### Appendix 1 — A conversion table for biogeoclimatic units in the Kamloops Forest Region

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### Appendix 2 — Site unit conversion tables

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<td>Aulacomnium palustre</td>
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Balsamorhiza sagittata .................................. arrow-leaved balsamroot
Barbilophozia lycopodioides ............................ common leafy liverwort
Betula glandulosa .................................... scrub birch
Betula occidentalis ................................... water birch
Betula papyrifera ..................................... paper birch
Brachythecium albicans ................................. lawn moss
Bromus tectorum ....................................... cheatgrass
Calamagrostis canadensis .............................. bluejoint
Calamagrostis rubescens ............................... pinegrass
Calochortus macrocarpus ............................... sagebrush mariposa lily
Caltha leptosepala ..................................... white marsh-marigold
Carex aquatilis ....................................... water sedge
Carex concinnoides ................................... northwestern sedge
Carex disperma ....................................... soft-leaved sedge
Carex lanuginosa ..................................... woolly sedge
Carex nigricans ....................................... black alpine sedge
Carex rostrata ........................................ beaked sedge
Cassiope mertensiana .................................. white mountain-heather
Castilleja miniata ..................................... common red paintbrush
Castilleja thompsonii ................................... Thompson's paintbrush
Ceanothus velutinus .................................... snowbrush
Cerastium arvense .................................... field chickweed
Chimaphila umbellata .................................. prince's pine
Chrysothamnus nauseosus .............................. rabbit-brush
Cinna latifolia ......................................... nodding wood-reed
Circaea alpina ......................................... enchanter's nightshade
Clematis ligusticfolia .................................. white clematis
Clematis occidentalis .................................. blue clematis
Clintonia uniflora ..................................... queen's cup
Collinsia parviflora ................................... small-flowered blue-eyed Mary
Collomia linearis ...................................... narrow-leaved collomia
Comandra umbellata ................................... pale comandra
Cornus canadensis .................................... bunchberry
Cornus sericea ......................................... red-osier dogwood
Craataegus douglasii .................................. black hawthorn
Crepis atrabaria ....................................... slender hawksbeard
Cystopteris fragilis .................................... fragile fern
Dactylis glomerata .................................... orchardgrass
Danthonia spicata ..................................... poverty oatgrass
Dichranum fuscescens ................................. curly heron's-bill moss
Disporum hookeri ..................................... Hooker's fairybells
Disporum trachycarpum ............................... rough-fruited fairybells
Distichlis stricta ..................................... alkali saltgrass
Dryopteris assimilis ................................... spiny wood fern
Elaeagnus commutata ........................................ wolf-willow
Elymus cinereus ............................................. giant wildrye
Elymus glaucus ............................................. blue wildrye
Empetrum nigrum ........................................... crowberry
Equisetum arvense .......................................... common horsetail
Equisetum hyemale .......................................... scouring-rush
Equisetum scirpoides ....................................... dwarf scouring-rush
Equisetum sylvaticum ...................................... wood horsetail
Erigeron compositus ....................................... cut-leaved daisy
Erigeron corymbosus ....................................... long-leaved fleabane
Erigeron filifolius ......................................... thread-leaved fleabane
Erigeron linearis ........................................... line-leaved fleabane
Erigeron peregrinus ....................................... subalpine daisy
Erigeron speciosus ........................................ showy fleabane
Eriogonum heracleoides .................................. parsnip-flowered buckwheat
Eriogonum niveum .......................................... snow buckwheat
Eriophorum angustifolium ................................ narrow-leaved cotton-grass
Erophila verna ............................................... spring whitlow-grass
Festuca idahoensis ......................................... Idaho fescue
Festuca occidentalis ...................................... western fescue
Festuca scabrella .......................................... rough fescue
Fragaria vesca ............................................. wood strawberry
Fragaria virginiana ....................................... wild strawberry
Fragaria virginiana ssp. glauca ......................... blue-leaved strawberry
Gaillardia aristata ......................................... brown-eyed Susan
Galium boreale ............................................. northern bedstraw
Galium triflorum .......................................... sweet-scented bedstraw
Geranium viscosissimum ................................ sticky geranium
Geum triflorum ............................................. old man’s whiskers
Goodyera oblongifolia .................................... rattlesnake-plantain
Grindelia squarrosa ...................................... curly-cup gumweed
Gymnocarpium dryopteris ................................ oak fern
Heracleum sphondylium ................................ cow-parsnip
Heuchera cylindrica ...................................... round-leaved alumroot
Hieracium albertinum .................................... western hawkweed
Hieracium albiflorum .................................... white-flowered hawkweed
Hordeum jubatum ......................................... foxtail barley
Hylocomium splendens ................................... step moss
Juncus arcticus ............................................. arctic rush
Juncus mertensianus ssp. gracilis ...................... Nevada rush
Juniperus communis ....................................... common juniper
Juniperus scopulorum .................................... Rocky Mountain juniper
Kalmia microphylla ........................................ alpine bog-laurel
Kalmia microphylla ssp. occidentalis .................. bog-laurel
Larix occidentalis ........................................ western larch
Ledum glandulosum .................................. trapper’s tea
Ledum groenlandicum ............................ Labrador tea
