TABLE 8 Environmental characteristics of IDF subzones and variants in the Cariboo Forest Region

	IDFxw	IDFxm	IDFdk1	IDFdk3	IDFdk4	IDFdw	IDFmw
Area (km^2)	362	2373	20	8953	3994	1009	147
Elevation (m)	600–1000	800–1200	800–1350	750–1200	1050–1350	1050–1400	760–900
Climate							
Precipitation (mm)	no data						
Mean annual		392	386	433	355	412	494
Mean summer		203	191	207	171	134	195
Mean winter		190	195	226	213	278	300
Mean annual snowfall (cm)		145	116	231	138	142	153
Temperature (°C)							
Mean annual	3.5	4.0	5.4	3.3	2.8	3.9	7.2
Mean warmest month	15.4	16.0	17.3	14.7	13.6	14.0	18.8
Mean coldest month	-10.2	-11.0	-10.2	-10.3	-10.3	-8.5	-5.4
Frost-free days		163	180	151	122	148	211
Soils							
Zonal soils[a]	O.G.L.	O.G.L.	O.G.L.	O.G.L.	O.G.L.	Br.G.L.	Br.G.L.
Zonal humus form[b]	HR	HR	HR	HR	HR	HR	HR

[a]O.G.L. = Orthic Gray Luvisol; Br.G.L. = Brunisolic Gray Luvisol
[b]HR = HemiMor

Gleysols occur locally in the IDF but organic soils are very uncommon. Seepage volumes are small and, as a result, seepage sites are restricted mostly to narrow bands at the base of long slopes and riparian areas along stream channels.

Subzones and Variants of the IDF Zone in the Cariboo Forest Region

British Columbia has eight subzones of the IDF Zone. These include the seven described by Hope *et al*. (1991) and the IDFdw recognized more recently in the Cariboo Forest Region. Five of these subzones (one with three variants) are present in the Cariboo Forest Region. From driest to wettest they are:

IDFxw - Very Dry Warm IDF Subzone
IDFxm - Very Dry Mild IDF Subzone
IDFdk - Dry Cool IDF Subzone (three variants)
  IDFdk1 - Thompson Variant
  IDFdk3 - Fraser Variant
  IDFdk4 - Chilcotin Variant
IDFdw - Dry Warm IDF Subzone
IDFmw - Moist Warm IDF Subzone
  IDFmw2 - Thompson Variant

IDFxw Subzone The IDFxw includes the driest and warmest portion of the IDF Zone in the Cariboo Forest Region. It occurs primarily in the Kamloops Forest Region and includes only a small area (362 km^2)in the southeastern portion of the Cariboo Forest Region. It borders the Ponderosa Pine Zone and has many similarities to this zone. Mature forests on zonal sites are dominated by Douglas-fir, often in association with ponderosa pine. Ponderosa pine is the principal seral species, dominating some seral stands and occurring as a long-lived seral species in mature Douglas-fir stands. In contrast to most other subzones of the IDF in the Region (except the IDFxm), lodgepole pine is usually absent. Tree species regeneration is almost exclusively Douglas-fir and is typically sparse compared to other subzones of the IDF. The understorey vegetation is dominated by grasses, with the dominant species being pinegrass and bluebunch wheatgrass (Table 9). Very few shrubs are present, giving the stand an open, park-like appearance. This is probably the result of past wildfires and a slower rate of tree regeneration and establishment than in moister subzones.

TABLE 9 IDF vegetation table - zonal sites[a]

