	13	sandy loam	45											
	Bfc	46- 60	23	20	sandy loam	45											
	BC+C	60-150+	10	5	sandy loam	65	53	39	25	15	0	0.69	12	NP	NP	SM	A-1-a
Snookwa	Ahg_1	0- 16	61	32	silt loam	0											
	Ahg_2	16- 30	42	27	silt loam	0											
	Aheg	30- 39	27	18	loam	50											
	Cg	39-130+	17	8	sandy loam	50	61	50	36	25	0	0.20	4.4	16	20	SM	A-2-4
Sandford	Bhf	0- 12	45	33	loam	55											
	C	12- 40	19	7	sandy loam	55	56	43	25	15	0	0.70	6.0	NP	NP	SM	A-1-a

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Particle Size by Weight: Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Sorcerer	C	0-300+	14	3	silty clay loam	60	53	52	32	23	0	0.30	3.8	NP	NP	SM	A-2-4
Sorcerer	C	0-300+	2	1	sand	0								NP	NP	SP	
Sorcerer	C	0-300+	11	3	sandy loam	25								NP	NP		
Sunset	Ae+Bhf	0- 20	47	23	sandy loam	40											
	BC	20- 51	14	4	sandy loam	40											
	CB	51- 78	12	3	sandy loam	40											
	C	78-150+	8	3	loamy sand	40	52	42	24	9	0.11	0.76	7.9	NP	NP	SP-SM	A-1-a
Sawtooth	Ah_1+Ah_2	0- 21	36	23	sandy loam	0											
	Ah_3	21- 36	35	22	sandy loam	0											
	Bf	36- 54	19	8	loam	0											
	C	54-117	19	6	loam	0	64	57	33	15	0.038	0.32	2.9	NP	NP	SP	A-1-b,A-2-4
Tangier	$Ae+Bf_1+Bf_2$	0- 38	21	10	loam	45											
	BC	38- 61	15	8	sandy loam	65											
	CB	61- 91	10	5	sandy loam	65											
	C	91-185+	7	3	sandy loam	65	42	32	16	7	0.15	1.7	11	NP	NP	GW-GM	A-1-a
Tumtum	$Ae+Bf_1$	0- 31	21	13	sandy loam	0											
	Bf_2	31- 43	42	25	sandy loam	0											
	Bf_3	43- 68	19	11	sandy loam	0											
	IIBC	68- 98	12	4	sandy loam	45											
	IIBC+IIC	98-300+	12	4	sandy loam	45	60	54	26	13	0	0.57	4.7	NP	NP	SM	A-1-b,A-2-4
Trophy	C	0-300				80	69	58	32	12	0.056	0.37	2.5	NP	NP	SP-SM	A-1-b,A-2-4

Table 7 (Cont.)

Soil Association	Horizon	Depth (cm)	Moisture Status: Percent Water Retained at 0.33 bars	Moisture Status: Percent Water Retained at 15 bars	Soil Texture	Field Est. of Coarse Fragments by Volume (%)	Particle Size by Weight: Percent Passing Mesh 4	10	40	200	Diameter (mm) at Percentage Passing 10%	30%	60%	Atterberg Lim.: Plastic Limit	Liquid Limit	Classification: Unified	AASHO
Vermelin	Ae+Bm	0- 33	27	10	sandy loam	40											
	C	33-400+	3	2	sand	80	38	20	7	1	0.57	5.4	27	NP	NP	GW	A-1-a
Wolfenden	Bm_1	0- 23	24	17	loamy sand	90											
	Bm_2	23- 38	13	7	loamy sand	90											
	BC_1+BC_2	38-260	4	2	sand	90											
	Cc_1+Cc_2	260-306	4	2	sand	90											
	C	306+	3	2	sand	90	29	13	4	1	1.2	5.2	25	NP	NP	GP	A-1-a
Wabron	Ae+Bf	0- 15	17	7	loamy sand	0											
	Bm	15- 33	10	2	loamy sand	0											
	C	33- 77	7	2	loamy sand	0											
	IIC	77-185+	3	1	sand	35	75	67	35	7	0.12	0.36	1.3	NP	NP	SP-SM	A-1-b,A-2-4
Warsaw	$Ae+Bf_1+Bf_2$	0- 18	20	12	loamy sand	0											
	Bm	18- 47	7	5	sand	0											
	BC	47- 77	3	2	sand	0											
	C_1	77-103	3	2	sand	0											
	C_2	103-126	3	2	sand	0											
	C_3	126-150+	2	1	sand	0	93	89	59	4	0.11	0.19	0.44	NP	NP	SP	A-3
Yeoward	Bhf_1+Bhf_2	0- 24	46	28	loam	10											
	Bf_1	24- 42	46	30	loam	10											
	Bf_2	42- 70	32	20	loam	10											
	C	70-127	25	10	loam	10											
	IICc+IIC	127-180+	22	7	sandy loam	40	67	60	25	11	0.062	0.60	2.2	NP	NP	SW-SM	A-1-b,A-2-4
Yeoward	Ae	0- 13	23	8	sandy loam	60											
	Bf	13- 37	18	7	sandy loam	60											
	BC	37- 70	22	7	sandy loam	60											
	C	70-135	12	3	sandy loam	60	60	46	25	14	0	0.57	4.7	NP	NP	SM	A-1-a,A-2-4

the American Association of State Highway Officials (AASHO) system of soil classification, soils having approximately the same general load-carrying capacity and service characteristics are grouped together to form seven basic groups designated as A-1, A-2 and A-3 (granular materials), and A-4, A-5, A-6 and A-7 (silt-clay materials). Table 7 lists the pertinent information for determining the Unified and AASHO soil classifications. Further information concerning the Unified system and the comparison of the Unified system with the AASHO system of soil classification may be obtained from the Asphalt Institute (1969) or the U.S. Department of Agriculture (1971).

The soil profiles were also sampled for determination of the available water storage capacity (A.W.S.C.). Sampling consisted of taking a soil sample for each soil horizon that was about 15 cm or more in thickness. The surface organic layer was not sampled. Thinner horizons were combined with thicker horizons. From the portion of the sample passing 6 mesh, the percentage of water retained in the soil at the field capacity and at the permanent wilting point was determined in the laboratory. The difference between the amount of water retained at field capacity and permanent wilting point is the amount of water available to plants. The A.W.S.C. of the horizon is determined by multiplying the bulk density for the soil texture by the depth of the horizon or horizons and by the amount of water available to the plants. The answer will be in centimeters of water for that horizon. The A.S.W.C. of the profile is then determined by summing the centimeters of water for each horizon. The data necessary to calculate the A.W.S.C. is listed in Table 7. Since the bulk densities were not measured, they were estimated in relation to soil texture as shown in Table 8.

Table 8

Estimated bulk densities for various soil textures

Bulk Density	Texture	Bulk Density	Texture
1.10	clay	1.40	sandy clay loam
1.15	silty clay	1.40	loam
1.20	sandy clay	1.45	fine sandy loam
1.25	silty clay loam	1.50	sandy loam
1.30	clay loam	1.55	loamy sand
1.35	silt	1.60	sand
1.35	silt loam		

3.3.3 Guide to the Engineering Interpretations

The engineering interpretations for the soil associations and components are given in Table 9. All the soil associations are listed alphabetically according to their symbol. Soil associations having similar engineering interpretations to that of the alphabetically listed soil association are grouped together with that soil association. For example, the alphabetically listed soil association is Allamore and the soil associations that have similar engineering interpretations and are listed with Allamore are Keefer, Mulholland and Tsikustum. Generally, for each group of soil associations, interpretations were made on three distinctions, deep soils, shallow soils overlying bedrock, and soils affected by excess seepage or high water tables. Further on in Table 9, when soil association Keefer is reached, no interpretations are made at that point, but a reference is made to see Allamore for the

interpretations. The same is true for other soil associations listed under Allamore or any subsequent soil associations where interpretations have been made. Each group of soil associations has been classified according to the Unified system, and the appropriate symbol or symbols that best represent the group of soil associations have been listed. The symbols have been determined for the soil associations sampled by following the procedure outlined by The Asphalt Institute (1969). In instances where the soil associations were not sampled and there is no available data, the symbols were estimated.

The soil limitations for septic tank absorption fields, shallow excavations, low dwelling foundations, local roads and streets, and sewage lagoons are indicated by the ratings slight, moderate and severe. Interpretive tables used to assess limitation ratings are found in U.S. Department of Agriculture's (1971) Guide for Interpreting Engineering Uses of Soils. Slight soil limitation is the rating given soils that have properties favourable for the rated use. The degree of limitation is minor and can be overcome easily. Good performance and low maintenance can be expected. Moderate soil limitation is the rating given soils that have properties moderately favourable for the rated use. This degree of limitation can be overcome or modified by special planning, design, or maintenance. During some part of the year the performance of the structure or other planned use is somewhat less desirable than for soils rated slight. Some soils rated moderate require treatment such as artificial drainage, runoff control to reduce erosion, extended sewage absorption fields, extra excavation, or some modification of certain features through manipulation of the soil. For these soils, modification is needed for those construction plans generally used for soils of slight limitation. Modification may include special foundations, extra reinforcement of structures, sump pumps, and the like. Severe soil limitation is the rating given soils that have one or more properties unfavourable for the rated use, such as steep slopes, bedrock near the surface, flooding hazard, high shrink-swell potential, a seasonally high water table, or low bearing strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance. Some of these soils can be improved by reducing or removing the soil feature that limits use, but in most situations it is difficult and costly to alter the soil or to design a structure so as to compensate for a severe degree of limitation.

Soil properties that affect septic tank absorption field are depth to ground water table or bedrock, permeability, susceptibility to flooding and slope.

Shallow excavations refer to digging or trenching to a depth of less than 2 meters, such as, excavations for pipelines, sewer lines, telephone and power transmission lines, ditches and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, absence of rocks or big stones, and freedom from flooding or a high water table.

The suitability of a soil for low dwelling foundations (less

than three stories high) is related to its capacity to support a load, and depends on wetness, susceptibility to flooding, density, texture, plasticity, shrink-swell, potential frost action, slope, and depth to bedrock.

Soil properties that most affect local road and street construction are load supporting capacity, stability of the subgrade and quality and quantity of cut-and-fill material. These properties are dependent on soil wetness, flooding, slope, depth to bedrock, shrink-swell potential, susceptibility to frost action, and content of stones.

Sewage lagoon areas hold water behind a dam or embankment. Soils suitable for sewage lagoons have low seepage, which is related to their permeability, and depth to fractured or permeable bedrock or other permeable material.

The material indicated by the soil association name as suitable as a source of fill material, sand and gravel or topsoil is indicated by the rating of good, fair or poor.

Road fill is soil material used in embankments for roads. Its suitability depends on the predicted performance in embankments and the relative ease of excavation.

The suitability of the soils for sand and/or gravel is primarily intended to guide readers to local sources. A soil rated good or fair generally has a layer at least 1 meter thick, the top of which is within a depth of 2 meters.