Leptarrhena pyrolifolia ............................ leatherleaf saxifrage
Ligusticum canbyi ..................................... Canby’s lovage
Lilium columbianum ................................. tiger lily
Linnaea borealis ........................................ twinflower
Listera cordata .......................................... heart-leaved twayblade
Lithospermum ruderale .............................. lemonweed
Lomatium dissectum ................................... fern-leaved desert-parsley
Lomatium macrocarpum ............................. large-fruited desert-parsley
Lomatium triternatum ............................... narrow-leaved desert-parsley
Lonicera ciliosa .......................................... western trumpet honeysuckle
Lonicera involucrata ................................. black twinberry
Lonicera utahensis ...................................... Utah honeysuckle
Luetkea pectinata ...................................... partridgefoot
Lupinus arcticus ......................................... arctic lupine
Lupinus sericeus ........................................ silky lupine
Luzula hitchcockii ............................ smooth woodrush
Luzula parviflora ........................................ small-flowered woodrush
Lycopodiunm annotinum ............................. stiff clubmoss
Lysichiton americanum ............................. skunk cabbage
Mahonia aquifolium .................................. tall Oregon-grape
Melampyrum lineare ................................ cow-wheat
Menyanthes trifoliata ............................... buckbean
Menziesia ferruginea ................................ false azalea
Mitella breviri ............................... Brewer’s mitrewort
Mitella nuda ........................................... common mitrewort
Mitella pentandra ..................................... five-stamened mitrewort
Mnium ....................................................... leafy moss
Moneses uniflora ...................................... single delight
Oplopanax horridus ................................ devil’s club
Opuntia fragilis ......................................... brittle prickly-pear cactus
Orthilia secunda ...................................... one-sided wintergreen
Oryzopsis asperifolia ................................ rough-leaved ricegrass
Osmorhiza chilensis ................................ mountain sweet-cicely
Oxytropis campestris ................................ field locoweed
Parnassia fimbriata .................................... fringed grass-of-Parnassus
Paxistima myrsinites ................................ falsebox
Pedicularis bracteosa ................................ bracted lousewort
Pedicularis racemosa ................................. sickletop lousewort
Penstemon confertus ................................ yellow penstemon
Penstemon fruticosus ................................ shrubby penstemon
Penstemon procerus ................................... small-flowered penstemon
Petasites palmenus ........................................ palmate coltsfoot
Phacelia linearis ........................................... thread-leaved phacelia
Philadelphus lewisii .......................................... mock-orange
Phyllodoce empetrifurmis ................................. pink mountain-heather
Phlox longifolia ............................................. long-leaved phlox
Picea engelmannii ........................................... Engelmann spruce
Picea glauca x engelmannii ............................... hybrid white spruce
Pinus albicaulis ............................................. whitebark pine
Pinus contorta var. latifolia .............................. lodgepole pine
Pinus monticola ............................................. western white pine
Pinus ponderosa ............................................ ponderosa pine / yellow pine
Planiago patagonica ........................................ Indian-wheat
Platanthera dilatata ......................................... white bog-orchid
Pleurozium schreberi ....................................... red-stemmed feathermoss
Poa canbyi .................................................. Canby's bluegrass
Poa pratensis ................................................. Kentucky bluegrass
Poa sandbergii ................................................ Sandberg's bluegrass
Polytrichum juniperinum .................................... juniper haircap moss
Polytrichum piliferum ....................................... awned haircap moss
Populus balsamifera ssp. trichocarpa .................... black cottonwood
Populus tremuloides ........................................ trembling aspen
Potentilla diversifolia ....................................... diverse-leaved cinquefoil
Potentilla glandulosa ........................................ sticky cinquefoil
Potentilla gracilis ........................................... graceful cinquefoil
Potentilla palustris .......................................... marsh cinquefoil
Prunus emarginata .......................................... bitter cherry
Prunus virginiana ........................................... choke cherry
Pseudotsuga menziesii var. glauca ......................... interior Douglas-fir
Ptilium crista-castrensis .................................... knight's plume
Pulsatilla occidentalis ..................................... western pasqueflower
Purshia tridentata .......................................... antelope-brush
Pyrola asarifolia ............................................ pink wintergreen
Pyrola chlorantha .......................................... green wintergreen
Ranunculus glaberrimus .................................... sagebrush buttercup
Ranunculus uncinatus ...................................... little buttercup
Rhacomitrium canescens ................................... grey frayed-cap moss
Rhododendron albiflorum ................................ white-flowered rhododendron
Rhus glabra .................................................. sumac
Rhytidiadelphus loreus ..................................... lanky moss
Rhytidiadelphus triquetrus ................................ electrified cat's-tail moss
Rhytidiopsis robusta ........................................ pipecleaner moss
Ribes bracteosum .......................................... stink currant
Ribes cereum ............................................... squaw currant
Ribes lacustre .............................................. black gooseberry
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<th>Common Name</th>
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<td>Rosa woodsii</td>
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<td>Rubus arcticus</td>
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<td>Rubus parviflorus</td>
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<td>Rubus pubescens</td>
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<td>Common Name</td>
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<td>Zigadenus venenosus</td>
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### Appendix 4 — Tree species symbols and schematic figures for the Kamloops Forest Region

