

Appendix H. U.S. Forest Service Vegetation Response Unit and Habitat Type Group Descriptions

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U.S. Forest Service Vegetation Response Unit and Habitat Type Group Descriptions

This appendix presents detailed information for Vegetation Response Units (VRUs) and Habitat Type Groups (HTGs) for the South Fork Clearwater River Subbasin. The VRU information was obtained from the *South Fork Clearwater River Landscape Assessment* (USFS 1998). The HTG information was obtained from the document *Biophysical Classification – Habitat Groups and Descriptions 5/96*.

Vegetation Response Units

The VRUs are broad ecological land units that display unique patterns of habitat type groups (potential vegetation) and terrain. A VRU classification and delineation was developed for the South Fork Clearwater River Subbasin. Detailed information for each VRU within the subbasin is provided below.

VRU 1: Convex Slopes, Subalpine Fir

This VRU is common in the South Fork Clearwater River Subbasin at mid and upper elevations. Grand fir and subalpine fir habitat types are dominant.

Historic Conditions

Lodgepole pine was historically dominant in many settings in this VRU. Engelmann spruce, western larch, Douglas fir, and whitebark pine were less common. Wet meadows are important elements of this landscape. The relative proportion of trees by size class was about 5-10% non-forest (non-stocked), 20-30% seedling/sapling, 20-30% pole, 20-30% medium tree, and 5-15% large tree at any given time over this VRU in the subbasin. Old growth was typically limited to moist draw bottoms and north slopes and usually comprised from 10 to 15% of the area.

Large, infrequent (75 to 150 years) severe fires were typical of most settings. Historically, about 700 acres burned per year in the subbasin. About 60-80% of stands originated from stand-replacing fires, and 20-40% from mixed severity fires. Moist lower slopes were most prone to mixed fire. Lodgepole pine, western larch, and Douglas fir sometimes survived one or more fires to form a scattered overstory. Large blocks (500 to 2,000 acres) of pole and medium-size fire-killed trees were typically present at any time within any 10,000 acres of this VRU. Mountain pine beetle activity cycled with fire in lodgepole pine and may have been important in developing fuel conditions that favored stand-replacing fires.

Changes from Historic Conditions –

With advancing forest succession and fire suppression, seral lodgepole pine, western larch, and whitebark pine have declined, and more shade tolerant grand fir and subalpine fir have increased. Lodgepole pine forests have decreased by 12% and Engelmann spruce-subalpine fir forests have increased by 9%. Blister rust has further reduced whitebark pine populations.

Today, only about 70 acres of this VRU burn per year in the subbasin; a 90% decrease. Advancing forest succession has resulted in an 88% reduction in trees in the seedling/sapling structural stage and a 37% increase in trees in the medium and large tree stages. Fire suppression has also resulted in increased stand densities, as shade tolerant understories develop. Harvest has affected about 10% of the area. Recent harvest patterns have replaced large-scale, infrequent burned areas with frequent, small harvested areas more uniformly distributed across watersheds than the historical burned areas. The average harvest unit size is smaller than historic burn patch and there is not as much diversity in frequency of structural stages within subwatersheds. Each watershed is more like other watersheds in terms of the representation of structural stages. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 2: Glaciated Slopes, Subalpine Fir

This VRU is common in the South Fork Clearwater River Subbasin at upper elevations. Subalpine fir and whitebark pine habitat types are dominant.

Historic Conditions

Lodgepole pine, Engelmann spruce, and subalpine fir were historically dominant on side slopes in this VRU. Whitebark pine was important on ridges. Rock outcrops, lakes and wetlands, and montane parklands were important elements of this landscape. The relative proportion of trees by size class was about 10-25% non-forest, 10-30% seedling/sapling, 30-65% pole, and 5-15% medium tree. Old growth was typically limited to moist trough bottoms and open ridges and usually comprised less than 10% of the area.

Historically about 400 acres burned per year in the subbasin. Midslopes tended to experience stand-replacing fires at infrequent intervals (75 to 150 years). Open ridges or moist valley bottoms were more prone to mixed severity fires. Medium blocks (100 to 1,000 acres) of pole-size fires killed trees were often present at any time within 20,000 acres of this VRU.