	Biogeoclimatic Unit	IDF xw	IDF xm	IDF dk3	IDF dk4	IDF dw	
Tree Layer	*Pinus ponderosa*	▮▮▮					Ponderosa pine
	Pseudotsuga menziesii	▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	Douglas-fir
	Populus tremuloides				▮		trembling aspen
	Pinus contorta			▮▮▮▮	▮▮▮		lodgepole pine
Shrub Layer	*Juniperus communis*	▮					common juniper
	Symphoricarpos albus		▮▮▮				common snowberry
	Rosa acicularis	▮▮	▮▮▮	▮▮▮	▮▮▮	▮▮▮	prickly rose
	Shepherdia canadensis	▮▮▮		▮▮▮	▮▮▮	▮▮▮	soopolallie
	Spiraea betulifolia		▮	▮	▮	▮▮▮	birch-leaved spirea
Herb Layer	*Balsamorhiza saggittata*	▮▮▮					arrow-leaved balsamroot
	Sedum lanceolatum	▮▮					lance-leaved stonecrop
	Elymus spicatus	▮▮▮▮▮	▮				bluebunch wheatgrass
	Allium cernuum	▮▮	▮				nodding onion
	Antennaria spp.	▮▮	▮▮			▮	pussytoes
	Achillea millefolium	▮▮	▮▮		▮▮	▮	yarrow
	Lithospermum ruderale	▮	▮				lemonweed
	Astragalus miser	▮▮	▮▮		▮▮▮	▮	timber milk-vetch
	Arctostaphylos uva-ursi	▮▮▮▮	▮▮▮	▮▮▮	▮▮▮▮▮	▮▮▮	kinnikinnick
	Aster conspicuus	▮▮	▮▮▮	▮▮▮	▮▮▮	▮▮▮	showy aster
	Calamagrostis rubescens	▮▮▮▮▮	▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮	pinegrass
	Fragaria virginiana	▮▮	▮▮	▮▮	▮▮	▮▮	wild strawberry
	Galium boreale	▮	▮▮	▮	▮	▮	northern bedstraw
	Carex concinnoides	▮▮		▮▮▮	▮		northwestern sedge
	Goodyera oblongifolia			▮▮			rattlesnake-plantain
	Vaccinium caespitosum			▮▮▮			dwarf blueberry
	Orthilia secunda			▮▮▮			one-sided wintergreen
	Pyrola chlorantha			▮▮			green wintergreen
	Epilobium angustifolium			▮▮▮	▮		fireweed
	Linnaea borealis			▮▮▮▮	▮▮▮		twinflower
	Arnica cordifolia			▮▮▮	▮	▮▮▮	heart-leaved arnica
	Disporum trachycarpum					▮	rough-fruited fairybells
Moss Layer	*Dicranum polysetum*	▮	▮▮▮	▮▮▮	▮▮▮		wavy-leaved moss
	Cladonia spp.	▮▮▮	▮▮▮	▮▮	▮▮▮	▮▮	cladonia lichens
	Peltigera spp.	▮▮	▮▮▮	▮▮▮	▮▮▮	▮▮▮	pelt lichens
	Pleurozium schreberi		▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	▮	red-stemmed feathermoss
	Hylocomium splendens		▮	▮▮▮	▮		step moss
	Peltigera aphthosa			▮▮▮	▮▮▮		freckle pelt
	Cladina spp.		▮▮	▮	▮▮▮		reindeer lichens

[a]Data are for zonal sites only; IDFdk1 and IDFmw not included due to no data from Cariboo Forest Region.

Species abundance: ▮ present in 40–60% of plots surveyed; ▮▮ >60% of plots, mean cover <1%; ▮▮▮ >60% of plots, mean cover 1–7%; ▮▮▮▮ >60% of plots, mean cover >7–15%; ▮▮▮▮▮ >60% of plots, mean cover >15%

IDFxw
INTERIOR DOUGLAS-FIR VERY DRY WARM SUBZONE

The IDFxw is a small subzone (approximately 362 km^2) that occurs in the Bonaparte River and Loon Lake valleys and in the Fraser River valley south of Big Bar. Most of the subzone is within the Cariboo Forest Region. Elevations are generally 600–1000 m.

Distinguishing Adjacent Units from the IDFxw

The **IDFdk3** occurs at higher elevations on the plateau surrounding the Bonaparte River and Loon Lake valleys and on the slopes of the Edge Hills. The **BGxh3** occurs at elevations below the IDFxw in the Fraser River valley along the west side of the Edge Hills.

In the **IDFdk3**, zonal sites have:
- lodgepole pine;
- twinflower;
- no bluebunch wheatgrass or ponderosa pine.

In the **BGxh3**, zonal sites have:
- grasslands, not forests, as climax vegetation;
- no pinegrass.

Site Units of the IDFxw

Zonal Site Series **01 Fd - Juniper - Bluebunch wheatgrass Site Series** dominates the IDFxw, occupying about 40% of the landscape. Slopes are generally level to gentle but are occasionally moderate to steep. They are vegetated by Douglas-fir forests, often with a minor component of ponderosa pine. Small trembling aspen stands occur locally. The Douglas-fir stands typically have a moderately open canopy and relatively sparse tree regeneration, primarily Douglas-fir. The undergrowth is dominated by grasses, primarily pinegrass and bluebunch wheatgrass, and includes few shrubs.