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<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Symbol</th>
<th>Schematic</th>
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<table>
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<th>Scientific name</th>
<th>Common name</th>
<th>Symbol</th>
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<tbody>
<tr>
<td><em>Pinus contorta</em></td>
<td>lodgepole pine</td>
<td>Pl</td>
<td></td>
</tr>
<tr>
<td><em>Pinus monticola</em></td>
<td>western white pine</td>
<td>Pw</td>
<td></td>
</tr>
<tr>
<td><em>Pinus ponderosa</em></td>
<td>ponderosa pine</td>
<td>Py</td>
<td></td>
</tr>
<tr>
<td><em>Populus tremuloides</em></td>
<td>trembling aspen</td>
<td>At</td>
<td></td>
</tr>
<tr>
<td><em>Populus balsamifera</em> ssp. trichocarpa*</td>
<td>black cottonwood</td>
<td>Act</td>
<td></td>
</tr>
<tr>
<td><em>Pseudotsuga menziesii</em></td>
<td>Douglas-fir</td>
<td>Fd</td>
<td></td>
</tr>
<tr>
<td><em>Thuja plicata</em></td>
<td>western redcedar</td>
<td>Cw</td>
<td></td>
</tr>
<tr>
<td><em>Tsuga heterophylla</em></td>
<td>western hemlock</td>
<td>Hw</td>
<td></td>
</tr>
<tr>
<td><em>Tsuga mertensiana</em></td>
<td>mountain hemlock</td>
<td>Hm</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 5 — Key for estimating soil texture in the field

Soil texture refers to the relative proportions of sand, silt and clay particles within a soil. These particles, collectively called the fine fraction, are all less than 2 mm in diameter.

Coarse fragments consist of particles greater than 2 mm in diameter. They are estimated visually as a percentage of the whole soil: % coarse fragments + % fine fraction = 100% (total soil).

The names of the various soil texture classes, as shown on the textural triangle, represent combinations of the dominant particle sizes. For example, a soil with 30% sand, 50% clay (and therefore 20% silt) has a clay soil texture. Loams are composed of a relatively even mix of sand, silt and clay.

The relative proportion of fine fraction particles is estimated through the use of their unique properties of "feel". Sand can always be felt as individual grains, but silt and clay generally cannot. Dry silt feels floury and wet silt is slippery or soapy, but not sticky. Clay forms hard lumps when dry, is very sticky when wet, and plastic (like Plasticine) when moist.

Most soils are a mixture of sand, silt and clay, so the graininess, slipperiness or stickiness depends on the proportion of each particle size that is present. As the amount of clay increases, soil particles bind together better and form longer, stronger "worms". As the sand and silt content increases, soil binding strength and stickiness decrease, and only weak to moderately strong worms can be formed.

Key for estimating soil texture in the field (cont'd)

Various tests are available to assist in the field determination of soil texture. These tests should be used in conjunction with the accompanying key.

1. **Graininess Test**: Rub the soil between your fingers. If sand is present, the soil will feel "grainy".
   - **Nongrainy**: Few or no grains can be felt (less than 20% sand).
   - **Slightly grainy**: Some grains can be felt, but non-grainy material (silt and clay) is dominant (20-50% sand).
   - **Grainy**: Sand is the dominant material felt. Some non-grainy material can be felt between sand grains (50-80% sand).
   - **Very grainy**: Sand is the only material that is felt. Little or no non-grainy material is present (greater than 80% sand).