Changes from Historic Conditions—

With advancing forest succession and fire suppression, seral whitebark pine has declined. Blister rust has further reduced whitebark pine by a total of more than 75%. More shade tolerant Engelmann spruce-subalpine fir forests have increased more than 70%. Today, only about 18 acres burn each year in the subbasin, a 96% decrease. Advancing forest succession has resulted in an 84% decline in non-forest openings, a 71% decline in trees in the seedling/sapling structural stage, a 74% decline in trees in the pole stage, and a 74% increase in trees in the medium and large tree stages. Fire suppression has also resulted in increased stand densities in Engelmann spruce-subalpine fir forests, as shade tolerant understories develop. No recorded harvest has occurred. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 3: Stream Breaklands, Grand Fir and Douglas Fir

This VRU is common at lower to mid elevations in canyons in the South Fork Clearwater River Subbasin.

Historic Conditions

Small to medium blocks (10 to 200 acres) of pole and medium-size fire-killed trees were abundant at any time within any 10,000 acres of this VRU. Old growth pine and western larch, bunchgrass, understories, and rock outcrops are important elements of this landscape. On the VRU as a whole, the relative proportion of trees by size class was about 5-20% non-forest or non-stocked, 5-30% seedling/sapling, 10-20% pole, 20-40% medium tree, and 20-40% large tree.

On south aspects, dry Douglas fir habitat types were dominant. Open stands of large Douglas fir and ponderosa pine were historically common. Low and mixed severity fires occurred at very frequent intervals (5 to 25 years) on south aspects. Here, 60-90% of the stands survived through one or more fires. Ponderosa pine old growth occupied about 40 to 60% of these warm dry sites.

On north aspects, grand fir habitat types were dominant. Grand fir and Douglas fir were common cover types, with ponderosa pine and western larch and sometimes Engelmann spruce or lodgepole pine mixed in. Pacific yew grew on lower slopes. Mixed severity fires were common at frequent intervals (25 to 75 years) on north aspects. About 30-60% of the stands retained 10 or more trees per acre through at least one fire. Twenty to 30% of the stands included at least 10 trees per acre older than 150 years. Ponderosa pine, western larch, Douglas fir, and grand fir formed the old overstory.

Changes from Historic Conditions

With advancing forest succession and fire suppression, ponderosa pine/Douglas fir forests have declined by 13%. Annual grasslands and weedlands have increased. Timber harvest has resulted in a 128% increase in non-forest (non-stocked) openings. Forest succession and fire suppression have resulted in a 33% decline in trees in the seedling/sapling structural stage, an 83% decline in trees in the pole stage, a 36% decrease in trees in the medium tree stage, and a 6% increase in trees in the large tree stage. However, more of the large trees are in mixed conifer and less in open pine stands than before. Timber harvest has affected about 11% of the Forest lands in the subbasin over 50 years. Today, about 255 acres burn annually in the subbasin, a decline of 70%. Prescribed fire on dry south aspects burns an additional 500 to 1,000 acres annually. The ratio of stand replacement harvest to mixed or low severity treatments has been about 60% replacement to 34% less severe treatments. This is probably within the range of natural variability, but harvest has, until recently, favored removal of the fire tolerant overstory pine and retention of understory Douglas fir and grand fir, the reverse of fire disturbance effects. This is a higher ratio of stand replacement than would have occurred under natural disturbance regimes. Total canopy cover appears to have declined. Whether this is due to increased mortality from insects and disease or harvest is uncertain.

Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 4: Rolling Hills, Grand Fir

This VRU is common in the South Fork Clearwater River Subbasin at low and mid elevations. Grand fir habitat types are dominant.

Historic Conditions

Grand fir, Douglas fir, ponderosa pine, and western larch were historically dominant in this VRU. Lodgepole pine and Engelmann spruce were less common. Old growth pine and western larch and meadow complexes were important elements of this landscape. The relative proportion of trees by size class was about 5-10% non-forest, 5-50% seedling/sapling, 10-30% pole, 20-30% medium tree, and 10-50% large tree.

Mixed and stand-replacing fires occurred at moderate intervals. About 50-60% of stands originated from stand-replacing fires and 40-50% experienced mixed and low severity fires. Ponderosa pine, western larch, Douglas fir, and grand fir often survived mixed severity fires to form a scattered overstory of old large trees. Ten to 25% of the stands included at least 10 trees per acre older than 150 years. Small to large blocks (1,100 to 2,000 acres) of pole-size trees to large fire-killed trees were common at any time within any 10,000 acres of this VRU.