The ratings for the topsoil are based mainly on the texture of the soil, ease of working and spreading of the material, thickness of the layers, natural fertility or the response to fertilizer application, stoniness, soil drainage and presence of toxic substances.

Table 9

Engineering Interpretations

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
AA-ALLAMORE KEEFER MULHOLLAND TSIKUSTUM	AA1 KF1,4 MO1,7 TW1,2	SM, SP-SM, GP-GM	severe to moderate	moderate to slight	moderate to slight	slight to moderate	moderate	adverse topography, slow permeability	good to fair	poor	poor
AA-ALLAMORE KEEFER MULHOLLAND	AA1a,3a,5a KF1a,2a,5a MO1a,5a		severe	severe to moderate	moderate	moderate	severe	soil wetness, adverse topography	poor	poor	poor
AA-ALLAMORE KEEFER MULHOLLAND TSIKUSTUM	AA5,6 KF5,6 MO5,6 TW5,6		severe to moderate	severe to moderate	moderate to slight	severe to moderate	severe	shallowness to bedrock, adverse topography	fair to poor	poor	poor
AD-ADAMANT COPELAND SOARDS WHIRLPOOL	AD1,5,6 CD5,6 SS1,5,6 WH5,6	GP-GM, GM	severe	severe to moderate	moderate to slight	severe to moderate	severe	shallowness to bedrock, adverse topography	poor to fair	poor	poor to fair
AE-ARGENTINE FROG KWIKOIT KUSKANAX LATREMOUILLE SAUFF SPECTRUM WOLFENDEN WARSAW	AE1,4 FG1,3,4,5 KK1,2,3,4 KX1 LM1,2 SF1,2,3 SU1,2,4,5 WD1,2 WW1,2	GP,SP,GM, SM,GW,SW	slight to moderate	moderate to slight	slight to moderate	slight	severe	adverse topography, sidewall instability, low compressibility, difficult to compact, high percolation	good	good	poor to fair
AE-ARGENTINE KWIKOIT LATREMOUILLE SAUFF SPECTRUM WOLFENDEN WARSAW	KK1a,3a LM1a SF1a,2a,3a SU1a,2a,7a WD1a WW1a		moderate	moderate	moderate	moderate to slight	severe	soil wetness, adverse topography	good	good	fair to poor
AL-ALLIE ARTISAN MCLURE	AL1,1a,4 AN1,2,3 MC4	SC	severe	slight to moderate	slight to moderate	slight to moderate	slight to moderate	adverse topography, frost heaving, slow permeability, bearing strength and compressibility problems, erodibility problems	good to fair	poor	fair
AL-ALLIE ARTISAN	AL5,6 AN5,6		severe	severe to moderate	moderate to slight	severe to moderate	severe	shallowness to bedrock, adverse topography, slow permeability	fair to poor	poor	poor

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
AM-ARMOUR KOSTAL SNOOKWA SASKUM	AM1,4 KL1 SA1 SK1	GM, GW-GM	slight to moderate	moderate to slight	slight	slight	moderate to severe	adverse topography, high percolation	good	poor	poor
AM-ARMOUR KOSTAL SNOOKWA	AM1a,5a,6a KL1a,5a,6a SA1a,2a,5a,6a		severe	severe to moderate	moderate	severe	severe	soil wetness, adverse topography, shallowness to bedrock	fair to poor	poor	poor to fair
AM-ARMOUR KOSTAL SNOOKWA SASKUM	AM5,6 KL5,6 SA5,6 SK6		severe to moderate	severe to moderate	moderate	severe to moderate	severe	shallowness to bedrock, adverse topography	good to poor	poor	poor
AN-ARTISAN	See AL-ALLIE										
AO-ANEMONE BEATON CREEK BIGMOUTH BLAYLOCK FISSURE GOLDSTREAM HANAKWA RATCHFORD RUDDOCK	AO1 BA1 BM1 BY1 FS1 GM1 HW1 RF1 RK1	GW-GM, GP-GM	severe	severe to moderate	severe	severe to moderate	severe	adverse topography, sidewall instability, erodibility problems, high percolation, slumping hazard	good	poor	poor
AO-ANEMONE BEATON CREEK BONNER BLAYLOCK FISSURE HANAKWA RATCHFORD	BA1a,5a BO6a BY1a,5a FS1a HW1a RF5a,6a		severe	severe	severe	severe	severe	adverse topography, soil wetness, shallowness to bedrock	fair to poor	poor	poor to fair
AO-ANEMONE BEATON CREEK BIGMOUTH BONNER BLAYLOCK FISSURE GOLDSTREAM HANAKWA RATCHFORD RUDDOCK WHITEROSE	AO5,6 BA5,6 BM5,6 BO6 BY5,6 FS5,6 GM5,6 HW5,6 RF5,6 RK5,6 WE6		severe	severe	severe	severe	severe	shallowness to bedrock, adverse topography	good to poor	poor	poor

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
AS-AVIS ARGONAUT MAMMOTH MCNOMEE PUKEASHUN WOOLSEY	AS1 AU1,1a,4 MM1,1a,4 MN1,1a,4 PH1,1a,2,3,4,4a WY1,4	GP,SP,GM, SM,GW,SW	severe	severe	severe	severe to moderate	severe	periodic flooding, soil wetness, compaction and erodibility problems	fair to good	good	poor to fair
AT-ANGLEMONT LAXITY PRINCE ROTTACHER	AT1,1a,3,3a,4 LX1,3 PE1 RT2	SP-SC,SM	severe to moderate	severe to moderate	severe to moderate	severe to moderate	severe	adverse topography, slow permeability, slumping hazard, bearing strength and compressibility problems, erodibility problems	poor to fair	poor	poor
AT-ANGLEMONT LEAGUE LAXITY ROTTACHER	AT5,5a,6 LA5,6 LX5,6 RT5		severe	severe	severe	severe	severe	shallowness to bedrock, adverse topography, slow permeability	poor	poor	poor
AU-ARGONAUT BA-BEATON CREEK	See AS-AVIS See AO-ANEMONE										
BD-BYRD CREEK RENNIE	BD1a RD1,1a	SM,SP	severe	severe	severe	severe	severe	periodic flooding, soil wetness, erodibility, compaction and compressibility problems	fair	poor	fair to good
BE-BREWSTER RAYONIER RAIL	BE1 RA1 RL1	PT	severe	severe	severe	severe to moderate	severe	soil wetness, organic soil	unsuitable	unsuitable	poor
BM-BIGMOUTH BO-BONNER BY-BLAYLOCK	See AO-ANEMONE See AO-ANEMONE See AO-ANEMONE										
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA1,2 CN1,4 DN1,4 LT1,4 VN1,2,3	GP-GM, GM	severe to moderate	severe to moderate	severe to moderate	severe to moderate	severe	adverse topography, slumping hazard, erodibility problems	poor to fair	poor	poor
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA1a,2a,5a CN1a,4a,5a,6a DN1a LT1a,5a,6a,7a VN1a,3a,5a		severe	severe	severe	severe to moderate	severe	soil wetness, adverse topography	poor	poor	poor to fair

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA5,6 CN5,6 DN5,6 LT5,6 VN5,6		severe	severe	severe	severe to moderate	severe	shallowness to bedrock, adverse topography	poor	poor	poor
CC-CLEMENCEAU SORCERER TROPHY	CC1 SO1,4,5 TY1,4	GM, GP-GM	severe	severe	severe	severe	severe	adverse topography, stony, slumping hazard, erodibility problems	good	poor	poor
CD-COPELAND	See AD-ADAMANT										
CL-CANDLE FRISBY SANDFORD SAWTOOTH	CL1a,5,6 FB1,5,5a,6,6a SD1a,5,6 SW6	SP-SM, GP-GM	severe	severe to moderate	severe to moderate	severe to moderate	severe	shallowness to bedrock, soil wetness, adverse topography, slumping hazard	fair to good	poor	poor
CN-CINNEMOUSEN	See CA-CAYENNE										
CR-CARNES GANNETT HAGGARD WEBB WARWICK	CR1,4 GT1,6 HD1 WB1 WC1	GP	severe	severe	severe	severe	severe	extremely bouldery, adverse topography, slumping hazard, high percolation	poor	poor	poor
CS-MOUNT COND GOOSEGRASS GRIFFITH GORMAN HOLDICH HOSKINS KITSON WAITABIT	CS1,5 GA1,5 GH1,5,6 GN1,5,6 HH1,4,5,6 HK1,5,6 KT1,4,5,6 WT5	GW-GM, GP-GM	severe	severe	severe	severe	severe	avalanching, shallowness to bedrock, adverse topography, slumping hazard	good	poor	poor
D- DUNLEAVY DORRELL	D1,1a,4 DL1,4	SM, SP-SM, SC	slight to moderate	moderate to slight	slight	slight	moderate	occasional soil wetness and flooding, sidewall instability, bearing strength and compressibility problems, percolation problems	fair	poor	fair to good

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
DA-DRAGONFLY MURTLE MESSITER SAMATOSUM SUNSET	DA1 ME2 MT1,3 SM1,2 ST1,2	GP-GM, GM, SW-SM	moderate to slight	slight to moderate	slight to moderate	slight to moderate	moderate to severe	low compressibility, percolation problems, adverse topography	good	poor	poor
DA-DRAGONFLY MESSITER SAMATOSUM SUNSET	DA1a MT1a,3a,5a SM1a,2a,5a,6a ST1a,2a,5a		severe	severe to moderate	moderate	moderate	severe	soil wetness, shallowness to bedrock, adverse topography	fair to poor	poor	poor to fair
DA-DRAGONFLY MURTLE MESSITER SAMATOSUM SUNSET	ME5 MT5,6 SM5,6 ST5,6		severe to moderate	severe to moderate	moderate to slight	moderate to severe	severe	shallowness to bedrock, adverse topography	good to poor	poor	poor
DE-DOWNIE MOMICH REMILLARD STUBBS SYMOND TANGIER TUMTUM TRIDENT	DE1 MH1 RR1 SB1 SY1 TE1 TM1 TT1	GW-GM, GM, GP-GM	moderate to severe	moderate to severe	moderate to severe	moderate to severe	severe	adverse topography, slumping hazard, low compressibility, compaction and erodibility problems, high percolation	good	poor	poor
DE-DOWNIE MOMICH STUBBS TANGIER TUMTUM TRIDENT WHATSHAN	MH1a SB5a TE1a,5a TM1a,5a TT1a,5a,6a WS5a		severe	severe	severe	severe to moderate	severe	soil wetness, shallowness to bedrock, adverse topography	fair to poor	poor	poor to fair
DE-DOWNIE MOMICH REMILLARD STUBBS SYMOND TANGIER TUMTUM TRIDENT WHATSHAN	DE5,6 MH5,6 RR5,6 SB5,6 SY5 TE5,6 TM5,6 TT5,6 WS5,6		severe	severe to moderate	severe to moderate	severe to moderate	severe	shallowness to bedrock, adverse topography	good to poor	poor	poor
DL-DORRELL	See D-DUNLEAVY										
DN-DUDGEON	See CA-CAYENNE										