Drier Sites Due to the abundance of steep slopes associated with valley terrain of the IDFxw, sites drier than zonal sites are common. They occur on moderate to steep slopes and on ridge crests and bedrock

Distribution of IDFxw Subzone in the Cariboo Forest Region

outcrops. Coarse-textured soils are not common. On south aspects, slopes with a gradient greater than about 15% are generally drier than mesic. Dry-site forests typically have a relatively open canopy, which commonly includes scattered ponderosa pine The undergrowth includes several dryland vascular species such as compact selaginella, large-fruited desert-parsley, and round-leaved alumroot. Bluebunch wheatgrass is often abundant.

02 FdPy - Bluebunch wheatgrass - Pinegrass Site Series occurs on localized bedrock outcrops on hill crests and upper slope positions. Soils are generally less than 30 cm deep over bedrock. The forest canopy is typically very open and dominated by Douglas-fir or ponderosa pine. The undergrowth is low-growing and dominated by grasses and other dryland vascular plants and lichens. Common species are compact selaginella, bluebunch wheatgrass, pinegrass, Rocky Mountain fescue, and cladonia lichens.

03 FdPy - Western snowberry - Bluebunch wheatgrass Site Series occurs on very steep (>50%) south- or west-facing slopes. These are among the hottest and driest forested sites in the Cariboo Forest Region. The forest canopy is open and consists primarily of Douglas-fir and ponderosa pine, often growing in patches separated by open areas. Trees are short and growth is slow. The undergrowth includes relatively few species and a high proportion of exposed mineral soil. The undergrowth is dominated by bluebunch wheatgrass and rabbitbrush.

04 FdPy - Bluebunch wheatgrass - Balsamroot Site Series occurs on south and west-facing slopes which are moderate to steep (20–50%) but not as steep as those of IDFxw/03. These are also hot, dry sites. The forest canopy is open and dominated by Douglas-fir and ponderosa pine. Tree regeneration is sparse. The undergrowth includes a greater number of species and has less exposed mineral soil than the /03 site series. It is dominated by grasses (primarily bluebunch wheatgrass) and other dryland species including arrow-leaved balsamroot, lemonweed, and kinnikinnick.

05 Fd - Feathermoss Site Series occurs on very steep (>50%) north- and northeast-facing slopes. They are relatively uncommon and mostly small. The forest canopy is moderately closed and dominated entirely by Douglas-fir. The undergrowth is distinguished by a continuous and relatively thick carpet of mosses, primarily red-

stemmed feathermoss and step moss, but few vascular plants.

Wetter Sites Sites wetter than mesic occupy a relatively small portion of the IDFxw landscape. They occur primarily along stream channels and as narrow bands on lower slopes and depressions near lakes and small wetlands. Seepage slopes are uncommon due to the low seepage volumes in this dry climate. Hybrid white spruce, red-osier dogwood, northern gooseberry, wild sarsaparilla, palmate coltsfoot, and twinflower are among the characteristic species.

06 Sxw - Water birch Site Series occurs on moist lower slopes and seepage-receiving sites, often adjacent to stream channels or wet depressions. Free seepage water is intermittently present near the soil surface, especially in early spring and following heavy rains, but a water table does not occur within 100 cm of the surface. The forest canopy is moderately closed to open and patchy. It consists primarily of hybrid white spruce and scattered large Douglas-fir. The under-growth is relatively shrubby and includes prickly rose, northern gooseberry, and water birch. Moist-site forbs such as wild sarsaparilla and star-flowered false Solomon's-seal are common. These sites are generally small.

07 Sxw - Prickly rose - Coltsfoot Site Series occurs on wet toe slope sites and depressions where a water table is present within 100 cm of the surface throughout the growing season. These sites are very small and uncommon. The forest canopy is moderately open and dominated by hybrid white spruce and scattered large Douglas-fir. The under-growth is shrubby and contains red-osier dogwood, black twinberry, and highbush-cranberry in addition to wet-site herbaceous species such as common horsetail, palmate coltsfoot, and common mitrewort.

Non-forested Sites Most of the IDFxw landscape is forested. However, small grasslands occur on dry south-facing slopes, and small wetlands are common in valley bottoms, often in association with streams and lakes. The grasslands are dominated primarily by bluebunch wheatgrass and rabbit-brush. The wetlands are primarily marshes, shallow open water, and swamps. Moist to dry saline meadows often occur between

the wetlands and the upslope forests.

Key to Site Units of the IDFxw

1a. Moisture regime mesic or drier; hybrid white spruce, twinflower, and star-flowered false Solomon's-seal absent; no evidence of persistent seepage inputs.