Changes from Historic Conditions –

With advancing forest succession and fire suppression, ponderosa pine/Douglas fir forests have declined by 32%. Lodgepole pine forests have decreased by 31%. Grand fir/Douglas fir forests have increased by 43%. Forest succession and fire suppression have resulted in a 33% decline in trees in the seedling/sapling structural stage and a 12% decrease in trees in the large tree stage. The harvest of overstory pines has been most concentrated in this VRU, affecting about 29% of the Forest acres within the last 50 years. Today, about 5 acres burn annually in the subbasin, a decline of 99%. The ratio of stand replacement harvest to mixed or low severity treatments has been about 60% replacement to 40% less severe treatments. This is slightly more replacement than would have occurred under natural disturbance regimes. This is probably within the range of natural variability, but harvest has, until recently, favored removal of the fire tolerant overstory pine and retention of understory Douglas fir and grand fir, the reverse of fire disturbance effects. Total canopy cover appears to be about the same. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 5: Moraines, Subalpine Fir and Grand Fir

This VRU is rare in the South Fork Clearwater River Subbasin at mid to upper elevations. Grand fir and subalpine fir habitat types are dominant. Lodgepole pine and Engelmann spruce are common seral species. Grand fir, Douglas fir, subalpine fir, and western larch are minor components.

Historic Conditions

In swales, Engelmann spruce-subalpine fir old growth was usually extensive between areas where rare, large, stand-replacing fires occurred in this VRU. About 10-20% of stands included at least 10 trees per acre older than 150 years. Wetlands and old growth Engelmann spruce-subalpine fir forests were important elements of this landscape. The relative proportion of trees by size class was about 5% non-forest (non-stocked), 10-40% seedling/sapling, 20-60% pole, 5-30% medium tree, and 3-10% large tree.

Mixed and stand-replacing fires occurred at infrequent intervals. About 35% of the stands originated from stand-replacing fires and 65% experienced mixed or low severity fires. Small to large blocks (100 to 2,000 acres) of pole-size to medium-size fire killed trees occurred occasionally within any 10,000 acres of this VRU.

Changes from Historic Conditions

With advancing forest succession and fire suppression, mixed conifer and Engelmann spruce-subalpine fir forests have increased. It is uncertain if whitebark pine was ever an important component in this area, but it is present now in only very small amounts. Forest succession and fire suppression have resulted in declines in trees in the seedling/sapling and pole structural stages and increases in trees in the medium and large trees stages. Harvest has affected about 19% of the Forest acres within the last 50 years. No acres have burned in the subbasin since fire suppression became effective. The ratio of stand replacement harvest to mixed or low severity treatments has been about 70% replacement to 30% less severe treatments. This is probably more replacement than would have occurred under natural disturbance regimes. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 6: Cold Basins, Grand Fir and Subalpine Fir

This VRU is very common in the subbasin at mid elevations. Grand fir and subalpine fir habitat types are dominant.

Historic Conditions

Lodgepole pine was the dominant seral species in this VRU. Western larch, Douglas fir, and Engelmann spruce were important. Grand fir was important on mesic sites. Whitebark pine was found occasionally. Five to 15% of stands included at least 10 trees per acre older than 150 years. Large disturbances and meadow complexes were important elements of this landscape. The relative proportion of trees by size class was 5-10% non-forest (non-stocked), 10-30% seedling/sapling, 30-45% pole, 20-40% medium tree, and 5-20% large tree.

Medium to large stand-replacing fires occurred at infrequent interval (75 to 150 years). About 60-90% of the stands originated from stand-replacing fires and 10-40% experienced mixed severity fires. Moderate to large blocks (500 to 1,000 acres) of pole-size to medium-size fire-killed trees were common at any time within any 10,000 acres of this VRU.

Changes from Historic Conditions

With advancing forest succession and fire suppression, lodgepole pine has decreased by 23% and more shade tolerant mixed conifer and Engelmann spruce-subalpine fir forests have increased by 30%. Whitebark pine has essentially disappeared as even a minor component. Forest succession and fire suppression have resulted in a 53% decline in trees in the seedling/sapling stage, a 46% decline in trees in the pole structural stage, a 32% increase in trees in the medium tree stage, and a 20% increase in trees in the large tree stage. Riparian meadows appear to have declined either due to forest encroachment or agricultural conversion. Harvest has affected about 18% of the Forest acres within the last 50 years. About 13 acres have burned annually in the subbasin since fire suppression became effective, a decline of about 99%. The ratio of stand replacement harvest to mixed or low severity treatments has been about 70% replacement to 30% less severe treatments. This is probably within the range of what would have occurred under natural disturbance regimes. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 7: Moist Uplands, Grand Fir and Pacific Yew

This VRU is common in the subbasin at mid elevations, but quite rare elsewhere in northern Idaho. Mesic grand fir habitat types are dominant and Pacific yew phases are common.