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
DU-DUNCAN CREEK HUPEL KIRBYVILLE STUKEMAPTEN WABRON	DU1,3 HP1,2,3,4 KV1,4 SP1,3,4 WN1,2,4	SP-SM, SM, GP-GM	slight to moderate	moderate to slight	slight	slight	moderate	sidewall instability, low compressibility, bearing strength and erodibility problems, percolation problems	good to fair	fair to poor	fair
DU-DUNCAN CREEK HUPEL KIRBYVILLE STUKEMAPTEN WABRON	DU1a HP1a,3a KV1a SP1a,3a WN1a,4a		severe	moderate	moderate	slight to moderate	severe	soil wetness, occasional flooding	fair	poor to fair	fair
FB-FRISBY	See CL-CANDLE										
FG-FROG	See AE-ARGENTINE										
FS-FISSURE	See AD-ANEMONE										
GA-GOOSEGRASS	See CS-MOUNT COND										
GH-GRIFFITH	See CS-MOUNT COND										
GM-GOLDSTREAM	See AD-ANEMONE										
GN-GORMAN	See CS-MOUNT COND										
GT-GANNETT	See CR-CARNES										
H- HEMP HOOLIGAN HEATHROW	H1 HO1 HT1	SC, SM	severe to moderate	severe to moderate	severe to moderate	severe to moderate	severe	adverse topography, slow permeability, slumping hazard, bearing strength and compressibility problems, frost heaving	poor to fair	poor	poor
H- HEMP HOOLIGAN HEATHROW	H5,6 HO5,6 HT5,6		severe	severe	severe	severe	severe	shallowness to bedrock, adverse topography, slow permeability	poor	poor	poor
HA-HALLAMORE LUPINE SPILLMAN YEOWARD	HA1 LP1,1a,4,7,7a SL2 YW1	SP-SM, SM, GW-GM	severe to moderate	severe to moderate	severe to moderate	severe to moderate	severe	adverse topography, slow permeability, slumping hazard, erodibility problems, soil wetness	poor to fair	poor	poor
HA-HALLAMORE LUPINE SPILLMAN YEOWARD	HA5,6 LP5,6 SL5,6 YW5,6		severe	severe	severe	severe	severe	shallowness to bedrock, adverse topography	poor	poor	poor
HD-HAGGARD	See CR-CARNES										
HH-HOLDICH	See CS-MOUNT COND										
HK-HOSKINS	See CS-MOUNT COND										
HO-HOOLIGAN	See H -HEMP										
HP-HUPEL	See DU-DUNCAN CREEK										

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
HS-HOBSON ROUND ROSERIM TSUIUS	HS1,3 RD2,3 RM3 TS1,4	SC, SM, SP-SM	severe to moderate	slight to moderate	slight to moderate	slight to moderate	moderate	slow permeability, bearing strength, compressibility and erodibility problems, adverse topography	good to fair	poor	poor
HS-HOBSON ROUND TSUIUS	HS1a,3a,5a RD1a,3a TS1a		severe	moderate to severe	moderate	moderate	severe	soil wetness, slow permeability, bearing strength and compressibility problems	fair to poor	poor	poor to fair
HS-HOBSON ROUND ROSERIM TSUIUS	HS5,6 RD5,6 RM5 TS5		severe	severe to moderate	moderate to slight	severe to moderate	severe	shallowness to bedrock, slow permeability, adverse topography	fair to poor	poor	poor
HT-HEATHROW	See H -HEMP										
HW-HANAKWA	See AO-ANEMONE										
I -ICE (GLACIERS)	Unsuitable										
KF-KEEFER	See AA-ALLAMORE										
KK-KWIKOIT	See AE-ARGENTINE										
KL-KOSTAL	See AM-ARMOUR										
KT-KITSON	See CS-MOUNT COND										
KV-KIRBYVILLE	See DU-DUNCAN CREEK										
KX-KUSKANAX	See AE-ARGENTINE										
LA-LEAGUE	See AT-ANGLEMONT										
LH-LICHEN	LH1, 3	ML	severe	slight	slight to moderate	moderate	slight	low permeability, bearing strength, compressibility and erodibility problems, frost heaving	poor	poor	fair
LM-LATREMOUILLE	See AE-ARGENTINE										
LP-LUPINE	See HA-HALLAMORE										
LT-LOST	See CA-CAYENNE										
LX-LAXITY	See AT-ANGLEMONT										
MC-MCLURE	See AL-ALLIE										
ME-MURTLE	See DA-DRAGONFLY										
MH-MOMICH	See DE-DOWNIE										
MM-MAMMOTH	See AS-AVIS										
MN-MCNOMEE	See AS-AVIS										
MO-MULHOLLAND	See AA-ALLAMORE										
MT-MESSITER	See DA-DRAGONFLY										
PE-PRINCE	See AT-ANGLEMONT										
PH-PUKEASHUN	See AS-AVIS										
RA-RAYONIER	See BE-BREWSTER										
RD-ROUND	See HS-HOBSON										
RE-RENNIE	See BD-BYRD CREEK										
RF-RATCHFORD	See AO-ANEMONE										
RK-RUDDOCK	See AO-ANEMONE										

Table 9 (Cont.)

SOIL ASSOCIATION		UNIFIED SYSTEM	SOIL LIMITATIONS FOR					SOIL FEATURES AFFECTING USE	SUITABLE AS A SOURCE OF		
NAME	COMPONENT		SEPTIC TANK ABSORPTION FIELDS	SHALLOW EXCAVATIONS	LOW DWELLING FOUNDATIONS	LOCAL ROADS AND STREETS	SEWAGE LAGOONS		FILL MATERIAL	SAND & GRAVEL	TOPSOIL
RL-RAIL	See BE-BREWSTER										
RM-ROSERIM	See HS-HOBSON										
RO-ROCK OUTCROP	Unsuitable										
RR-REMILLARD	See DE-DOWNIE										
RT-ROTTACHER	See AT-ANGLEMONT										
SA-SNOOKWA	See AM-ARMOUR										
SB-STUBBS	See DE-DOWNIE										
SD-SANDFORD	See CL-CANDLE										
SE-STRUTHERS SUCCOUR	SE1,3,3a SR1	GM,SM,GP, SP,GW,SW	slight	severe to moderate	slight	slight	severe to moderate	sidewall instability, low compressibility, erodibility problems, high percolation	good	good	poor to fair
SF-SAUFF	See AE-ARGENTINE										
SK-SASKUM	See AM-ARMOUR										
SL-SPILLMAN	See HA-HALLAMORE										
SM-SAMATOSUM	See DA-DRAGONFLY										
SO-SORCERER	See CC-CLEMENCEAU										
SP-STUKEMAPTEN	See DU-DUNCAN CREEK										
SR-SUCCOUR	See SE-STRUTHERS										
SS-SOARDS	See AD-ADAMANT										
ST-SUNSET	See DA-DRAGONFLY										
SU-SPECTRUM	See AE-ARGENTINE										
SW-SAWTOOTH	See CL-CANDLE										
SY-SYMOND	See DE-DOWNIE										
TE-TANGIER	See DE-DOWNIE										
TM-TUMTUM	See DE-DOWNIE										
TS-TSUIUS	See HS-HOBSON										
TT-TRIDENT	See DE-DOWNIE										
TW-TSIKUSTUM	See AA-ALLAMORE										
TY-TROPHY	See CC-CLEMENCEAU										
VN-VERMELIN	See CA-CAYENNE										
WB-WEBB	See CR-CARNES										
WC-WARWICK	See CR-CARNES										
WD-WOLFENDEN	See AE-ARGENTINE										
WE-WHITEROSE	See AO-ANEMONE										
WH-WHIRLPOOL	See AD-ADAMANT										
WN-WABRON	See DU-DUNCAN CREEK										
WS-WHATSHAN	See DE-DOWNIE										
WT-WAITABIT	See CS-MOUNT COND										
WW-WARSAW	See AE-ARGENTINE										
WY-WOOLSEY	See AS-AVIS										
YW-YEOWARD	See HA-HALLAMORE										

3.4 FORESTRY INTERPRETATIONS

3.4.1 Introduction

The report area covers parts of the Adams, Arrowhead, Barrier, Eagle, Kinbasket, Nisconolith, North Thompson, Raft and Shuswap Public Sustained Yield Units, portions of Tree Farm Licences 23 and 33, and parts of Wells Gray Provincial Park and Mount Revelstoke National Park.

Where it is possible, soil associations having similar characteristics such as landform, percent slope, elevational range, texture, forest capability and forest zone, are grouped together and are given the same interpretation and recommendation. To aid in understanding the use of soils in forest management, Kowall (1974) and Arnson (1977) provide some assistance.

3.4.2 Guide to the Forestry Interpretations

Soil Associations. Forestry interpretations for the soil associations and components are given in Table 10. All the soil associations are listed alphabetically according to their symbol. Soil associations having similar forestry interpretations to that of the alphabetically listed soil association are grouped together with that soil association. For example, the alphabetically listed soil association is Allie and the soil associations that have similar forestry interpretations and are listed with Allie are Artisan and McLure. Generally, for each group of soil associations, interpretations were made on three distinctions: deep soils, shallow soils overlying bedrock, and soil affected by excess seepage or high water tables. Further on in Table 10 when soil association Artisan is reached, no interpretations are made at this point, but a reference is made to see Allie for the interpretations. The same is true for other soil associations listed under Allie or any subsequent soil associations where interpretations have been made.

Landform. The symbols listed below under Genetic Materials and Surface Expression conform to the landform classification system of Alley (1973). This system was used in this report to conform to the terrain maps already in use. This landform classification system is similar to the E.L.U.C. Secretariat (1976) Terrain Classification System which gives a more complete explanation of the genetic materials and surface expression.

Genetic Materials	Surface Expression
A - Alluvial	a - apron
A^G - Fluvioglacial	b - blanket
C - Colluvial	f - fan
I - Ice	p - plain
L^G - Glaciolacustrine	r - ridged
M - Morainal (including basal till)	t - terraced
O - Organic	v - veneer
R - Bedrock	

Percent Slope. The percent slope was grouped into the following categories: less than 10, 15, 30 and 60 percent and greater than 30 percent.

Texture. The textures listed are the most common ones found in the parent material of the soil associations. Generally, the solum textures are similar to the parent material.

Texture Symbols and Modifiers

fsl - fine sandy loam	gsil - gravelly silt loam
gcl - gravelly clay loam	ls - loamy sand
gl - gravelly loam	s - sand
gls - gravelly loamy sand	sl - sandy loam
gs - gravelly sand	sil - silt loam
gsl - gravelly sandy loam	vgs - very gravelly sand

For a more complete explanation of the textural classes see the Canadian Soil Survey Committee (1978).