2. **Stickiness Test**: Wet the soil thoroughly and compress between thumb and forefinger. The degree of stickiness is determined by how strongly the soil adheres to the thumb and forefinger after pressure is released, and by how much it stretches. Stickiness increases with clay content.
   - **Nonsticky**: Practically no soil material adheres to the thumb and forefinger (less than 10% clay).
   - **Slightly sticky**: Soil material adheres only to one of the fingers and comes off the other rather cleanly. The soil does not stretch appreciably when fingers are separated (less than 25% clay).
   - **Sticky**: Soil material adheres to both fingers and stretches slightly before breaking when fingers are pulled apart (25-40% clay).
   - **Very sticky**: Soil putty adheres strongly to both fingers and stretches distinctly before breaking (greater than 40% clay).

3. **Worm Test**: Roll some moist soil between the palms of your hands to form the longest, thinnest worm possible. Worms should be rolled to a length of approximately 5 cm. The more clay there is in the soil, the longer, thinner and more durable the worm will be.

4. **Taste Test**: Work a small amount of soil between your front teeth. Silt particles are distinguished as fine "grittiness", unlike sand, which is distinguished as individual grains (i.e. graininess). Clay has absolutely no grittiness at all.
Well decomposed organic matter (humus) imparts silt-like properties to the soil. It feels floury when dry and slippery when moist, but not sticky and not plastic. However, when subjected to the taste test, it feels non-gritty. It is generally very dark when moist or wet, and stains the hands brown or black. Humus-enriched soils often occur on wet sites and on grasslands. Humus is not used as a determinant of soil texture; an estimate of the silt content of any humus-enriched mineral soil should be reduced accordingly.

“Organic” soil samples contain more than 30% organic matter. Soil texture is not determined on organic samples. Most organic soils and deep organic horizons are found on wet sites (often in depressions or on floodplains) and in association with a dense moss cover (frequently Sphagnum spp.).
Key for estimating soil texture in the field (cont'd)

**ORGANIC**
- very dark colour
- non-sticky
- slippery and greasy
- > 30% organic matter

**COARSE**
- some silt or clay (> 15%) can be felt or seen
  - Sand (S)
  - Loamy sand (LS)

**MEDIUM**
- slightly sticky
- worm: weak or ≥ 3 mm diameter
  - Sandy loam (SL)
  - Loam (L)

**FINE**
- slightly sticky to sticky
- worm = 3 mm diameter
- grainy
  - slightly sticky
  - slightly grainy
  - slightly gritty
  - non-grainy
  - gritty
  - very sticky
  - worm < 3 mm diameter
  - very sticky
  - worm ≤ 1.5 mm that does not break when flexed
  - slightly grainy
  - silty clay loam (SiCL)
  - sandy clay loam (SC)
  - clay loam (CL)
  - silty clay loam (SiCL)
  - silty clay (SiC)
  - clay or heavy clay (C or HC)
Appendix 6 — A soil classification key, to the great group level

This key was devised to aid field staff in classifying soils that may occur in the Kamloops Forest Region. Soils may be classified to the order or great group level of the Canadian system of soil classification. Soil horizons important in classifying soils are defined below.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ah</td>
<td>dark-coloured, mineral surface horizon enriched with organic matter</td>
</tr>
<tr>
<td>Ae</td>
<td>light-coloured, near surface horizon from which iron, aluminium, organic matter and clay have been removed.</td>
</tr>
<tr>
<td>Ahe</td>
<td>dark gray-streaked surface horizon enriched with organic matter and depleted of iron and aluminum.</td>
</tr>
<tr>
<td>Bf</td>
<td>dark reddish brown to red subsurface horizon, enriched with iron and aluminium.</td>
</tr>
<tr>
<td>Bhf</td>
<td>reddish brown subsurface horizon, enriched with iron, aluminium and organic matter.</td>
</tr>
<tr>
<td>Bt</td>
<td>brownish subsurface horizon enriched with clay that has moved from a horizon above.</td>
</tr>
<tr>
<td>Bg</td>
<td>horizon with blue-gray colours and/or mottling (rust coloured patches), indicative of permanent or periodic anaerobic saturation (gleyed).</td>
</tr>
<tr>
<td>Bm</td>
<td>brownish subsurface horizon with only slight additions of iron, aluminium or clay.</td>
</tr>
<tr>
<td>j</td>
<td>used with suffixes e, f, g and t to indicate criteria for that suffix are weakly expressed and do not meet specified limits, e.g. Bfj, Btgj.</td>
</tr>
</tbody>
</table>
| Of, Om, Oh  | organic horizons developed mainly from mosses, sedges, rushes and woody materials under poor drainage conditions. The state of decomposition is denoted by:  
  • f - fibric, poorly decomposed  
  • m - mesic, moderately decomposed  
  • h - humus, well decomposed. |