Historic Conditions

Grand fir, Douglas fir, and Pacific yew were the dominant species in this VRU. Western larch, Engelmann spruce, and lodgepole pine were less common. Old overstory trees (grand fir, western larch, Douglas fir, Engelmann spruce, and lodgepole pine) were common. About 30-40% of stands had 10 or more trees per acre older than 150 years. Two or more age classes were common. Pacific yew and mesic old growth were important elements of this landscape. The relative proportion of trees by size class was about 1 – 10% non-forest (non-stocked), 5-20% seedling/sapling, 10-25% pole, 25-35% medium tree, and 35-45% large tree.

Small to medium fires of mixed severity occurred at infrequent intervals (75 to 150 years). Large stand-replacing fires occurred more infrequently. About 60% of the stands experienced mixed severity fires and about 40% originated from stand-replacing fires. Small and scattered blocks (5-100 acres) and infrequent large blocks of fire-killed medium and large trees occurred occasionally within any 10,000 acres of this VRU.

Changes from Historic Conditions

With harvest and planting, Douglas fir/ponderosa pine forests have increased 107%. Upland and riparian shrublands have declined. Forest succession and fire suppression have resulted in a 57% decline in trees in the seedling/sapling stage, a 45% decline in trees in the pole structural stage, and a 22% increase in trees in the large tree stage. Harvest has affected about 28% of the Forest acres within the last 50 years. About 5 acres have burned annually in the subbasin since fire suppression became effective, a decline of about 99%. The ratio of stand replacement harvest to mixed or low severity treatments has been about 70% replacement to

30% less severe treatments. This relative proportion of stand replacement is higher than would have occurred under natural disturbance regimes. Due to fire suppression, snag patches that result from large fires are no longer created.

VRU 8: Stream Breaklands, Cedar and Grand Fir

This VRU is rare in the subbasin, but is common north of the subbasin at low and mid elevations. Moist grand fir and cedar habitat types are dominant.

Historic Conditions

Grand fir and Douglas fir were the dominant species in this VRU. Western larch, western redcedar, western white pine, Engelmann spruce, and Pacific yew were less common. Ponderosa pine and lodgepole pine were minor species. Old overstory trees (Douglas fir, western larch, grand fir, and occasionally ponderosa pine) were common on ridges and lower slopes. About 10-15% of stands had 10 or more trees per acre older than 150 years. Coastal disjunct plant species, early seral tall shrub and hardwood communities, and cedar old growth along major streams were important elements of this landscape. The relative proportion of trees by size class was about 5-20% non-forest (non-stocked), 5-30% seedling/sapling, 10-20% pole, 30-50% medium tree, and 20-30% large tree.

Small to medium fires occurred at moderate intervals (25-75 years) and large stand-replacing fires occurred at infrequent intervals (75 to 150 years). About 40-50% of stands experienced mixed severity fires, and 50-60% of stands originated from stand-replacing fires. Small and scattered blocks (5-100 acres) of fire-killed medium-size and large trees were common at any time within any 10,000 acres of this VRU, and large blocks (500 to 1,000 acres) occurred from time to time.

Changes from Historic Conditions

This VRU is poorly represented in the subbasin and only a few trends can be seen. Western white pine has almost disappeared because of blister rust and forest succession. Shrubs, hardwoods, trees in the seedling/sapling stage, and trees in the pole structural stage have probably declined. Trees in the medium and large tree stages have increased. Harvest has affected 2% of the acres. No acres have burned in the subbasin since fire suppression has become effective, a decline of 100%. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

VRU 9: Glaciated Slopes, Subalpine Fir and Whitebark Pine

This VRU is rare in the subbasin, at highest elevations, but is more common to the south and east of the subbasin. Cold subalpine fir and whitebark pine habitat types are dominant.

Historic Conditions

This VRU was the major stronghold of whitebark pine. Subalpine fir, Engelmann spruce, and lodgepole pine were also common. Old whitebark pine or lodgepole pine were common on rock outcrops and open ridges. About 5-15% of the stands had 10 or more trees per acre older than 150 years. Whitebark pine and open alpine communities were important elements of this landscape. The relative proportion of trees by size class was 30-40% non-forest (non-stocked), 10-30% seedling/sapling, 15-60% pole, 1-10% medium tree, and 1% or less large tree.

Mixed severity fires occurred at moderate and infrequent intervals (25 to 10 years). About 40-60% of the stands experienced mixed severity fires and 40-60% of the stands originated from stand-replacing fires. Small to moderate blocks (50-200 acres) of fire-killed trees were common at any one time in any 10,000 acres of this VRU.