Available Water Storage Capacity. The available water storage capacity (A.W.S.C.) was characterized by sampling and analyzing 49 soil profiles. The data is presented in Table 7 in the engineering section where a more complete explanation of the A.W.S.C. is given. The A.W.S.C. is the amount of water that can be stored in the upper 100 centimeters of the soil and is represented by the following classes:

poor - less than 7 cm/100 cm

medium - 7 - 14 cm/100 cm

good - more than 14 cm/100 cm

Where the depth of the soil is restricted to less than 100 centimeters by the bedrock, the A.W.S.C. is lowered accordingly.

Average Forest Capability Classes. The land capability for forestry classes represents an average capability of a particular soil (usually a soil association component) and was determined by the location and measurement of typical forest productivity plots and by the use of the B.C. Ministry of Forests inventory data and forest cover maps. The methodology of locating and measuring forest productivity plots, and assessing the capability of the soils is described by Kowall (1971). The mapping of the Land Capability for Forestry follows the Canada Land Inventory (1970a, 1970b) procedure and the manuscript maps are available from the Map Librarian, Resource Analysis Branch, Ministry of Environment, Parliament Buildings, Victoria, B.C. V8V 1X4. The capability classes found in the report are based on Mean Annual Increment (growth expressed in cubic meters per hectare per year) and are as follows:

Class 7:	0.0 - 0.7	Class 3 :	5.0 - 6.3
Class 6:	0.8 - 2.1	Class 2 :	6.4 - 7.7
Class 5:	2.2 - 3.5	Class 1 :	7.8 - 9.1
Class 4:	3.6 - 4.9	Class 1a:	9.2 - 12.0

Classes 1 and 1a are assumed to have no limitations to tree growth, therefore the limitations are restricted to Classes 2 to 7 and are:

C - combination of climatic factors at high elevations

D - physical restriction to rooting by dense or consolidated layers, other than bedrock

E - actively eroding soils - avalanche paths

H - cold temperatures - soil and air

M - soil moisture deficiency at some time during the growing season

R - restriction to rooting by bedrock

S - a combination of soil factors which collectively lower the capability class

U - exposure - aspect and atmospheric

W - soil moisture excess

A summary of the relationships between forest zones, tree species, soils and capability is given in the short reports accompanying the Land Capability for Forestry Maps for 82M/SE, SW, NE and NW.

Species Suitability. The species listed are obtained from the productivity data derived from the forest inventory and capability plots. They represent those species which seem to be best adapted to the site and are the most productive.

For more precise information on species suitability, the guidelines outlined by Utzig and McDonald (1977) should be consulted and used in conjunction with the soils and forest capability information. Symbols used for the various species are:

wB	- white birch	wH	- western hemlock
wC	- western red cedar	lP	- lodgepole pine
bCo	- black cottonwood	pP	- ponderosa pine
D	- Douglas-fir	eS	- Engelmann spruce
mH	- mountain hemlock	wS	- white spruce

Biophysical Forest Zonation. The biophysical forest zonation is that used by the Vegetation Section of the Resource Analysis Branch and a fuller explanation is given in Section 1.4. The symbols of the biophysical forest zonation is as follows:

DI	DRY INTERIOR REGION
ID	Interior Rocky Mountain Douglas-Fir Zone
ID:a	Lodgepole pine subzone
ID:b	Ponderosa pine subzone
SAeS-alF	Subalpine Engelmann Spruce - Alpine Fir Zone
SAeS-alF:a	Lodgepole pine subzone
SAeS-alF:c	Rocky Mountain Douglas-fir-lodgepole pine subzone
IWB	INTERIOR WET BELT REGION
IwH-wC	Interior Western Hemlock-Western Red Cedar Zone
IwH-wC:a	Rocky Mountain Douglas-fir-lodgepole pine subzone
IwH-wC:b	Lodgepole pine-Engelmann spruce-alpine fir subzone
SAmH	Subalpine Mountain Hemlock Zone (subzones have not been determined)
SAeS-alF	Subalpine Engelmann Spruce-Alpine Fir Zone
SAeS-alF:a	Lodgepole pine-whitebark pine subzone
SAeS-alF:b	Krummholz subzone
At	Alpine Tundra Zone (subzones have not been determined)

Potential Regeneration Limitations. Regeneration, especially natural regeneration, is dependent upon a number of variables. One of the most important factors is an adequate seed source. Other variables include whether the seedbed has been scarified or compacted, cutting methods, distance of the seedbed from the seed source, prevailing wind direction, shade requirements of the various seedling species, soil characteristics, climate, aspect, elevation, frost potential and brush competition.

The following is a list of possible reasons why regeneration may be unsuccessful or of limited success.

(1) frost heaving - usually occurs on soils having a high clay or silt content.

(2) low fertility - usually occurs in coarse textured soils such as gravels, especially when the surface organic layer has been removed.

(3) high lime content - areas where carbonate levels are high in the soil and restrict the uptake by the plants of essential nutrients causing a fertility problem.

(4) soil moisture deficiency - usually occurs in coarser textured soils such as sandy loams, loamy sand and sand with or without a coarse fragment content.

Extreme conditions occur in coarse textured soils such as gravels which have very low water holding capacities and rapid percolation rates.

(5) soil moisture excess - occurs in areas having a high water table, causing the soil to be poorly or very poorly drained, which limits aeration on seedling establishment.

(6) climatic limitations at high elevations - areas that are subject to high snowfalls which effectively shorten the growing season and/or areas that have cold soil temperatures especially during the early part of the growing season or areas subject to wind exposure.

(7) climatic limitations at low elevations - areas that are subject to high evapotranspiration, low precipitation (aridity), and wind and aspect exposure.

(8) steep slopes - soil surface is unstable and subject to erosion which washes away the seedlings especially if the surface organic horizon is greatly disturbed - usually occurs on slopes greater than 50% but may occur on less steep slopes on soils having a high clay or silt content.

(9) unstable soil surface - areas where avalanche paths are prevalent.

(10) shallow rooting medium - areas that have shallow soils overlying bedrock, these soils tend to drain rapidly and become quite droughty.

(11) rocky rooting medium - coarse, fragmental and rubbly areas and talus slopes where a reduction in the soil rooting medium occurs due to the coarse fragments.

(12) inundation - areas subject to periodic flooding.

Plant Competition. The ratings are based on soil characteristics, field observations, slope, aspect, climate and elevation, and indicate the susceptibility of the soil association components for revegetation to brush following harvesting. Generally, it is assumed that the more productive the site the greater will be the problem with brush revegetation and competition. Better forest growing sites are usually areas with an adequate supply of soil moisture, which usually contains the necessary nutrients for good plant growth. In general such sites revegetate to brush, grass and/or undesirable tree species in much less time than it takes to establish desirable tree species. Conversely, on dry sites that are rapidly or well drained, brush competition is low and generally not a problem.

Brush revegetation, including the seeding of domestic grass species, is not always detrimental and in many instances may be beneficial in stabilizing sites disturbed by harvesting and thereby reducing soil erosion. It may also aid seedling establishment by curbing frost heaving and, with certain species, provide shade.

The ratings are as follows:

Low:	revegetation of brush species is not a factor in the establishment of a desirable tree crop.
Moderate:	some revegetation of brush species will occur and compete with the desired species.
High:	revegetation of brush species is severe and greatly restricts the establishment and growth of the desired species.

Windthrow Hazard. These ratings are based on such factors as soil texture, water table and effective rooting depth, and are considered individually or in combination. Other factors that should be considered are the rooting characteristics of the various tree species, exposure to the prevailing winds, especially storm tracks, and extent of the exposed forest edge after harvesting.

It is assumed that the deeper the effective rooting medium, the more windfirm will be the tree. Therefore, on coarse textured

materials such as gravelly fluvioglacial materials lacking any root restricting layers (ortstein or duric horizons), root penetration is unrestricted, allowing for deep rooting and windfirmness. In contrast, fine textured soils such as clayey glacial till or lacustrine sediments usually have a dense subsoil which restricts root penetration, causing a shallow rooting pattern and less windfirmness. Soils that have a high water table or are poorly drained also cause shallow rooting patterns and less windfirmness, as is the case in most instances of shallow soils overlying bedrock. Slope also has an adverse affect on tree stability. With increasing slope steepness, soil mass movement (soil creep) increases, thereby decreasing the tree roots' ability to become firmly anchored, resulting in more blowdown. For more information on wind damage see the publication by the Bureau of Land Management.

Low:	No special problem exists. Effective rooting depth is deep with limited rooting restrictions, slopes are gentle.
Moderate:	Some trees are expected to blow down during periods of excessive soil wetness and high wind. Effective rooting depth may be restricted, slopes are more irregular and severe.
High:	Many trees are expected to blow down during periods of soil wetness with moderate and high wind. Effective rooting depth is usually shallow, slopes are usually severe.

Potential Soil Damage from Disturbance. These ratings are based on such factors such as soil wetness, soil texture, coarse fragment percentage, slope, and drainage, and indicate the susceptibility of soils (and other resources dependent on soils) to incur damage during and subsequent to all phases of forest harvesting, mining exploration, recreational activity or any other activity which causes soil disturbance. To aid in making the ratings, the physical properties of selected soils, such as texture, Atterberg limits, bulk densities and available water storage capacity were determined. Some of these properties are listed in Table 7 in the engineering section. Damage is caused to soils by creating soil disturbances which may destroy soil structure, cause compaction, and increase erosion, and also by the removal of the soil surface. These factors may affect other resources through decreased site productivity, lower water quality and yield or by loss of fish habitat. The ratings for the four categories of Physical Soil Damage, Organic Matter Loss, Surface Erosion Hazard and Mass Movement Hazard are low, moderate and high.

(1) Physical Soil Damage. This category considers the destruction of soil structure, soil compaction and/or puddling which occurs in soils usually having a high silt or clay content. Soil damage is only important if considering plant growth and its productivity. Damage usually occurs when the soil is compacted or churned when it is wet. Under these conditions, when the soil is in a wet and plastic condition, the soil pore space and pore size is so reduced that the soil becomes practically impervious to air and water. When this soil dries it usually becomes hard and dense.

(2) Organic Matter Loss. This category is concerned with the loss of organic matter from the disturbed site. On coarser soils such as loamy sands, sands or gravels, the removal of the organic

litter layer can cause a decrease in soil fertility and soil granulation and lower the water holding capacity.

(3) Surface Erosion Hazard. This category considers the loss of the solum and subsoil after the vegetation and litter has been disturbed or removed. Factors to be considered include the soil texture, depth of the soil to bedrock, seasonal rainfall intensities, aggregate stabilities and slope. Of particular concern is steeply sloping shallow soils overlying bedrock and occurring in positions in which the soil moisture rapidly drains away. Another is dealing with roads where, without proper ditching and culverting, considerable amount of surface erosion can occur on the cut slopes, fill areas and also sidecast areas. Concurrent with surface erosion is stream sedimentation (and siltation), which is the sediment load added to streams in addition to that which occurs normally.

(4) Mass Movement Hazard. Individual factors affecting mass movement are relatively easy to identify, but it is difficult to determine the combination of factors resulting in mass movement of a landscape. Factors affecting mass movement are topography, soil physical characteristics, moisture status, climate and vegetation. These factors were subjectively assessed to estimate an overall rating.