1 After Agriculture Canada Expert Committee on Soil Survey (1987)
A soil classification key, to the great group level (cont’d)

**START**

- **Soil Orders**
  - Organic
  - Saturated

- **Differentiating Characteristic**
  - Of is dominant
  - Of is dominant
  - Om is dominant
  - Oh is dominant

- **Great Groups**
  - Fibrisol
  - Mesisol
  - Humisol
  - Folisol
  - Brown
  - Black
  - Dark Brown

1. **Organic Deposit**
   - a) ≥ 40 cm
   - b) > 10 cm over bedrock
   - c) > 2 times the depth of mineral soil < 20 cm deep

2. **Grassland Community**
   - Ah or Ahe ≥ 10 cm

3. **Has a fluctuating water table or Bg horizon within 50 cm of the surface**
   - Y: Gleysol
   - N: Bt present

4. **Bt Horizon**
   - (a) ≥ 5 cm within 50 cm of the surface
   - or (b) > 50 cm deep and no Bf, Bhf, Bg

5. **Has a Podzolic B Horizon**
   - (Bf, Bhf, ≥ 10 cm)

6. **Has weak development**
   - (Bm, Bfj, Btj, Bgj ≥ 5 cm)

7. **Lacks development**
   - B Horizon ≤ 5 cm
This key assists users in identifying humus forms to either the order or great group level, through the use of readily observable forest floor characteristics. Humus forms are recognized at the great group level because differences at this level reflect site characteristics, which in turn affect operational prescriptions.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ah horizon</td>
<td>a mineral horizon formed at or near the soil surface and enriched with organic matter.</td>
</tr>
<tr>
<td>L horizon</td>
<td>the litter layer, consisting of relatively fresh residues of foliage, twigs, wood and dead moss.</td>
</tr>
<tr>
<td>F horizon</td>
<td>a horizon in which plant residues are partially decomposed.</td>
</tr>
<tr>
<td>H horizon</td>
<td>a horizon dominated by well-decomposed organic material; the original structure is no longer recognizable.</td>
</tr>
<tr>
<td>Fungal mycelia</td>
<td>a mass of thread-like filaments that constitute the “vegetative” phase of fungal development; many are brown, black, grey, white, red or yellow; others are transparent.</td>
</tr>
<tr>
<td>Fibrous</td>
<td>contains an abundance of plant residues which do not break down upon rubbing.</td>
</tr>
</tbody>
</table>

1 After Klinka et al. (1981).
Appendix 8 — A generalized key for identifying parent materials in the Kamloops Forest Region

**START**

- Deposits contain materials coarser than sand (gravels, cobbles, stones and boulders)

  - **Y**
    - Angular coarse fragments; loose deposits; particle size may vary from clay to boulders; often on or at the base of steep slopes; deposited by gravity
    - **N**
      - Rounded to sub-angular coarse fragments; heterogeneous mixture of all particle sizes; may be compacted or loose; deposited by glaciers (till)
    - **Y**
      - Organic material >40 cm thick; formed from decomposing vegetation on saturated sites; bogs, fens and swamps
        - **Y**
          - Eolian (E)
        - **N**
          - Lacustrine (L)
            - **Y**
              - Sorted and layered silts and sands, often interbedded with gravel
            - **N**
              - Deposited recently by streams and rivers (alluvial)
                - **Y**
                  - Deposited by glacial meltwater
                - **N**
                  - Fluvial (F)
        - **Y**
          - Deposited by fluvial (FG)
          - **N**
            - Colluvial (C)
              - **Y**
                - Morainal (M)
                  - **Y**
                    - Bedrock (R)
                    - **N**
                      - N

  - **N**
    - Loose sand or coarse silt; well sorted, not compacted; deposited by wind
      - **Y**
        - Eolian (E)
      - **N**
        - Lacustrine (L)
          - **Y**
            - Sorted and layered silts and sands, often interbedded with gravel
          - **N**
            - Deposited recently by streams and rivers (alluvial)
              - **Y**
                - Deposited by glacial meltwater
              - **N**
                - Fluvial (F)
        - **Y**
          - Deposited by fluvial (FG)
          - **N**
            - Colluvial (C)
              - **Y**
                - Morainal (M)
                  - **Y**
                    - Bedrock (R)
                    - **N**
                      - N