Changes from Historic Conditions

Some conclusions are based on limited data from neighboring watersheds. Anecdotal information suggests that similar changes have occurred in the subbasin. With advancing forest succession, fire suppression, and blister rust, whitebark pine has declined by 69%, and more shade tolerant Engelmann spruce-subalpine fir forests have increased by 190%. Today, only about 12 acres burn per year in the subbasin, a 90% decrease. Advancing forest succession has resulted in a 62% reduction in trees in the seedling/sapling structural stage, a 72% decline in trees in the pole stage, and a 4200% increase in trees in the medium tree stage. No recorded harvest has occurred. Due to fire suppression, snag patches that result from large fires are no longer created.

VRU 10: Uplands, Alder, Grand Fir and Subalpine Fir Habitat Types

This VRU is common in the South Fork Clearwater River Subbasin, but rare to the south. It is also called the grand fir mosaic. Mesic grand fir, subalpine fir, and alder habitat types are dominant.

Historic Conditions

Grand fir, Engelmann spruce, subalpine fir, and Sitka alder were historically important cover types in this VRU. Douglas fir, western larch, lodgepole pine, and Pacific yew were common on ridges. About 15-30% of the stands had 10 or more trees per acre older than 150 years. Open canopied and multi-aged old growth and tall shrub communities were important elements of this landscape. The relative proportion of trees by size class was 10-25% non-forest, 15-25% seedling/sapling, 20-30% pole, 25-40% medium tree, and 15-25% large tree.

Small fires occurred frequently, but mixed severity infrequent fires were typical. Stand-replacing fires were usually confined to ridges. About 40-60% of the stands experienced mixed severity fires and 40-60% of stands originated from stand-replacing fires. Small

blocks (5-50 acres) of fire-killed medium-size and large trees were common at any one time in any 10,000 acres of this VRU.

Changes from Historic Conditions

With forest succession and fire suppression, shrublands have declined 77%. Other changes in cover type have been minor. Forest succession and fire suppression have resulted in a 91% decline in trees in the seedling/sapling stage, a 63% decline in trees in the pole structural stage, a 25% increase in trees in the medium tree stage, and a 147% increase in trees in the large tree stage. Harvest has affected about 4% of the Forest acres within the last 50 years. About 2 acres have burned annually since fire suppression became effective, a decline of about 99%. The ratio of stand replacement harvest to mixed or low severity treatments has been about 80% replacement to 20% less severe treatments. This relative proportion of stand replacement is higher than what would have occurred under natural disturbance regimes. Due to fire suppression, snag patches that result from large fires are no longer created.

VRU 12: Stream Breaklands, Bunchgrass and Shrubland

This VRU is rare on National Forest lands in the subbasin, but is common in the lower canyon on private lands. Bluebunch wheatgrass and Idaho fescue habitat types are dominant, and shrubland habitat types are common.

Historic Conditions

Bluebunch wheatgrass and Idaho fescue were historically important. Shrublands occupied draws or lower slopes. Very frequent (5-25 years) low severity fires maintained open grasslands and rejuvenated shrublands.

Changes from Historic Conditions

This VRU is poorly represented on Forest lands. On all lands, only general trends are indicated. Disturbed grasslands (annuals and weeds) and pasture have replaced native perennials over more than 50% of their prior extent. Upland shrublands have increased as much as 100% due to fire suppression and brush invasions of former grasslands. About 2 acres have burned annually on National Forest lands in the subbasin since fire suppression became effective, a decline of about 82%.

VRU 16: Plateaus, Bunchgrass and Shrubland

This VRU occurs only on non-National Forest lands. Bluebunch wheatgrass, Idaho fescue, and shrubland habitat types are common.

Historic Conditions

Bluebunch wheatgrass and Idaho fescue were historically important on this VRU. Shrublands occupied draws, lower slopes, and north aspects. Very frequent (5-25 years) low severity fires maintained open grasslands and rejuvenated shrublands.

Changes from Historic Conditions

On all lands, only general trends can be seen. Annual cropland has replaced native perennials over more than 80% of their prior extent. Hayland and pasture have largely replaced the remaining native prairie. Upland shrublands have probably also decreased. Fire incidence has certainly declined, but to what extent is unknown.

VRU 17: Rolling Hills, Cedar and Grand Fir

This VRU is rare in the South Fork Clearwater River Subbasin. Mesic grand fir and western redcedar habitat types are dominant.

Historic Conditions

Grand fir and Douglas fir were historically important cover types on this VRU. Western redcedar, western white pine, western larch, Engelmann spruce, and ponderosa pine were less common. About 20-35% of the stands had 10 or more trees per acre older than 150 years. Ridge top groves of large old cedar and grand fir old growth and early seral tall shrub communities were important elements of this landscape. The relative proportion of trees by size class was 10-25% non-forest, 15-25% seedling/sapling, 20-30% pole, 20-35% medium tree, and 15-40% large tree.