2a. Soils very shallow (<25 cm), bedrock near or at surface; slope position crest; moisture regime xeric; muttongrass and compact selaginella present.

IDFxw/02 FdPy - Bluebunch wheatgrass - Pinegrass

2b. Soils deeper, and bedrock not at or near surface; slope position various; moisture regime subxeric to mesic; muttongrass and compact selaginella usually absent.

3a. Slope aspect SE, S, SW, or W.

4a. Slope gradient >50%; soil parent material colluvium; mineral soil exposure >50%; moisture regime subxeric; rabbit-brush present.

IDFxw/03 FdPy - Western snowberry - Bluebunch wheatgrass

4b. Slope gradient <50%; soil parent material not colluvium; mineral soil exposure generally <20%; rabbit-brush absent (occasionally very low amounts in IDFxw/01).

5a. Pinegrass absent; slope gradient generally 20–50%.

IDFxw/04 FdPy - Bluebunch wheatgrass - Balsam root

5b. Pinegrass present; slope gradient generally <20% (rarely to 40%).

IDFxw/01 Fd - Juniper - Bluebunch wheatgrass

3b. Slope aspect NW, N, NE, or E.

6a. Slope gradient >50% **and** slope aspect N or NE.

IDFxw/05 Fd - Feathermoss

6b. Slope gradient <50% or, if steeper, then slope aspect not N or NE.

IDFxw/01 Fd - Juniper - Bluebunch wheatgrass

1b. Moisture regime subhygric or wetter; hybrid white spruce, twinflower, or star-flowered false Solomon's-seal present; evidence of significant seepage inputs present.

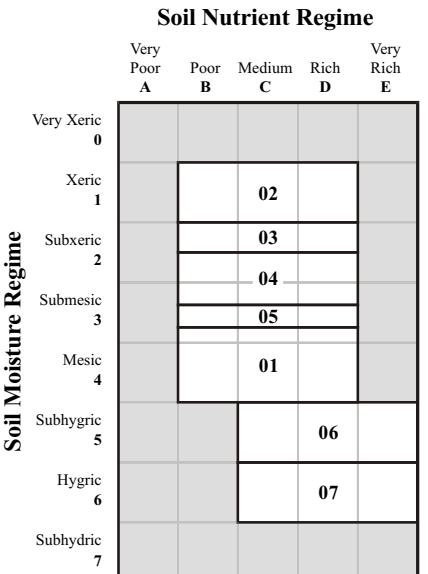
7a. Moisture regime subhygric; slope grade usually >10%; water table generally not within 100 cm of surface; water birch and western meadowrue present; highbush-cranberry, common horsetail, meadow horsetail, and palmate coltsfoot absent or incidental.

IDFxw/06 Sxw - Water birch

7b. Moisture regime hygric or subhydric; slope grade usually <10%; water table present within 100 cm of surface; water birch and western meadowrue absent or incidental; highbush-cranberry, common horsetail, meadow horsetail, and palmate coltsfoot present.

IDFxw/07 Sxw - Prickly rose - Coltsfoot

IDFxw Edatopic Grid



Site Series

01 Fd - Juniper - Bluebunch wheatgrass
02 FdPy - Bluebunch wheatgrass - Pinegrass
03 FdPy - Western snowberry - Bluebunch wheatgrass
04 FdPy - Bluebunch wheatgrass - Balsamroot
05 Fd - Feathermoss
06 Sxw - Water birch
07 Sxw - Prickly rose - Coltsfoot

IDFxw Landscape Profile

Site Features of IDFxw Site Series

Site Series	01	02	03	04
Key Features	zonal and other mesic or submesic sites on gentle, warm slopes and gentle to steep, cool slopes	very shallow (< 25 cm) soils over bedrock on upper and crest slope positions	very steep (> 50%) SE- to W-facing slopes; very hot, dry sites with ravelling soils	moderate to steep (20 - 50%) SE- to W-facing slopes; hot, dry sites
Soil Moisture / Nutrient Regimes	mesic (submesic) / poor - rich	xeric / poor - rich	subxeric / poor - rich	subxeric, submesic / poor - rich
Slope Position	mid, level, lower	crest, upper	upper, mid	upper, mid
Aspect	all	all	SE, S, SW, W	SE, S, SW, W
Slope Grade (%)	0 - 60 (> 20 only on cool aspects)	0 - 15	50 - 75	20 - 50
Soil Texture	gravelly loamy	loamy with near-surface bedrock	gravelly loamy	gravelly loamy
Humus Form and Thickness (cm)	Mormoder, Rhizomull 1 - 5	Rhizomull, Xeromoder 0 - 4	Rhizomull 0 - 3	Rhizomull, Mormoder 1 - 3
Occurrence / Size / Distribution	very common / medium / wide	common / small / wide	uncommon / small / wide	common / medium / wide