  - **N**
    - Rounded to sub-angular coarse fragments; heterogeneous mixture of all particle sizes; may be compacted or loose; deposited by glaciers (till)
      - **Y**
        - Organic material >40 cm thick; formed from decomposing vegetation on saturated sites; bogs, fens and swamps
          - **Y**
            - Eolian (E)
          - **N**
            - Lacustrine (L)
              - **Y**
                - Sorted and layered silts and sands, often interbedded with gravel
              - **N**
                - Deposited recently by streams and rivers (alluvial)
                  - **Y**
                    - Deposited by glacial meltwater
                  - **N**
                    - Fluvial (F)
            - **Y**
              - Deposited by fluvial (FG)
              - **N**
                - Colluvial (C)
                  - **Y**
                    - Morainal (M)
                      - **Y**
                        - Bedrock (R)
                        - **N**
                          - N

  - **Y**
    - Angular coarse fragments; loose deposits; particle size may vary from clay to boulders; often on or at the base of steep slopes; deposited by gravity

Surface expression subscripts are added to the parent material symbol. The surface expression of parent materials is their form (assemblage of slopes) and pattern of forms. Sub-scripts used in this field guide are:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>blanket: a mantle of material $\geq 1$ m thick.</td>
</tr>
<tr>
<td>v</td>
<td>veneer: material $&lt; 1$ m thick.</td>
</tr>
<tr>
<td>t</td>
<td>terrace: steep sloping scarp face and the horizontal (or gently sloping) surface behind it.</td>
</tr>
<tr>
<td>f</td>
<td>fan: a fan-shaped form, with a gentle gradient from apex to toe.</td>
</tr>
</tbody>
</table>

Landform Description

The combination of parent material and surface expression symbols indicate the landform. Landform expressions may be used alone or in combination, (e.g., Mb, Mv/R, Cv/Mb).

---

1 For more information consult Howes and Kenk (1988).
Appendix 9 — Assessment of soil moisture and nutrient regimes

Soil moisture regime refers to the soil's ability to supply available water for plant growth. Soil nutrient regime is an indication of the soil's ability to supply the essential nutrients required for plant growth. Tables are presented to assist in the identification of soil moisture and nutrient regimes. Important site factors are listed in the left-hand column of each table. These factors are easily determined in the field.

All site factors are defined and can be determined by using the identification tools presented in this guide. Mesoslope positions are illustrated in Figure 6 and defined in Appendix 10. Methods for determining soil texture and coarse fragment content are outlined in Appendix 5. Soil depth and gleying are defined in Appendix 10. A key to humus forms is presented in Appendix 7. A key for identifying bedrock type can be found in Appendix 11.

Site factors are divided into commonly used classes such as the soil texture classes sand (S), loam (L) and clay loam (CL). Each factor has been assigned a numerical value. The range in numerical values reflects the site factor's relative importance or contribution to the particular soil regime. The centre of each table contains factors that have an intermediate influence on moisture and nutrient regime. They have been assigned a value of zero. Those factors on the right-hand side have a positive influence while those on the left have a negative influence.

Make a site assessment by evaluating all site factors listed in each table, assign them a numerical value, and note it in the right-hand column of the table. Total the numerical value and compare it with the predetermined class ranges for each moisture or nutrient regime class. All site factors displayed on the table must be evaluated.

All site factors interact in the assessment process. One factor may override or compensate for another. Site features on the left side of the table may compensate for those on the right. For example, sandy-textured soils may be compensated by the presence of a water table in the moisture regime table, resulting in intermediate conditions.

Two tables are presented for assessment of soil nutrient regime. Non-saturated soils occur on upland sites; saturated soils occur in swamps, bogs and fens with prolonged or permanent saturation.
## Assessment of Soil Moisture Regime

<table>
<thead>
<tr>
<th>Site factors</th>
<th>Factors that reduce available moisture</th>
<th>Intermediate moisture</th>
<th>Factors that increase available moisture</th>
<th>Site assessment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mesoslope position</td>
<td>Crest -15</td>
<td>Middle &amp; Level 0</td>
<td>Lower +3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper -8</td>
<td></td>
<td>Toe +5</td>
<td></td>
</tr>
<tr>
<td>Slope gradient</td>
<td>&gt;60% -4</td>
<td>5-35% 0</td>
<td>0-5% +2</td>
<td></td>
</tr>
<tr>
<td>Gentle slopes</td>
<td>S, SW -2</td>
<td>E, SE 0</td>
<td>N, NE +1</td>
<td></td>
</tr>
<tr>
<td>≤35%</td>
<td>W, NW -1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspect</td>
<td>SW -5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steep slopes</td>
<td>W, S -4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;35%</td>
<td>SE, NW -2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil texture</td>
<td>S -10</td>
<td>SiL, L 0</td>
<td>Si, SCL, CL, SiCL +1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LS -6</td>
<td></td>
<td>SC, SiC, C +2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SL -2</td>
<td></td>
<td>Organic +3</td>
<td></td>
</tr>
<tr>
<td>Coarse fragment content</td>
<td>&gt;85% -10</td>
<td>10-35% 0</td>
<td>0-10% +2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>65-85% -6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35-65% -3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil depth (cm)</td>
<td>0-25 -18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-50 -8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-100 -4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth to water or gleying (cm)</td>
<td>Absent 0</td>
<td>100-150 +5</td>
<td>75-100 +15</td>
<td>50-75 +25</td>
</tr>
</tbody>
</table>

* Totalling the values for each site factor gives an estimate of soil moisture regime.