Small fires occurred frequently, but mixed severity infrequent (75 to 150 years) fires were typical. About 40-60% of the stands originated from mixed severity fires and 40-60% of the stands originated from stand-replacing fires. Moderate sized blocks (50-500 acres) of fire-killed medium-size and large trees were common at any one time in any 10,000 acres of this VRU.

Changes from Historic Conditions

This VRU is poorly represented in the subbasin and only a few trends can be seen. Western white pine has virtually disappeared due to blister rust and forest succession. Shrubs, hardwoods, trees in the seedling/sapling structural stage, and trees in the pole structural stage have probably declined. Trees in the medium and large tree stages have increased, but numbers of the largest old trees may have been reduced by harvest. Harvest has affected 11% of the acres. The ratio of replacement treatment to less severe treatments has been about 100% replacement. This is well above the historic ratio. No acres have burned in the subbasin since fire suppression has become effective, a decline of 100%. Due to fire suppression, extensive snag patches that result from large fires are no longer created.

Habitat Type Groups

Habitat type grouping is based on similarities in natural disturbance regimes, successional patterns, and structural characteristics of mature stands. The HTGs are intended to assist with subregional and landscape assessments. The HTGs are separated into forest and non-forest categories. Table H-1 presents vegetation conditions expected for non-forest HTGs and Table H-2 presents vegetation conditions expected for forest HTGs. A detailed description of HTGs is presented below.

Forested Habitat Type Groups and Descriptions

HTG #1 - Warm and Dry - *Pinus ponderosa* Types or *Pseudotsuga menziesii*/Grass Types

This HTG is characterized in naturally functioning ecosystems by dry and open-grown park-like stands of *Pinus ponderosa* or *Pseudotsuga menziesii* with bunch grass understories. Most of the sites occur on hot and dry landscapes at low elevations and on west and south aspects. A natural fire-free interval of 5 to 25 years on these sites maintained these open-grown park-like stands (Fischer 1987). These fires were low severity, under-burning fires. Stand replacement fires were probably rare.

HTG #2 - Moderately Warm and Dry - Most *Pseudotsuga menziesii* Types and Dry *Abies grandis* Types

These habitat types are characterized in naturally functioning ecosystems by open-grown stands of *Pinus ponderosa* or *Pseudotsuga menziesii* with grass and brush understories. Most of the sites normally occur at lower elevations on many aspects, but are also found at higher elevation on more southerly and westerly aspects. The natural fire-free interval for under-burning was historically 5 to 50 years (Fischer 1987). The mostly low- and moderate-severity fires maintained open, park-like stands dominated by *Pinus ponderosa*. In some cases, stand composition was also high in *Pseudotsuga menziesii* and *Larix occidentalis*. Little information is available on stand-replacing fires, but these severe intensity fires occurred only after a fire-free interval probably exceeding 500 years on dry land types and 50-200 years on moist land types (Smith 1995).

HTG #3 - Moderately Warm and Moderately Dry - *Pseudotsuga menziesii* with *Linnaea borealis* Understory and Most *Abies grandis* Types

This HTG contains a highly variable group of habitat types. The group is a transition type between the dry and moist habitat types. It includes types characteristic of each. These habitat types were characterized in naturally functioning ecosystems by mixed species stands of *Pinus ponderosa*, *Pseudotsuga menziesii*, *Larix occidentalis*, *Pinus contorta*, and *Abies grandis*. Understories in absence of fire or other disturbance are composed primarily of dense *Pseudotsuga menziesii* or *Abies grandis* thickets, though other tree species may be present. The natural fire-free interval for under-burning was 15 to 50 years. Mixed intensities of moderate and severe fires commonly created mosaics of even-aged stands with

survivor individuals and groups of trees (Smith 1995). Also common in this HTG are open, park-like stands dominated by *Pinus ponderosa*, *Larix occidentalis*, and *Pseudotsuga menziesii*.

HTG #4 - Moderately Warm and Moist - *Abies grandis* *Asarum* and *Clintonia* Types

These are warm and moist habitats that occur along the lower slopes and valley bottoms. The group is highly diverse and nearly all the conifer species in the area can occur in this HTG. Understory vegetation may be dominated by a wide variety of species. The fire-free interval is wide, from 50 years for the drier types to over 200 years for the more moist types. Typical fires are minor ground fires that create a mosaic within the stand. On the other extreme, with drying, a complete stand replacement fire can occur. Many times this is the result of a fire burning from an adjacent and drier type. Fire exclusion on these sites has changed them very little except to reduce the number of acres in early succession types.