Table 10

Forestry Interpretations

SOIL ASSOCIATION		LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPETITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT											PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
AA-ALLAMORE	AA1	Mb	<60	gcl,gl	M-G	3S	eS,1P,D	SAeS-alF:c,a	-frost heaving	M	M-L	m-H	l	M-H	M
	AA1a,3a,5a	Mb	<30			3S,4MR	eS,1P		-occasional soil moisture excess, some shallow rooting medium	H	M	H	L	M	L
	AA5,6	Mv	<60			4MR	eS,1P,D		-frost heaving, shallow rooting medium	L	M-H	M-H	L	H	L-M
AD-ADAMANT	AD1,5,6	variable	variable	variable	variable	7CR	non-forested	At	-climatic limitations at high elevations	L	L	L-M	L	H	M-H
CLEMENCEAU	CC1														
COPELAND	CD5,6														
CARNES	CR1,4														
GANNETT	GT1,6														
HAGGARD	HD1														
SORCERER	SO1,4,5														
SOARDS	SS1,5,6														
TROPHY	TY1,4														
WARWICK	WC1														
WHIRLPOOL	WH5,6														
AE-ARGENTINE	AE1,4	AGt	<60	s,gs,vgs	P	3M,2S	wH,wS,D	IwH-wC:a	-soil moisture deficiency	l	L	L	M	L-M	L
KUSKANAX	KX1														
AL-ALLIE	AL1,4	Mb	<60	gl,gcl	G	3S,4M	D,1P,pP	ID b:a	-frost heaving, climatic limitations at low elevations	M-L	M-L	M	L	M-H	M
ARTISAN	AN1,2,3														
MCLURE	MC4														
AL-ALLIE	AL1a	Mb	<30			3S	D,1P		-occasional soil moisture excess	H	M	H	L	L-M	L
AL-ALLIE	AL5,6	Mv	<60			4MR	D,1P		-frost heaving, shallow rooting medium, climatic limitations at low elevations	L	M-H	M-H	L	H	L-M
ARTISAN	AN5,6														
AM-ARMOUR	AM1,4	Mb	<60	gsl,gl	M	5H	eS,1P,alF	SAeS-alF:a	-climatic limitations at high elevations	M	L	L	L	L-M	L-M
KEEFER	KF1,2,4					4H;3H									
KOSTAL	KL1					4H,5H,7H									
MULHOLLAND	MO1,7					5H									
REMILLARD	RR1					4H									
SNOOKWA	SA1,2					4H,3H									
TRIDENT	TT1					4H,3H									
AM-ARMOUR	AM1a,5a,6a	Mb	<30			5H,5HR			-some soil moisture excess, climatic limitations at high elevations, some shallow rooting medium	H	H	M-L	L	M-L	L
KEEFER	KF1a,2a,5a					3S,5HR									
KOSTAL	KL1a,5a,6a					4H,5HR									
MULHOLLAND	MO1a,5a					5H,5HR									
SNOOKWA	SA1a,2a,5a,6a					3H,5HR									
TRIDENT	TT1a,5a,6a					3H,5HR									
WHATSHAN	WS5a					3H,4HR									
AM-ARMOUR	AM5,6	Mv	<60			5HR,6HR			-shallow rooting medium, climatic limitations at high elevations	M-L	M	M	L	M	M
KEEFER	KF5,6					5HR									
KOSTAL	KL5,6					5HR									
MULHOLLAND	MO5,6					5HR,6HR									
REMILLARD	RR5,6					5HR,4HR									
SNOOKWA	SA5,6					5HR									
TRIDENT	TT5,6					5HR									
WHATSHAN	WS5,6					4HR									
AN-ARTISAN	See AL-ALLIE														

Table 10 (Cont.)

SOIL ASSOCIATION		LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT											PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
AO-ANEMONE BLAYLOCK CAYENNE GOLDSTREAM HANAKWA ROTTACHER	AO1 BY1 CA1,2 GM1 HW1 RT2	Cb	<30	gsl	M	3M,2S	D,wH,wC,wS	IwH-wC:a	-steep slopes, some rocky rooting medium	M	H-M	L	L	H	H
AO-ANEMONE BLAYLOCK CAYENNE HANAKWA	BY1a,5a CA1a,2a,5a HA1a	Cb	<30			2S,4MR			-some shallow rooting medium	H	M	L-M	L	M	L-M
AO-ANEMONE BLAYLOCK CAYENNE GOLDSTREAM HANAKWA LEAGUE ROTTACHER	AO5,6 BY5,6 CA5,6 GM5,6 HW5,6 LA5,6 RT5	Cv	>30			5RM,4MR			-shallow rooting medium, soil moisture deficiency, steep slopes, some rocky rooting medium	M	H	M	M	H	M-H
AS-AVIS ARGONAUT MAMMOTH MCNOMEE PUKEASHUN WOOLSEY	AS1 AU1,4 MM1,4 MN1,4 PH1,2,3,4 WY1,4	Apt	<10	sil,sl, s,gs, vgs	P(G)	2S,1a 2S 1,2S 1,2S 2S 2M,1	bCo,wS,wH,D	IwH-wC:a	-inundation	H	L	L-M	L-M	M-L	L
AS-AVIS ARGONAUT BYRD CREEK MAMMOTH MCNOMEE PUKEASHUN	AU1a BD1a MM1a MN1a PH1a,4a	Apt	<10			2S 1 1 1 2S			-inundation, occasionally soil moisture excess	H	H	M	L	M	L
AT-ANGLEMONT LAXITY PRINCE VERMELIN	AT1,3,4 LX1,3 PE1 VN1,2,3	Cb	>30	gl,gsl	M-G	4M,3M	D,lP,wH,wS	IwH-wC:a	-steep slopes, soil moisture deficiency, some frost heaving, some rocky rooting medium	M	M-H	M	L	H	H
AT-ANGLEMONT VERMELIN	AT1a,3a,5a VN1a,3a,5a	Cb	<30			4M,3M			-some frost heaving, occasional soil moisture	H	M-H	M	L	M	M
AT-ANGLEMONT LAXITY VERMELIN	AT5,6 LX5,6 VN5,6	Cv	>30			5RM			-shallow rooting medium, steep slopes, soil moisture deficiency, some rocky rooting medium.	L	H	H	M	H	M
AU-ARGONAUT	See AS-AVIS														
BA-BEATON CREEK BIGMOUTH CINNEMOUSEN LUPINE LOST RATCHFORD YEOWARD	BA1 BM1 CN1 LP1,4,7 LT1,4,7 RF1 YW1	Cb	>30	gsl,gl	M	4H 4H 4H 5H,7H 5H,7H 4H,3H 4HM	eS,lP,alF,mH	SAeS-alF:a	- steep slopes, climatic limitations at high elevations, some rocky rooting medium	M	H-M	L-M	L	H	H
BA-BEATON CREEK BONNER CINNEMOUSEN LUPINE LOST RATCHFORD	BA1a,5a BO6a CN1a,4a,5a,6a LP1a,7a LT1a,5a,6a,7a RF5a,6a	Cb	<30			4H 5HR 4H,4HR 5H,7H 5H,5HR,7H 5HR			-climatic limitations at high elevations, some soil moisture excess, some shallow rooting medium	H	H	L-M	L	M	L-M

Table 10 (Cont.)

SOIL ASSOCIATION		LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT											PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
BA-BEATON CREEK BIGMOUTH BONNER CINNEMOUSEN LUPINE LOST RATCHFORD WHITEROSE YEOWARD	BA5,6 BM5,6 BO6 CN5,6 LP5,6 LT5,6 RF5,6 WE6 YW5,6	Cv	>30			5HR 6HR,5HR 6HR,5HR 5HR,4HR 6HR,5HR 5HR,6HR 5HR,6HR 5HR 5HR			-shallow rooting medium, climatic limitations at high elevations, steep slopes	M-L	H	M	M	H	M
BD-BYRD CREEK	See AS-AVIS														
BE-BREWSTER RAYONIER RAIL	BE1 RA1 RL1	O	N/A	N/A	G	7W	non-forested	variable	-excess soil moisture	N/A	N/A	L	L	L	L
BM-BIGMOUTH BO-BONNER BY-BLAYLOCK CA-CAYENNE CC-CLEMENCEAU CD-COPELAND	See BA-BEATON CREEK See BA-BEATON CREEK See AD-ANEMONE See AD-ANEMONE See AD-ADAMANT See AD-ADAMANT														
CL-CANDLE FRISBY SANDFORD SAWTOOTH	CL5,6 FB1,5,6 SD5,6 SW6	Cv	<60	gsl	M-G	7CR	alF	SAeS-alF:b	-climatic limitations at high elevations, shallow and rocky rooting medium	N/A	N/A	M	L	H	M
CL-CANDLE FRISBY SANDFORD	CL1a FB5a,6a SD1a	Cvb	<30			7CR			-climatic limitations at high elevations, soil moisture excess, shallow and rocky rooting medium	N/A	N/A	M	L	M	M-L
CN-CINNEMOUSEN CR-CARNES	See BA-BEATON CREEK See AD-ADAMANT														
CS-MOUNT CUNO GOOSEGRASS GRIFFITH HOSKINS KITSON	CS1,5 GA1,5 GH1,5,6 HK1,5,6 KT1,4,5,6	Cbv	>30	gsl	M-G	7E,7RE	non-forested	IwH-wC:a, ID:a	-unstable soil surface-avalanche path, steep slopes	N/A	N/A	L	L	H	H
D -DUNLEAVY DURRELL	D1,1a,4 DL1,4	Af	<30	gsil, gl	M(G)	5M	D,pP,lP	ID:a,b	-climatic limitations at low elevations, frost heaving	L-M	L	M	L	M	L
DA-DRAGONFLY MURTLE ROSERIM ROUND	DA1 ME2 RM3 RD2,3	Mb	<60	gl,gsl	M-G	5M,4M 3S 4M 3S	lP,wS,D,wH	IwH-wC:a	-soil moisture deficiency, some frost heaving	M-L	L-M	L-M	L	M	M
DA-DRAGONFLY ROUND	DA1a RD1,3a	Mb	<30			4M 3S			-some soil moisture deficiency	M	M	L	L	L-M	L
DA-DRAGONFLY MURTLE ROSERIM ROUND	ME5 RM5 RD5,6	Mv	<60			4MR 4MR 5RM			-shallow rooting medium, some frost heaving, soil moisture deficiency	M-L	M	M	M	M-H	M
DE-DOWNIE TANGIER	DE1 TL1	Mb	<60	gsl	M	4H,3H	eS,mH,alF	SAmH	-climatic limitations at high elevations	M	L-M	M-L	L	M	M
DE-DOWNIE TANGIER	TE1a,5a	Mb	<30			3H			-climatic limitations at high elevations	M	M	L-M	L	L-M	L
DE-DOWNIE TANGIER	DE5,6 TL5,6	Mv	<60			5HR,4HR			-shallow rooting medium, climatic limitations at high elevations	M	M-H	M	L-M	M-H	M

Table 10 (Cont.)