### Soil moisture regime classes and code

<table>
<thead>
<tr>
<th>Class ranges</th>
<th>Very xeric 0</th>
<th>Xeric 1</th>
<th>Subxeric 2</th>
<th>Submesic 3</th>
<th>Mesic 4</th>
<th>Subhygic 5</th>
<th>Hygric 6</th>
<th>Subhydric 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-32</td>
<td>-32 to -21</td>
<td>-20 to -11</td>
<td>-10 to -5</td>
<td>-4 to +4</td>
<td>+5 to +39</td>
<td>+40 to +70</td>
<td>&gt;70</td>
</tr>
</tbody>
</table>
# Soil Nutrient Regime Assessment For Non-Saturated Sites

<table>
<thead>
<tr>
<th>Site factors</th>
<th>Factors that reduce nutrient status</th>
<th>Intermediate nutrient regime</th>
<th>Factors that increase nutrient status</th>
<th>Site assessment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral soil rooting depth (cm)</td>
<td>&lt;10 10-20 20-35 35-50</td>
<td>&gt;50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil texture</td>
<td>S LS SL</td>
<td>SiL L Si</td>
<td>SCL CL SiCL SC SiC C Organic</td>
<td></td>
</tr>
<tr>
<td>Coarse fragment content</td>
<td>&gt;85% 65-85% 35-65%</td>
<td>10-35% 0</td>
<td>0-10%</td>
<td></td>
</tr>
<tr>
<td>Humus form</td>
<td>MORS Others</td>
<td>MODERS</td>
<td>MULLS Ah&lt;5cm Ah&gt;5cm</td>
<td></td>
</tr>
<tr>
<td>Seepage water</td>
<td></td>
<td></td>
<td>Absent Temporary Continuous</td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Light</td>
<td>Medium Dark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal size</td>
<td>Coarse</td>
<td>Medium Fine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardness</td>
<td>Hard</td>
<td>Medium Soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;2cm thick or mainly 'L'</td>
<td>0</td>
<td>+3 +6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Totalling the values for each site factor gives an estimate of soil nutrient regime.
** For sites with a mixed geologic composition, estimate the mean. Calcareous rock types should be rated +6. Those able to identify geologic rock types may choose to use the rating class outlined in the table, Soil Nutrient Regime Assessment for Saturated Soils, instead of colour, crystal size and hardness.

<table>
<thead>
<tr>
<th>Nutrient regime classes and code</th>
<th>Very poor A</th>
<th>Poor B</th>
<th>Medium C</th>
<th>Rich D</th>
<th>Very rich E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class ranges</td>
<td>≤-11</td>
<td>-10 to -4</td>
<td>-3 to +3</td>
<td>+4 to +8</td>
<td>≥+9</td>
</tr>
</tbody>
</table>
# Soil Nutrient Regime Assessment For Saturated Soils

<table>
<thead>
<tr>
<th>Site factors</th>
<th>Factors that reduce nutrient status</th>
<th>Intermediate nutrient status</th>
<th>Factors that increase nutrient status</th>
<th>Site assessment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologic source of seepage**</td>
<td>Granite Quartzite</td>
<td>Gneiss Granodiorite</td>
<td>Rhyolite Quartz-Diorite</td>
<td>Conglomerate Breccia</td>
</tr>
<tr>
<td>Humus Form</td>
<td>Histomor</td>
<td>Hydromor Histomoder</td>
<td>Hydromoder</td>
<td>Hydromull</td>
</tr>
</tbody>
</table>

* Totalling the values determined for each site factor gives an estimate of soil nutrient regime.
** A key to the identification of common rocks of the Kamloops Forest Region is presented in Appendix 10.