HTG #5 - Moderately Cool and Moist - *Thuja plicata* and *Tsuga heterophylla* *Asarum* and *Clintonia* Types

These are moderately cool and moist sites. They contain many species, including *Thuja plicata*, western *Tsuga heterophylla*, *Pseudotsuga menziesii*, *Picea engelmannii*, *Abies grandis*, *Pinus contorta*, *Tsuga mertensiana*, *Larix occidentalis*, and *Pinus monticola*. Very high basal areas can be achieved on these types. Fire frequency is low due to the maritime influence on these sites. Fire severity can be highly variable due the common moist conditions, but can be severe during periods of drought. Fire-free intervals range from 50 to greater than 200 years (Fischer 1987). Many species do well on these sites and may thrive for centuries without disturbance. *Thuja plicata* is the most notable example.

HTG #6 - Moderately Cool and Wet - *Thuja plicata* *Athyrium*, *Oplopanax*, and *Adiantum* Types

These are very wet sites. They are forested riparian areas along streams and are associated with wetlands. Due to these very wet conditions, the fire-free interval can be very long. Intervals are probably much longer than the majority of fire group eleven, 50 to greater than 200 years. Centuries may pass without severe, stand-replacing fires (Smith 1995).

HTG #7 - Cool and Moist - *Clintonia* and *Menziesia* Types

These types are characterized by cool and moist site conditions. Species diversity can be high with *Larix occidentalis*, *Pseudotsuga menziesii*, *Pinus monticola*, *Picea Engelmannii*, *Pinus contorta*, *Abies lasiocarpa*, and *Abies grandis*. Other sites are dominated by *Pinus contorta* after stand-replacing burns. These sites are probably too cool for *Tsuga heterophylla* and *Thuja plicata*. Fire history information is scarce. Fire intervals are estimated at greater than 120 years for most sites (Fischer 1987).

HTG #8 - Cool and Wet - *Calamagrostis canadensis*, *Equisetum*, *Galium*, and *Streptopus*

These are very wet sites. They are forested riparian areas along streams and associated with wetlands. Due to these very wet conditions, the fire-free interval can be very long. Intervals between severe, stand-replacing fires are probably much longer than the majority of fire group nine (90 to 130 years) and are probably in excess of 150 years.

HTG #9 - Cool and Moderately Dry - Cooler *Abies lasiocarpa* and *Pinus contorta* Types

These are the cooler *Abies lasiocarpa* habitat types within the area. The fire-free interval of these types is 50-130 years (Fischer 1987). These periodic fire disturbances and the high number of moderate- to high-intensity fires favor species such as *Pinus contorta*, *Pseudotsuga menziesii*, and *Larix occidentalis*. Other species on these sites are commonly *Abies lasiocarpa*, *Picea*, and *Pinus albicaulis*. Stands dominated by *Pinus contorta* and over 80 years of age tend to build fuels to become a part of large stand-replacing fire events encompassing thousands of acres (Fischer 1987). These sites, especially in the *Vaccinium caespitosum* and *scoparium* types, are quite frosty.

HTG #10 - Cold and Moderately Dry - *Vaccinium scoparium* and *Luzula* Types

These types are upper elevation, cold, dry sites. Many of these sites are above the cold limits of conifers such as *Pseudotsuga menziesii*, *Larix occidentalis*, and *Pinus monticola*. Common species are *Pinus albicaulis*, *Pinus contorta*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Larix lyallii*. The fire-free interval varies considerably from 35 to over 300 years. Stand-replacing fires occur after intervals of more than 200 years (Fischer et al. 1987). Most fires are of low severity because of discontinuous fuels (Arno 1989).

HTG #11 - Cold - High elevation *Pinus albicaulis* and *Abies lasiocarpa* Types

These types are cold, high elevation sites. They are near timberline and above the cold limits of species such as *Pseudotsuga menziesii* and *Larix occidentalis*. Common species are *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Larix lyallii*. The fire-free interval varies considerably from 35 to over 300 years. Stand replacement fires occur after intervals of more than 200 years (Fischer et al. 1987).

Table H-1. Non-forested Habitat Type Groups (HTGs) (USDA FS 1992).