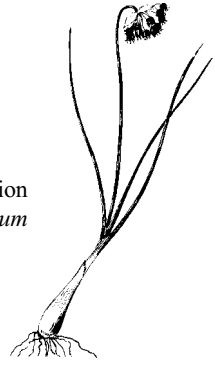
Site Features of IDFxw Site Series (continued)

Site Series	05	06	07
Key Features	steep (> 50%) NE- and N-facing slopes	moist lower slopes without water table within 100 cm; seepage intermittent; often riparian	wet toe slope positions and depressions with water table within 100 cm of surface
Soil Moisture / Nutrient Regimes	submesic / poor - rich	subhygric / medium - very rich	hygric / medium - very rich
Slope Position	upper, mid	lower	toe, depression
Aspect	N, NE, NW, E	all (predominantly NW, N, NE, E)	all
Slope Grade (%)	50 - 70	10 - 60	0 - 5
Soil Texture	gravelly loamy	loamy, sandy	loamy, sandy
Humus Form and Thickness (cm)	Mormoder 2 - 5	Mormoder 1 - 12	Hemimor and Hydromor 1 - 15
Occurrence / Size / Distribution	uncommon / small / wide	uncommon / small / wide	common / small / wide

IDFxw Vegetation Table[a]

	Site Unit	02	03	04	05	01	06	07	
Tree Layer	*Pinus ponderosa*	▮	▮▮▮	▮▮▮▮		▮▮▮			ponderosa pine
	Pseudotsuga menziesii	▮▮▮	▮	▮▮▮▮▮	▮▮▮▮▮	▮▮▮▮▮	▮	▮	Douglas-fir
	Picea engelmannii x *glauca*						▮▮▮▮▮	▮▮▮▮▮	hybrid white spruce
Shrub Layer	*Juniperus scopulorum*	▮▮▮	▮	▮▮▮	▮	▮▮▮	▮		Rocky Mountain juniper
	Rosa acicularis	▮▮	▮			▮▮	▮▮▮	▮▮▮▮	prickly rose
	Chrysothamnus nauseosus		▮▮▮						rabbit-brush
	Shepherdia canadensis			▮		▮▮▮	▮▮		soopolallie
	Betula occidentalis						▮▮▮		water birch
	Ribes oxyacanthoides						▮▮	▮	northern gooseberry
	Cornus stolonifera						▮	▮▮▮	red-osier dogwood
	Lonicera involucrata						▮	▮▮▮	black twinberry
	Viburnum edule							▮▮	highbush-cranberry
Herb Layer	*Selaginella densa*	▮▮▮▮							compact selaginella
	Festuca saximontana	▮▮▮		▮					Rocky Mountain fescue
	Lomatium macrocarpum	▮▮	▮	▮▮					large-fruited desert-parsley
	Penstemon fruticosus	▮▮		▮▮					shrubby penstemon
	Heuchera cylindrica	▮▮			▮				round-leaved alumroot
	Arctostaphylos uva-ursi	▮▮▮		▮▮▮		▮▮▮▮			kinnikinnick
	Allium cernuum	▮▮		▮▮	▮	▮▮			nodding onion
	Lithspermum ruderale		▮▮	▮		▮			lemonweed
	Elymus spicatus	▮▮▮▮▮	▮▮▮▮	▮▮▮▮▮	▮	▮▮▮▮▮			bluebunch wheatgrass
	Balsamorhiza saggittata	▮		▮▮▮		▮▮▮			arrow-leaved balsamroot
	Achillea millefolium	▮▮		▮▮	▮▮	▮▮	▮▮		yarrow
	Calamagrostis rubescens	▮▮▮			▮▮▮▮▮	▮▮▮▮▮		▮▮	pinegrass
	Astragalus miser				▮	▮▮			timber milk-vetch
	Linnaea borealis						▮▮▮	▮▮▮▮▮	twinflower
	Smilacina stellata						▮▮	▮▮	star-flowered false Solomon's-seal
	Geocaulon lividum						▮▮▮	▮	bastard toad-flax
	Aralia nudicaulis						▮	▮▮	wild sarsaparilla
	Orthilia secunda						▮	▮▮	one-sided wintergreen
	Pyrola asarifolia						▮	▮▮▮	pink wintergreen
	Equisetum arvense							▮▮	common horsetail
	Mitella nuda							▮▮	common mitrewort
	Petasites palmatus							▮▮▮	palmate coltsfoot
Moss Layer	*Ceratodon purpureus*	▮▮	▮						fire moss
	Peltigera rufescens	▮▮▮				▮			felt pelt
	Cladonia/Cladina spp.	▮▮▮				▮▮▮			cladonia lichens/reindeer lichens
	Hylocomium splendens				▮▮▮▮▮		▮	▮	step moss
	Pleurozium schreberi				▮▮▮▮▮		▮	▮▮▮▮▮	red-stemmed feathermoss
	Eurhynchium pulchellum						▮	▮▮	