SOIL ASSOCIATION												POTENTIAL SOIL DAMAGE			
NAME	COMPONENT	LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
DL-DORRELL	See D- DUNLEAVY														
DN-DODGEON SPILLMAN DN-DODGEON SPILLMAN	DN1,1a,4 SL2 DN5,6 SL5,6	Cb Cv	>30 >30	gsl,gl	M	3S,3M 5RM,5HR, 4HR	D,eS,wH	IwH-wC:b	-steep slopes -shallow rooting medium, steep slopes	M M-L	M-H H	M M	L L-M	H H	M M
DU-DUNCAN CREEK HUPEL STUKEMAPTEN DU-DUNCAN CREEK HUPEL STUKEMAPTEN	DU1,3 HP1,2,3,4 SP1,3,4 DU1a HP1a,3a SP1a,3a	Af Af	<30 <30	sl,ls,s gs,vgs	P-M	3M,4M 2S	D,lP,wH,wS	IwH-wC:a	-soil moisture deficiency -nothing specific	L-M H	L M	L L-M	M L	L L-M	L L
FB-FRISBY	See GL-CANDLE														
FG-FROG KWIKOIT SAUFF WOLFENDEN FG-FROG KWIKOIT SAUFF WOLFENDEN	FG1,3,4,5 KK1,2,3,4 SF1.2.3 WD1,2 KK1a,3a SF1a,2a,3a WD1a	$A^{G}t$ $A^{G}t$	<60 <30	s,gs,vgs	P	4M,3M 3S	D,lP,wH,wS	IwH-wC:a	-some extreme soil moisture deficiency, low fertility -nothing specific	L M	L L-M	L L-M	M-H L	L-M L-M	L L
FS-FISSURE RUDDOCK FS-FISSURE FS-FISSURE RUDDOCK	FS1 RK1 FS1a FS5,6 RK5,6	Cb Cb Cv	>30 <30 >30	gsl	M	3H,4H 3H 5HR,4HR	eS,mH,alF	SAmH	-climatic limitations at high elevatations, steep slopes -climatic limitations at high elevations -shallow rooting medium, steep slopes, climatic limitations at high elevations	M H M-L	M H-M H	M M H	L L L-M	H M H	H-M L M
GA-GOOSEGRASS GH-GRIFFITH GM-GOLDSTREAM	See CS-MOUNT COND See CS-MOUTH COND See AO-ANEMONE														
GN-GORMAN HOLDICH WAITABIT	GN1,5,6 HH1.4.5.6 WT5	Cvb	>30	gsl	M-G	7RE,7E	non-forested	SAmH,SAeS-alF:a,b	-unstable soil surface-avalanche path, steep slopes	H	N/A	M-H	L-M	H	H-M
GT-GANNETT	See AD-ADAMANT														
H -HEMP HOOLIGAN HEATHROW H -HEMP HOOLIGAN HEATHROW	H1 HO1 HT1 H5,6 HO5,6 HT5,6	Cb Cv	>30 >30	gl,gsl	M-G	5M 5RU,5RM, 6RU		ID:a,b	-climatic limitations at low elevations, steep slopes, soil moisture deficiency, some frost heaving -climatic limitations at low elevations, shallow rooting medium, steep slopes, soil moisture deficiency	L L	M H	M-H H	L L-M	H H	M M
HA-HALLAMORE HA-HALLAMORE	HA1 HA5,6	Cb Cv	>30 >30	gsl,gl	M-G	3S 5RM	eS,lP,D,alF	SAeS-alF:c,a	-steep slopes, some rocky rooting medium, some frost heaving -steep slopes, frost heaving, shallow rooting medium, soil moisture deficiency	M-L L	M-L M	M M	L L-M	H H	M M

Table 10 (Cont.)

SOIL ASSOCIATION						AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT	LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.							PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
HO-HAGGARD HH-HOLDICH HK-HOSKINS HO-HOOLIGAN HP-HUPEL	See AD-ADAMANT See GN-GORMAN See CS-MOUNT COND See H -HEMP See DU-DUNCAN CREEK														
HS-HOBSON MESSITER TSUIUS	HS1,3 MT1,3 TS1,4	Mb	<60	gsl,gl	M-G	3S	D,lP,wH,wS	IwH-wC:a	-some frost heaving	M-L	L-M	M	L	M	M
HS-HOBSON MESSITER TSUIUS	HS1a,3a,5a MT1a,3a,5a TS1a	Mb	<30			2S			-nothing specific	H	M	M	L	L-M	L
HS-HOBSON MESSITER TSUIUS	HS5,6 MT5,6 TS5	Mv	<60			4MR			-shallow rooting medium, some frost heaving	L	M	M	L-M	H-M	M
HT-HEATHROW HW-HANAKWA I -ICE KF-KEEFER KK-KWITOIT KL-KOSTAL KT-KITSON	See H -HEMP See AO-ANEMONE GLACIERS - N/A See AM-ARMOUR See FG-FROG See AM-ARMOUR See CS-MOUNT COND														
KV-KIRBYVILLE WABRON	KV1,4 WN1,2,4	Af	<30	sl,s,gs,vgs	P-M	3M	D,wS,wH,wC	IwH-wC:a	-soil moisture deficiency	M	L	L	M	L	L
KV-KIRBYVILLE WABRON	KV1a WN1a,4a	Af	<30			2S			-nothing specific	H	L-M	L	L-M	L	L
KX-KUSKANAX LA-LEAGUE	See AE-ARGENTINE See AO-ANEMONE														
LH-LICHEN	LH1,3	L^G	<30	sil	G	3MD	D,wS,wH,wC	IwH-wC:a	-frost heaving	M	M	H	L	M	L
LM-LATREMOUILLE SPECTRUM WARSAW	LM1,2 SU1,2,4,5 WW1,2	A^G	<30	s,gs,vgs	P	4HM,3H	eS,lP,alF	SAeS-alF:a,c	-climatic limitations at high elevations, soil moisture deficiency	L-M	L	L	M	L-M	L
LM-LATREMOUILLE SPECTRUM WARSAW	LM1a SU1a,2a,7a WW1a	A^G	<30			3S,3H			-climatic limitations at high elevations	H	M	L	L	L-M	L
LP-LUPINE LT-LOST LX-LAXITY MC-MCLURE ME-MURTLE	See BA-BEATON CREEK See BA-BEATON CREEK See AT-ANGLEMONT See AL-ALLIE See DA-DRAGONFLY														
MH-MOMICH STUBBS SUNSLT SYMUND TUMTUM	MH1 SB1 ST1,2 SY1 TM1	Mb	<60	gsl	M	1,2S,3S	D,wH,wS,wC	IwH-wC:a	-nothing specific	M	L-M	L-M	L	M	M-H
MH-MOMICH STUBBS SUNSLT TUMTUM	MH1a SB5a ST1a,2a,5a TM1a,5a	Mb	<30			1,2S			-some shallow rooting medium	H	M-H	L-M	L	M	L-M

Table 10 (Cont.)

SOIL ASSOCIATION		LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT											PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
MH-MOMICH STUBBS SUNSET SYMOND TUMTUM	MH5,6 SB5,6 ST5,6 SY5 TM5,6	Mv	<60			4MR,5RM			-shallow rooting medium, soil moisture deficiency	M-L	M-H	M	L-M	M-H	H
MM-MAMMOTH	See AS-AVIS														
MN-MCNOMEE	See AS-AVIS														
MU-MULHOLLAND	See AM-ARMOUR														
MT-MESSITER	See HS-HOBSON														
PE-PRINCE	See AT-ANGLEMONT														
PH-PUKEASHUN	See AS-AVIS														
RA-RAYONIER	See BE-BREWSTER														
RD-ROUND	See DA-DRAGONFLY														
RE-RENNIE	RE1,1a	Ap	<15	sil,fsl,s	M-G	5M,4M	D,pP,1P	ID:a,b	-climatic limitations at low elevations, some frost heaving, soil moisture deficiency	L	L	L-M	L	L-M	L
RF-RATCHFORD	See BA-BEATON CREEK														
RK-RUDDOCK	See FS-FISSURE														
RL-RAIL	See BE-BREWSTER														
RM-ROSERIM	See DA-DRAGONFLY														
RO-ROCK OUTCROP	BEDROCK - N/A														
RR-REMILLARD	See AM-ARMOUR														
RT-ROTTACHER	See AD-ANEMONE														
SA-SNOOKWA	See AM-ARMOUR														
SB-STUBBS	See MH-MOMICH														
SD-SANDFORD	See CL-CANDLE														
SE-STRUTHERS SUCCOUR	SE1,3,3a SR1	$A^{G}t$	<30	s,gs,vgs	M	4M,5M,3M	D,pP,1P	ID:a,b	-climatic limitations at low elevations, extreme soil moisture deficiency, low fertility	L	L	L	M-H	L	L
SF-SAUFF	See FG-FROG											M	L	M	M
SK-SASKUM	SK1,6	Mbv	<15	gsl	M	7CR	alF	SAeS-alF:b	-climatic limitations at high elevations, rocky rooting medium, shallow rooting medium	N/A	N/A				
SL-SPILLMAN	See DN-DUDGEON														
SM-SAMATOSUM TSIKUSTUM	SM1,2 TW1,2	Mb	<60	gsl,gl	M-G	3S,3H,2S	D,eS,wH,wC	SAeS-alF:b	-nothing specific	M	M-L	M	L	M	M-L
SM-SAMATOSUM	SM1a,5a,6a	Mb	<30			2S,4MR			-some shallow rooting medium	H	M	L-M	L	L-M	L
SM-SAMATOSUM TSIKUSTUM	SM5,6 TW5,6	Mv	<60			4MR			-shallow rooting medium, soil moisture deficiency	M	M-H	M	L-M	M	M
SO-SORCERER	See AD-ADAMANT														
SP-STUKEMAPTEN	See DU-DUNCAN CREEK														
SR-SUCCOUR	See SE-STRUTHERS														
SS-SUARDS	See AD-ADAMANT														
ST-SUNSET	See MH-MOMICH														
SU-SPECTRUM	See LM-LATREMOUILLE														
SW-SAWTOOTH	See CL-CANDLE														
SY-SYMOND	See MH-MOMICH														
TE-TANGIER	See DE-DOWNIE														
TM-TUMTUM	See MH-MOMICH														

Table 10 (Cont.)