<table>
<thead>
<tr>
<th>Nutrient regime classes and code</th>
<th>Very poor A</th>
<th>Poor B</th>
<th>Medium C</th>
<th>Rich D</th>
<th>Very rich E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class ranges</td>
<td>≤ -5</td>
<td>-2 to -4</td>
<td>-3 to +1</td>
<td>+2 to +4</td>
<td>≥ +5</td>
</tr>
</tbody>
</table>
Appendix 10 — A key to the identification of soil moisture regimes

This key is to assist the user in identifying soil moisture regime using readily observable environmental features. It should be applied with caution on steep south slopes of drier subzones. In such cases, the soil moisture regime class may be one class drier. The soil moisture regime classes, 0–7, shown in the key correspond to the terms very xeric (0) to subhydric (7).^1

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridge crest</td>
<td>height of land; usually convex slope shape.</td>
</tr>
<tr>
<td>Upper slope</td>
<td>the generally convex-shaped, upper portion of a slope.</td>
</tr>
<tr>
<td>Middle slope</td>
<td>the portion of a slope between the upper and lower slopes; the slope shape is generally straight.</td>
</tr>
<tr>
<td>Lower slope</td>
<td>the area towards the base of a slope; the slope shape is usually concave. It includes toe slopes which are generally level areas located directly below and adjacent to the lower slope.</td>
</tr>
<tr>
<td>Flat</td>
<td>any level area (excluding toe slopes); the surface shape is generally horizontal with no significant aspect.</td>
</tr>
<tr>
<td>Alluvium</td>
<td>post-glacial, active floodplain deposits along rivers and streams in valley bottoms; usually a series of low benches and channels.</td>
</tr>
<tr>
<td>Depression</td>
<td>any area that is concave in all directions; usually at the foot of a slope or in flat topography.</td>
</tr>
<tr>
<td>Soil depth</td>
<td>depth from the mineral soil surface to a restricting layer such as bedrock, strongly compacted, or strongly cemented materials (e.g. “hardpan”).</td>
</tr>
<tr>
<td>Gleyed</td>
<td>soils that have orange coloured mottles indicative of a fluctuating water table. Permanently gleyed soils are dull yellowish, blue or olive in colour.</td>
</tr>
<tr>
<td>Soil particle size coarse</td>
<td>sandy^3 with &gt;35% volume of coarse fragments or loamy^3 with &gt;70% volume of coarse fragments.</td>
</tr>
<tr>
<td>Fine texture</td>
<td>silty^3 or clayey^3 with &lt;20% coarse fragment volume.</td>
</tr>
</tbody>
</table>

^1 Adapted from Green et al. (1984).
^2 0 — very xeric, 1 — xeric, 2 — subxeric, 3 — submesic, 4 — mesic, 5 — subhydric, 6 — hydric, 7 — subhydric.
^3 Sandy — LS, S; loamy — SL, L, SCL; clayey — SiCL, CL, SC, SiC, C; silty — SiL, Si.
A key to the identification of soil moisture regimes (cont'd)

RIDGE CRESTS
UPPER SLOPES

- Soil very shallow (<0.5 m)
- N
- Y

- Soil particle size coarse
- N
- Y

- Frequent bedrock exposures
- Y
- N

- Slope > 35% or southerly aspect
- Y
- N

- Soil depth < 1 m or southerly aspect
- Y
- N

MIDDLE SLOPES

- Water table or seepage present or soil gleyed
- Y
- N

- Soil particle size coarse
- Y
- N

- Slope > 35%
- Y
- N

- Soil depth < 1 m
- Y
- N

- Soil depth < 1 m or southerly aspect
- Y
- N

- Soil depth < 1 m
- Y
- N

LOWER SLOPES
AND TOE

- Water table < 30 cm from surface
- Y
- N

- Soil particle size coarse
- Y
- N

FLATS

- Alluvium
- Y
- N

- Soil particle size coarse
- Y
- N

- Soil particle size fine
- Y
- N

- Water table present, or soil gleyed
- Y
- N

- Water table < 30 cm from surface
- Y
- N

DEPRESSIONS

- Water table present, or soil gleyed
- Y
- N

- Water table < 30 cm from surface
- Y
- N

*Drier if aspect in S or SW.
Appendix 11 — Key to the identification of common rocks of the Kamloops Forest Region

Appendix 12 — Physiographic areas of the Kamloops Forest Region

1 After Holland (1976).
It is anticipated that additions and revisions will be made to this publication once the provincial correlation program is complete and additional sampling has been carried out in the Kamloops Forest Region. To ensure that you receive copies of these changes, please write your name and address below and mail this form to:

Regional Research Ecologist
B. C. Ministry of Forests
515 Columbia Street
Kamloops, B.C. V2C 2T7

Please send copies of additions or revisions to “A Guide to Site Identification and Interpretation for the Kamloops Forest Region” to:

Name: ____________________________
Address: __________________________

Comments

Your comments on this publication would be appreciated. Please write your comments, criticisms and suggestions below and overleaf, and mail this form to the above address.