[a] Species abundance: ▮ present in 40–60% of plots surveyed; ▮▮ >60% of plots, mean cover <1%; ▮▮▮ >60% of plots, mean cover 1–7%; ▮▮▮▮ >60% of plots, mean cover >7–15%; ▮▮▮▮▮ >60% of plots, mean cover >15%



Nodding onion
Allium cernuum

Arrow-leaved balsamroot
Balsamorhiza sagittata

IDFxw Silviculture Considerations

Silviculture Practices and Options

Predominant silviculture system in Fd stands on Crown land is currently a faller selection system similar to that in the IDFdk. Stand regeneration is primarily by release of advance regeneration and natural regeneration ingress. Plantation success is generally poor. Salvage of trees killed by Douglas-fir beetle has occurred locally. Harvesting on private land has been primarily diameter-limit harvesting or clearcutting. Percent volume removal in Py stands has been relatively high.

Advance regeneration is primarily Fd with some Py (especially on drier sites), but is generally much less dense than in the IDFdk, probably as a result of the drier climate and resulting drier soils. Due to the drier soils, below-ground competition probably reduces growth at lower stem densities. Advance Fd regeneration is generally of good form and vigour, and its growth responds well to canopy opening. Growth generally increases with increasing sunlight, although stems with thin, non-furrowed bark often suffer sunscald when exposed to sunlight after growing in shade.

Natural restocking is the normal regeneration method in the IDFxm. Survival of planted Fd on cleared areas has generally been poor due primarily to moisture stress.

Principal Insect, Disease, and Abiotic Damage Concerns

Summer frost may limit Fd regeneration on some level terrain at the base of slopes but is generally less severe than in the IDFdk.
Douglas-fir beetle causes frequent mortality of mature Fd, especially those under moisture stress or damaged by logging.
Mountain pine beetle has caused local mortality of mature Py trees.
Western spruce budworm has caused widespread defoliation of Fd.
Laminated root rot and Armillaria root disease kill pockets of Fd stems but are generally less common than in the IDFdk.

Silviculture Considerations Table — Harvest Assumptions

No or limited canopy refers to clearcuts and larger group (generally >50 m wide) selection systems;

Canopy present includes single tree selection and faller selection systems with up to 60% volume removal as well as low-volume small group selection systems where groups of 2–4 trees are felled.

IDFxw Site Series - Silviculture Considerations

Site series	Ecologically adapted tree species	Principal site factors limiting tree establishment and early growth		Vegetation potential and complex
		No or limited canopy	Canopy present	
01	P:Fd Py D:At	***moisture deficits*** **Fd**, Py, At	Fd	low to medium; Pinegrass - bunchgrass •pinegrass cover and vigour generally increases following canopy opening; •pinegrass is strong competitor for soil moisture.
	•most reliable regeneration option for **Fd** and **Py** is release of advance regeneration and ingress of natural regeneration under partial canopy of mature Fd; •advance **Fd** and **Py** regeneration is sparse in many stands; •**Fd** natural regeneration ingress is slow and establishes primarily in shaded microsites but not beneath larger trees; •survival in clearings of planted **Fd** generally poor, and **Py** likely poor to moderate; limited primarily by moisture deficits and competition with grasses; •**At** stems mostly small, and growth relatively slow; •maintenance of soil organic layers and woody debris important for long-term site productivity and regeneration.			
02	P:Fd Py	***moisture deficits*** **Fd**, **Py** ***nutrient deficits (shallow soils)*** ***rooting restrictions (bedrock)***	**Fd**, **Py**	low; Pinegrass - bunchgrass
	•timber productivity very low and stands very difficult to regenerate due to sparse advance regeneration, slow regeneration ingress, and poor plantation survival; •natural regeneration ingress by **Fd** and **Py** slow, and likely best under near-natural canopy levels; •little experience in managing these sites for **Py**; •maintenance of soil organic layers and woody debris important for long-term site productivity and natural regeneration.			