SOIL ASSOCIATION		LANDFORM	SLOPE (PERCENT)	TEXTURE	A.W.S.C.	AVERAGE FOREST CAPABILITY CLASS	SPECIES SUITABILITY	BIOPHYSICAL FOREST ZONATION	POTENTIAL REGENERATION LIMITATIONS	PLANT COMPE-TITION	WIND-THROW HAZARD	POTENTIAL SOIL DAMAGE			
NAME	COMPONENT											PHYSICAL SOIL DAMAGE	ORGANIC MATTER LOSS	SURFACE EROSION HAZARD	MASS MOVEMENT HAZARD
TS-TSUIUS	See HS-HOBSON														
TT-TRIDENT	See AM-ARMOUR														
TW-TSIKUSTUM	See SM-SAMATOSUM														
TY-TROPHY	See AD-ADAMANT														
VN-VERMELIN	See AT-ANGLEMONT														
WB-WEBB	WB1	Cb	>30	gls	P	7R	non-forested	SAeS-alF:c,a	-rocky rooting medium, unstable soil surface-talus slope	L	L	L	H	L	M
WC-WARWICK	See AD-ADAMANT														
WD-WOLFENDEN	See FG-FROG														
WE-WHITEROSE	See BA-BEATON CREEK														
WH-WHIRLPOOL	See AD-ADAMANT														
WN-WABRON	See KV-KIRBYVILLE														
WS-WHATSHAN	See AM-ARMOUR														
WT-WAITABIT	See GN-GORMAN														
WW-WARSAW	See LM-LATREMOUILLE														
WY-WOOLSEY	See AS-AVIS														
YW-YEOWARD	See BA-BEATON CREEK														

3.5 RECREATION INTERPRETATIONS

3.5.1 Introduction

More widespread use of outdoor recreation resources is expected due to the public's increased awareness of their recreational needs. This will necessitate better planning and management of recreational facilities in the future. Recreational activities in the surveyed area are varied because of the favourable climate, lakes and river systems, mountainous topography, and impressive scenery. Sports fishing and hunting are important activities, as is boating, especially house boating on Shuswap Lake. Picnicking and camping, although seasonal, are also important forms of recreation in the area. The potential for hiking and scenic viewing is excellent, with some trails already located in Wells Gray Provincial Park and a road to the krummholz in Mount Revelstoke National Park.

3.5.2 Guide to the Recreation Interpretations

Recreation interpretations for the soil associations and components are given in Table 11. The soil association names are listed alphabetically according to their symbol. Soil associations having similar characteristics to that of the alphabetically listed soil are grouped together, and in turn listed alphabetically according to their symbol.

In planning sites for recreational purposes, such as campsites, tentsites, roads, hiking trails, buildings, playgrounds, or cottages, soil properties should be considered. Soil texture, structure, consistence, depth, stoniness or rockiness, drainage, flooding, permeability, and slope are factors which should be considered in the choice of a suitable recreation site. The same soil property has different effects on various recreational uses, but most soil properties influence all uses.

Coarse sandy soils pose severe limitations for intensive play areas, but only moderate limitations for paths and trails and no limitations for building sites. Fine, clayey soils present severe limitations for almost all recreational uses because they have very slow permeability and are sticky and slippery when wet. Poorly drained soils are also severely limiting for most recreational facilities. The same is true for soils subject to frequent flooding. Droughty soils also have severe limitations for intensive recreational uses, like playgrounds, because it is difficult to establish and maintain a good sod. Stones, cobbles, rocks and gravel also limit soil use for recreation to varying degrees, depending on their quantity and the proposed use.

Steep and very steep slopes are limiting factors for most facilities disregarding other soil properties (scenic trails and paths being an exception). Intensive recreational areas should have sanitary facilities. Soils with poor drainage, slow permeability and shallow depths to bedrock impose severe limitations for septic tank disposal fields.

Level or nearly level soils of sandy loam or loam textures, with good drainage and which are stone and gravel free, would be well suited for most recreational uses. Table 7, in the

engineering section, gives additional interpretations pertinent to recreational uses. The guidelines and interpretations for soil limitations for recreational use are taken from Montgomery and Edminster (1966).

The ability of a soil to produce and maintain natural as well as introduced vegetation is important in maintaining the environmental character of recreational sites. This capability is reflected in the Ecological Damage Hazard rating.

The soils were interpreted for different recreational purposes into three basic ratings, according to limitations imposed by the soil and terrain features as listed in the last column of the table. Limitations and ratings are based on the physical soil properties, without considering other aspects such as aesthetic and economic values, vicinity of lakes, and proximity to the population centres.

A description of the ratings is as follows:

None to slight soil limitations mean that the soil is free of limitations or that limitations such as slight stoniness or gentle slopes can be easily overcome.

Moderate soil limitations indicate that the soil still can be used satisfactorily for a particular purpose with correct planning and good management, but the corrective measures will be somewhat more costlier. The main limitations include: somewhat poor drainage, moderately steep slopes, silty or sandy texture, stoniness, shallower water table, restricted depth, occasional flooding, seepage or ponding, moderately slow permeability.

Severe to very severe soil limitations almost always prohibit the use of the soil for the stated purpose. In certain cases a particular limitation can be overcome, but often only with major reclamation work. Severe limitations include: steep or very steep slopes, high water table, poor drainage, flooding, serious ponding and seepage, unfavourable texture (loose sand, clay), acidity, excessive stoniness and rockiness, shallow depth, very slow permeability and organic deposits.

The Canada Land Inventory's Land Capability for Recreation map for 82M is available for the area. Classification guidelines include Canada Land Inventory (1969) and E.L.U.C. Secretariat (1975).

Table 11

Recreation Interpretations

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
AA-ALLAMORE KEEFER MULHOLLAND TSIKUSTUM	AA1 KF1,4 MO1,7 TW1,2	moderate to severe	moderate to severe	moderate to severe	slight to moderate	moderate to severe	slight to moderate	moderately slow permeability, slopes 10 to 50%, medium to moderately fine textured
AA-ALLAMORE KEEFER MULHOLLAND	AA1a,3a,5a KF1a,2a,5a MO1a,5a	severe	moderate to severe	severe	moderate	severe	slight to moderate	high water table
AA-ALLAMORE KEEFER MULHOLLAND TSIKUSTUM	AA5,6 KF5,6 MO5,6 TW5,6	severe	severe to moderate	severe	moderate to severe	severe	moderate	shallowness to bedrock, bedrock outcrops
AD-ADAMANT COPELAND SOARDS WHIRLPOOL	AD1,5,6 CD5,6 SS1,5,6 WH5,6	very severe	severe	very severe	severe	very severe	severe	alpine, shallowness to bedrock, bedrock outcrop, slopes usually greater than 40%
AE-ARGENTINE FROG KWIKOIT KUSKANAX LATREMOUILLE SAUFF SPECTRUM WOLFENDEN WARSAW	AE1,4 FG1,3,4,5 KK1,2,3,4 KX1 LM1,2 SF1,2,3 SU1,2,4,5 WD1,2 WW1,2	none to moderate	none to moderate	moderate to none	none to slight	none to moderate	slight	coarse textured, rapid permeability, slopes 5 to 50%
AE-ARGENTINE KWIKOIT LATREMOUILLE SAUFF SPECTRUM WOLFENDEN WARSAW	KK1a,3a LM1a SF1a,2a,3a SU1a,2a,7a WD1a WW1a	moderate to severe	moderate	moderate to severe	moderate to slight	moderate to severe	slight	high water table
AL-ALLIE ARTISAN MCLURE	AL1,1a,4 AN1,2,3 MC4	severe to moderate	moderate to severe	severe to moderate	moderate	severe to moderate	slight to moderate	slow permeability, slopes 10 to 50%, medium to moderately fine textured
AL-ALLIE ARTISAN	AL5,6 AN5,6	severe	severe	severe	moderate to severe	severe	moderate	shallowness to bedrock, bedrock outcrops
AM-ARMOUR KOSTAL SNOOKWA SASKUM	AM1,4 KL1 SA1 SK1	moderate to severe	moderate to slight	moderate	slight to none	moderate to severe	slight	slopes 10 to 50%, moderately coarse textured
AM-ARMOUR KOSTAL SNOOKWA	AM1a,5a,6a KL1a,5a,6a SA1a,2a,5a,6a	severe	moderate to severe	severe	moderate	severe	slight to moderate	high water table

Table 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
AM-ARMOUR KOSTAL SNOOKWA SASKUM	AM5,6 KL5,6 SA5,6 SK6	severe to moderate	moderate to severe	moderate to severe	moderate to severe	severe to moderate	moderate to slight	shallowness to bedrock, bedrock outcrop
AN-ARTISAN	See AL-ALLIE							
AO-ANEMONE BEATON CREEK BIGMOUTH BLAYLOCK FISSURE GOLDSTREAM HANAKWA RATCHFORD RUDDOCK	AD1 BA1 BM1 BY1 FS1 GM1 HW1 RF1 RK1	very severe	severe	very severe	severe to moderate	very severe	slight	slopes greater than 40%, moderately coarse textured
AO-ANEMONE BEATON CREEK BONNER BLAYLOCK FISSURE HANAKWA RATCHFORD	BA1a,5a BO6a BY1a,5a FS1a HW1a RF5a,6a	very severe	severe	very severe	severe	very severe	moderate	high water table, shallowness to bedrock
AO-ANEMONE BEATON CREEK BIGMOUTH BONNER BLAYLOCK FISSURE GOLDSTREAM HANAKWA RATCHFORD RUDDOCK WHITEROSE	AO5,6 BA5,6 BM5,6 BO6 BY5,6 FS5,6 GM5,6 HW5,6 RF5,6 RK5,6 WE6	very severe	severe	very severe	severe	very severe	moderate	shallowness to bedrock, bedrock outcrops, coarse fragments
AS-AVIS ARGONAUT MAMMOTH MCNOMEE PUKEASHUN WOOLSEY	AS1 AU1,1a,4 MM1,1a,4 MN1,1a,4 PH1,1a,2,3 WY1,4	moderate to slight	severe	moderate to slight	slight to none	moderate to slight	slight to moderate	seasonal flooding, slopes less than 10%, coarse textured, rapid permeability, some swampy areas
AT-ANGLEMONT LAXITY PRINCE ROTTACHER	AT1,1a,3,3a,4 LX1,3 PE1 RT2	severe	severe to moderate	severe	severe to moderate	severe	slight	slopes greater than 40%, slow permeability, medium textured
AT-ANGLEMONT LEAGUE LAXITY ROTTACHER	AT5,5a,6 LA5,6 LX5,6 RT5	severe	severe	severe	severe to moderate	severe	moderate	shallowness to bedrock, bedrock outcrops, coarse fragments