IDFxw Site Series - Silviculture Considerations (continued)

Site series	Ecologically adapted tree species	Principal site factors limiting tree establishment and early growth		Vegetation potential and complex
		No or limited canopy	Canopy present	
03	P:Fd Py	***moisture deficits*** **Fd**, **Py** ***high surface temperatures***	**Fd**, **Py**	low; Dry shrub - bunchgrass •grasses effective competitors for soil moisture.
	•very low timber productivity due to very dry soils; tree canopy typically open and advance regeneration usually sparse; •extremely difficult to regenerate (sparse advance regeneration, limited regeneration ingress, and poor plantation survival); •natural regeneration ingress of **Fd** and **Py** slow, but likely best under near-natural canopy levels; •maintenance of soil organic layers and woody debris important for long-term site productivity and natural regeneration.			
04	P:Fd Py D:At	***moisture deficits*** **Fd**, **Py**, At	Fd, Py, At	low; Dry shrub - bunchgrass •grasses are effective competitors for soil moisture.
	•very low timber productivity, and stands very difficult to regenerate; •survival of planted **Fd** very poor; only reliable regeneration option is release of advance regeneration and natural regeneration ingress under near-natural canopy levels; advance regeneration is often sparse; •maintenance of soil organic layers and woody debris important for long-term site productivity and natural regeneration.			
05	P:Fd D:At	***moisture deficits*** **Fd**, At	Fd	low; Pinegrass - low forb •grasses less abundant that in /03 or /04 units but increase following canopy removal.
	•most reliable regeneration option for **Fd** is release of advance regeneration and ingress of natural regeneration under partial canopy of mature Fd; survival of planted **Fd** likely poor; •competition for moisture from grasses less severe than on /01 sites; •although Pl does not occur naturally on these sites, experience suggests that **Pl** plantations can be initially established; •maintenance of soil organic layers and woody debris important for long-term site productivity and regeneration.			

IDFxw Site Series - Silviculture Considerations (continued)

Site series	Ecologically adapted tree species	Principal site factors limiting tree establishment and early growth		Vegetation potential and complex
		No or limited canopy	Canopy present	
06	P:Fd Sxw D:Act, At Ep	***light deficits (vegetation overtop)*** Fd, **Act**, **At**, **Ep** ***summer frost (toe slopes)*** Fd	Fd, **Act**, **At**, **Ep** ----	medium; Mixed shrub - tall shrub •shrubs and tall herbs relatively abundant and usually increase following tree canopy clearing.
	•survival of planted **Sxw** and **Fd** on cleared areas generally moderate to high if vegetation is controlled or not abundant at planting spot; growth of **Sxw** generally slow, especially on driest parts of site series and in dry years; •frost may limit growth of **Fd** in some years on level sites; •soils very susceptible to compaction and surface erosion.			
07	P:Sxw Fd D:Act At Ep	***light deficits (vegetation overtop)*** Sxw, Fd, **Act**, **At**, **Ep** ***summer frost*** Fd ***cold, moist soils (depressions)*** Fd	Sxw, Fd **Act**, **At**, **Ep** ---- Fd	medium to high; Mixed shrub - rose •shrub and herbaceous vegetation may increase significantly following canopy opening.
	•survival and growth of **Sxw** and **Fd** generally adequate to restock sites if planted promptly; vegetation control will likely improve early growth of **Sxw** and especially **Fd**; •survival and growth of **Sxw** and **Fd** best on relatively warm, moist, but not wet microsites; •natural regeneration ingress generally slow and limited by competing vegetation; •soils are very susceptible to compaction and rutting; •**Sxw** with large, dense crowns exposed to winds by logging are very suceptible to windthrow on these sites.			

TABLE A1.1. Site units (shaded) in the Cariboo Forest Region and their precorrelation equivalents (unshaded).

Current (correlated) BEC unit code												
BEC Unit		Site unit										
		/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	/11
		Equivalent precorrelation code										
	BEC Unit	Ecosystem unit										
AT	AT	(site units not yet described)										
BGxh3	PPBGg	(see Iverson and Coupé 1996a)										
BGxw2	PPBGe	(see Iverson and Coupé 1996b)										
CWHds1	CWHc	see Guide for Vancouver Region (Green and Klinka 1994)										
ESSFdc2	ESSFe1	see Guide for Kamloops Forest Region (Lloyd et al. 1990)										
ESSFwc3	ESSFh2	/01	/02	/03								
ESSFwk1	ESSFh1	/01	/02	/03	/05	/04	/07 in part	/07 in part				
ESSFxc	ESSFd	see Guide for Kamloops Forest Region (Lloyd et al. 1990)										
ESSFxv1	ESSFg, ESSF undif	npe	npe	npe	npe	npe	npe	npe	npe			
ESSFxv2	ESSFg, ESSF undif	npe	npe	npe	npe	npe	npe	npe	npe			
ICHdk	ICHe3	/01	/02	/03	/04	/05	/06	/07	/08	/09		
ICHmk3	ICHe2	/01,/04	/02	/03	/05	/06	/07	/08				
ICHmw3	ICHm1	see Guide for Kamloops Forest Region (Lloyd et al. 1990)										
ICHwk2	ICHh1	/01,/05	/02	/03	/04	/06 in part	/06 in part	/07	/08			
ICHwk4	ICHh2	/01,/06	/02	/03	/04	/05	/07	/08	/09			
IDFdk3	IDFb2	/01	/03	/02	/05	/04	/06	/07	/08	/09, /10		
IDFdk4	IDFb5	/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	
IDFdw	IDFundiff.	npe	npe	npe	npe	npe	npe	npe	npe			
IDFmw2	IDFj1	see Guide for Kamloops Forest Region (Lloyd et al. 1990)										
IDFxm	IDFa4	/01	/02	/03	/04	/05	/06	/07	/08	/09		
IDFxw	IDFa2	/01,/05,/07	/02	/03	/04	/06	/08	/09				

[a]No previous equivalent (npe)

APPENDIX 5
ACTUAL SOIL MOISTURE REGIME RELATIONSHIP TO RELATIVE SOIL MOISTURE REGIME AND BIOGEOCLIMATIC UNIT

BEC				Relative soil moisture regime				
unit	0	1	2	3	4	5	6	7
BGxh3	ED	ED	ED	ED	ED	SD	M	W
BGxw2	ED	ED	ED	ED	ED	SD	M	W
IDFxw	ED	ED	VD	VD	MD	SD	M	W
IDFxm	ED	ED	VD	VD	MD	SD	M	W
SBPSxc	ED	ED	VD	VD	MD	SD	M	W
SBPSdc	ED	ED	VD	MD	SD	F	M-VM	W
SBPSmk	ED	VD	VD	MD	SD	F	M-VM	W
IDFdk3	ED	VD	VD	VD	MD	F	M	W
IDFdk4	ED	VD	VD	VD	MD	F	M	W
IDFdw	ED	VD	VD	MD	MD	F	VM	W
IDFmw2	VD	VD	VD	MD	SD	F	VM	W
MSxk	VD	VD	VD	VD	MD	F	M	W
MSxv	VD	VD	VD	MD	SD	F	VM	W
SBPSmc	VD	VD	VD	MD	SD	F	M-VM	W
SBSdw1	VD	MD	MD	SD	SD	F	M	W
SBSdw2	VD	MD	MD	SD	SD	F	M	W
SBSmh	VD	MD	MD	SD	SD	M	VM	W
SBSmw	VD	MD	MD	SD	F	M	VM	W
SBSmc1	VD	MD	MD	SD	F	M	VM	W
SBSmc2	VD	MD	MD	SD	F	M	VM	W
SBSwk1	VD	MD	SD	F	F	M	VM	W
ICHdk	VD	VD	VD	MD	SD	M	VM	W
ICHmk3	VD	MD	MD	SD	F	M	VM	W
ICHwk2	VD	MD	SD	F	F	M	VM	W
ICHwk4	VD	MD	SD	F	F	M	VM	W
ESSFxv	VD	VD	MD	MD	SD	F	M	W
ESSFdc2	VD	MD	MD	SD	SD-F	M	VM	W
ESSFwk1	MD	MD	SD	F	M	M	VM	W
ESSFwc3	MD	MD	SD	F	M	M	VM	W

Actual Moisture Regime Codes:

ED=extremely dry; VD=very dry; MD=moderately dry; SD=slightly dry; F=fresh; M=moist; VM=very moist; W=wet