Tables 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
AU-ARGONAUT	See AS-AVIS							
BA-BEATON CREEK	See AO-ANEMONE							
BY-BYRD CREEK RENNIE	BD1a RE1,1a	severe to moderate	severe	moderate to slight	slight to none	severe to moderate	slight	seasonal flooding, slopes 2 to 10%, high water table, coarse textured, rapid permeability
BE-BREWSTER RAYONIER RAIL	BE1 RA1 RL1	very severe	very severe	very severe	severe	very severe	none	organic, high water table
BM-BIGMOUTH	See AO-ANEMONE							
BO-BONNER	See AO-ANEMONE							
BY-BLAYLOCK	See AO-ANEMONE							
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA1,2 CN1,4 DN1,4 LT1,4 VN1.2.3	severe	severe to moderate	severe	severe to moderate	severe	slight	slopes greater than 40%, moderately coarse textured
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA1a,2a,5a CN1a,4a,5a,6a DN1a LT1a,5a,6a,7a VN1a,3a,5a	severe	severe	severe	severe to moderate	severe	slight	high water table
CA-CAYENNE CINNEMOUSEN DUDGEON LOST VERMELIN	CA5,6 CN5,6 DN5,6 LT5,6 VN5,6	very severe	severe	severe	severe to moderate	very severe	moderate	shallowness to bedrock, rock outcrops, coarse fragments
CC-CLEMENCEAU SORCERER TROPHY	CC1 SO1,4,5 TY1,4	very severe	very severe	severe	moderate to severe	severe	slight to none	slopes greater than 40%, stony, non-vegetated
CD-COPELAND	See AD-ADAMANT							
CL-CANDLE FRISBY SANDFORD SAWTOOTH	CL1a,5,6 FB1,5,6a,6,6a SD1a,5,6 SW6	moderate	severe to moderate	moderate	slight to moderate	moderate	severe to moderate	slopes 10 to 60%, high water table, shallowness to bedrock, bedrock outcrops
CN-CINNEMOUSEN	See CA-CAYENNE							
CR-CARNES GANNETT HAGGARD WEBB WARWICK	CR1,4 GT1,6 HD1 WB1 WC1	very severe	very severe	very severe	severe	very severe	slight to none	avalanching, rock falls, bouldery, slopes greater than 40%

Table 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
CS-MOUNT COND GOOSEGRASS GRIFFITH GORMAN HOLDICH HOSKINS KITSON WAITABIT	CS1,5 GA1,5 GH1,5,6 GN1,5,6 HH1,4,5,6 HK1,5,6 KT1,4,5,6 WT5	very severe	very severe	very severe	severe	very severe	slight	avalanching, shallowness to bedrock, rock outcrops, slopes greater than 40%, coarse fragments
D- DUNLEAVY DORRELL	D1,1a,4 DL1,4	slight to moderate	moderate to slight	moderate	slight to moderate	slight to moderate	moderate	moderately slow permability, medium textured, seasonal high water table, occasional flooding
DA-DRAGONFLY MURTLE MESSITER SAMATOSUM SUNSET	DA1 ME2 MT1,3 SM1,2 ST1,2	moderate to severe	moderate to slight	moderate to severe	slight to moderate	moderate	slight to moderate	slopes 10 to 50%, moderately coarse textured
DA-DRAGONFLY MESSITER SAMATOSUM SUNSET	DA1a MT1a,3a,5a SM1a,2a,5a,6a ST1a,2a,5a	severe	severe to moderate	severe	severe to moderate	severe	moderate	high water table, bedrock outcrops, shallowness to bedrock
DA-DRAGONFLY MURTLE MESSITER SAMATOSUM SUNSET	 ME5 MT5,6 SM5,6 ST5,6	severe	severe to moderate	severe	moderate to severe	moderate to severe	moderate	shallowness to bedrock, bedrock outcrops
DE-DOWNIE MOMICH REMILLARD STUBBS SYMOND TANGIER TUMTUM TRIDENT	DE1 MH1 RR1 SB1 SY1 TE1 TM1 TT1	severe to moderate	moderate to severe	severe	moderate to severe	severe to moderate	slight	slopes 20 to 50%, moderately coarse textured
DE-DOWNIE MOMICH STUBBS TANGIER TUMTUM TRIDENT WHATSHAN	 MH1a SB5a TE1a,5a TM1a,5a TT1a,5a,6a WS5a	very severe	severe	very severe	severe to moderate	very severe	moderate	high water table, shallowness to bedrock

Table 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
DE-DOWNIE MOMICH REMILLARD STUBBS SYMOND TANGIER TUMTUM TRIDENT WHATSHAN	DE5,6 MH5,6 RR5,6 SB5,6 SY5 TE5,6 TM5,6 TT5,6 WS5,6	severe	severe to moderate	severe	moderate to severe	severe	moderate	shallowness to bedrock, bedrock outcrops
DL-DORRELL DN-DUDGEON	See D -DUNLEAVY See CA-CAYENNE							
DU-DUNCAN CREEK HUPEL KIRBYVILLE STUKEMAPTEN WABRON	DU1,3 HP1,2,3,4 KV1,4 SP1,3,4 WM1,2,4	none to moderate	moderate to slight	none to moderate	none to slight	none to moderate	moderate	slopes less than 25%, coarse textured, occasional flooding
DU-DUNCAN CREEK HUPEL KIRBYVILLE STUKEMAPTEN WABRON	DU1a HP1a,3a KV1a SP1a,3a WN1a,4a	severe	moderate	severe	moderate to severe	severe	moderate	high water table
FB-FRISBY FG-FROG FS-FISSURE GA-GOOSEGRASS GH-GRIFFITH GM-GOLDSTREAM GN-GORMAN GT-GANNETT	See CL-CANDLE See AE-ARGENTINE See AO-ANEMONE See CS-MOUNT COND See CS-MOUNT COND See AO-ANEMONE See CS-MOUNT COND See CR-CARNES							
H -HEMP HOOLIGAN HEATHROW	H1 HO1 HT1	severe	severe to moderate	severe	moderate to severe	severe	slight to moderate	slopes greater than 40%, slow permeability
H -HEMP HOOLIGAN HEATHROW	H5,6 HO5,6 HT5,6	severe	severe	severe	severe	severe	severe	shallowness to bedrock, bedrock outcrops
HA-HALLAMORE LUPINE SPILLMAN YEOWARD	HA1 LP1,1a,4,7,7a SL2 YW1	severe	severe to moderate	severe	moderate to severe	severe	slight	slopes greater than 40%, seasonal high water table
HA-HALLAMORE LUPINE SPILLMAN YEOWARD	HA5,6 LP5,6 SL5,6 YW5,6	severe	severe	severe	severe	severe	moderate	shallowness to bedrock, rock outcrop

Table 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
HD-HAGGARD	See CR-CARNES							
HH-HOLDICH	See CS-MOUNT COND							
HK-HOSKINS	See CS-MOUNT COND							
HO-HOOLIGAN	See H -HEMP							
HP-HUPEL	See DU-DUNCAN CREEK							
HS-HOBSON ROUND ROSERIM TSUIUS	HS1,3 RD2,3 RM3 TS1,4	severe to moderate	slight to moderate	severe to moderate	moderate	severe to moderate	slight	slow permeability, slopes 10 to 50%
HS-HOBSON ROUND TSUIUS	HS1a,3a,5a RD1a,3a TS1a	very severe	moderate to severe	very severe	moderate to severe	severe	slight	high water table
HS-HOBSON ROUND ROSERIM TSUIUS	HS5,6 RD5,6 RM5 TS5	severe	moderate	severe	moderate to severe	severe	moderate	shallowness to bedrock, rock outcrops
HT-HEATHROW	See H -HEMP							
HW-HANAKWA	See AO-ANEMONE							
I -ICE (GLACIERS)	Unsuitable							
KF-KEEFER	See AA-ALLAMORE							
KK-KWIKOIT	See AE-ARGENTINE							
KL-KOSTAL	See AM-ARMOUR							
KT-KITSON	See CS-MOUNT COND							
KV-KIRBYVILLE	See DU-DUNCAN CREEK							
KX-KUSKANAX	See AE-ARGENTINE							
LA-LEAGUE	See AT-ANGLEMONT							
LH-LICHEN	LH1,3	moderate	slight to moderate	moderate	moderate to slight	moderate	moderate	slow permeability, slopes less than 15%
LM-LATREMOUILLE	See AE-ARGENTINE							
LP-LUPINE	See HA-HALLAMORE							
LT-LOST	See CA-CAYENNE							
LX-LAXITY	See AT-ANGLEMONT							
MC-MCLURE	See AL-ALLIE							
ME-MURTLE	See DA-DRAGONFLY							
MH-MOMICH	See DE-DOWNIE							
MM-MAMMOTH	See AS-AVIS							
MN-MCNOMEE	See AS-AVIS							
MO-MULHOLLAND	See AA-ALLAMORE							
MT-MESSITER	See DA-DRAGONFLY							
PE-PRINCE	See AT-ANGLEMONT							
PH-PUKEASHUN	See AS-AVIS							
RA-RAYONIER	See BE-BREWSTER							
RO-ROUND	See HS-HOBSON							
RE-RENNIE	See BD-BYRD CREEK							
RF-RATCHFORD	See AO-ANEMONE							
RK-RUDDOCK	See AO-ANEMONE							

Table 11 (Cont.)

SOIL ASSOCIATION		SOIL LIMITATIONS FOR					ECOLOGICAL DAMAGE HAZARD	SOIL AND TERRAIN FEATURES AFFECTING USE
NAME	COMPONENT	CAMP AREAS	BUILDINGS	PLAY AREAS	PATHS & TRAILS	PICNIC AREAS		
RL-RAIL	See BE-BREWSTER							
RM-ROSERIM	See HS-HOBSON							
RO-ROCK OUTCROP	Unsuitable							
RR-REMILLARD	See DE-DOWNIE							
RT-ROTTACHER	See AT-ANGLEMONT							
SA-SNOOKWA	See AM-ARMOUR							
SB-STUBBS	See DE-DOWNIE							
SD-SANDFORD	See CL-CANDLE							
SE-STRUTHERS SUCCOUR	SE1,3,3a SR1	none to moderate	moderate	none to moderate	none to slight	none to moderate	slight	slopes less than 50%, rapid permeability
SF-SAUFF	See AE-ARGENTINE							
SK-SASKUM	See AM-ARMOUR							
SL-SPILLMAN	See HA-HALLAMORE							
SM-SAMATOSUM	See DA-DRAGONFLY							
SO-SORCERER	See CC-CLEMENCEAU							
SP-STUKEMAPTEN	See DU-DUNCAN CREEK							
SR-SUCCOUR	See SE-STRUTHERS							
SS-SOARDS	See AD-ADAMANT							
ST-SUNSET	See DA-DRAGONFLY							
SU-SPECTRUM	See AE-ARGENTINE							
SW-SAWTOOTH	See CL-CANDLE							
SY-SYMOND	See DE-DOWNIE							
TE-TANGIER	See DE-DOWNIE							
TM-TUMTUM	See DE-DOWNIE							
TS-TSUIUS	See HS-HOBSON							
TT-TRIDENT	See DE-DOWNIE							
TW-TSIKUSTUM	See AA-ALLAMORE							
TY-TROPHY	See CC-CLEMENCEAU							
VN-VERMELIN	See CA-CAYENNE							
WB-WEBB	See CR-CARNES							
WC-WARWICK	See CR-CARNES							
WD-WOLFENDEN	See AE-ARGENTINE							
WE-WHITEROSE	See AO-ANEMONE							
WH-WHIRLPOOL	See AD-ADAMANT							
WN-WABRON	See DU-DUNCAN CREEK							
WS-WHATSHAN	See DE-DOWNIE							
WT-WAITABIT	See CS-MOUNT COND							
WW-WARSAW	See AE-ARGENTINE							
WY-WOOLSEY	See AS-AVIS							
YW-YEOWARD	See HA-HALLAMORE							

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