Habitat Type	Phase	Code	Fire Group Code	
Grassland Steppe (HTG 15)		015		
Poasec-Danuni <i>Agropyron spicatum</i> Agrspi (lithic) <i>Festuca idahoensis</i> <i>Festuca scabrella</i> <i>Andropogon</i> spp.		017 018 019 020		
Shrubland Steppe (HTG 30)		030		
<i>Artemisia rigida-Poa secunda</i> <i>Artemesia tridentata</i> <i>Purshia tridentata</i> <i>Celtis reticulata</i> <i>Cercocarpus ledifolius</i> Cerled-agrspi <i>Rhus glabra-agropyron spicatum</i> <i>Symphoricarpos albus</i>		040 032 035 041 036 044 042 043		
Hardwoods (HTG 50)		050		
Mountain Bottomlands (HTG 60)		060		0
<i>Carex</i> spp. (wet complex) <i>Carex</i> /grass (moist complex) <i>Deschampsia caespitosa</i> Tall forb types <i>Crataegus douglasii</i> <i>Alnus</i> spp. <i>Salix</i> spp <i>Populus tremuloides</i> <i>Populus trichocarpa</i>		061 065 062 070 071 073 074 078 079		
Alpine Meadows and Scrub (HTG 80)		080		0
Sedge/grass types (Includes <i>Carhoo-Fesida</i> , <i>Cargey-Fesida</i> , <i>Fesvir-Carex</i>) Forb types Shrub types		081 084 087		
Rock (HTG 0)		0		0
Water (HTG 98)		98		0

Table H-2. Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 1				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Pinus ponderosa</i> / <i>Agropyron spicatum</i>		130	2	1
<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i>	<i>Festuca idahoensis</i> <i>Festuca scabrella</i>	140	2	1
		141	2	
		142	2	
<i>Pinus ponderosa</i> / <i>Purshia tridentata</i>	<i>Agropyron spicatum</i> <i>Festuca idahoensis</i>	160	2	
		161	2	
		162	2	
<i>Pseudotsuga menziesii</i> / <i>Agropyron spicatum</i>		210	4	1
<i>Pseudotsuga menziesii</i> / <i>Festuca idahoensis</i>		220	5	1
<i>Pseudotsuga menziesii</i> / <i>Festuca scabrella</i>		230	4	
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i>	<i>Agropyron spicatum</i>	311	4	1
<i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i>	<i>Agropyron spicatum</i>	321	4	

Habitat Types Comprising Habitat Group 3				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Pseudotsuga menziesii</i> / <i>Linnaea borealis</i>	<i>Symphoricarpos albus</i> <i>Vaccinium globulare</i>	290	6	
		291	6	
		293	6	
<i>Abies grandis</i> / <i>Xerophyllum tenax</i>	<i>Coptis occidentalis</i> <i>Vaccinium globulare</i>	510	6	7
		511	11	7
		512	6	7
<i>Abies grandis</i> / <i>Vaccinium globulare</i>		515	6	7
<i>Abies grandis</i> / <i>Linnaea borealis</i>	<i>Linnaea borealis</i> <i>Xerophyllum tenax</i>	590	11	7
		591	11	
		592	6	
<i>Abies grandis</i> / <i>Clintonia uniflora</i>	<i>Xerophyllum tenax</i>	523	11	7

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 2				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Pinus ponderosa/ Symphoricarpos albus</i>	<i>Symphoricarpos albus</i>	170	2	1
		171	2	
<i>Pinus ponderosa/Physocarpus malvaceus</i>		190		2
<i>Pseudotsuga menziesii/ Vaccinium caespitosum</i>		250	6/7	2
<i>Pseudotsuga menziesii/ Physocarpus malvaceus</i>	<i>Physocarpus malvaceus Calamagrostis rubescens Smilacina stellata</i>	260	6	2
		261	6	
		262	4	
		263		
<i>Pseudotsuga menziesii/ Vaccinium globulare</i>	<i>Vaccinium globulare Arctostaphylos uva-ursi Xerophyllum tenax</i>	280		2
		281	6	
		282	6	
		283	6	
<i>Pseudotsuga menziesii/Linnaea borealis</i>	<i>Calamagrostis rubescens</i>	292	6	
<i>Pseudotsuga menziesii/ Symphoricarpos albus</i>	<i>Calamagrostis rubescens Symphoricarpos albus</i>	310	6	2
		312	6	
		313	6	
<i>Pseudotsuga menziesii/ Calamagrostis rubescens</i>	<i>Arctostaphylos uva-ursi Calamagrostis rubescens Pinus ponderosa</i>	320		2
		322	6	
		323		
		324	4	
<i>Pseudotsuga menziesii/Carex geyeri</i>		330		2
<i>Pseudotsuga menziesii/Spiraea betulifolia</i>		340	4	1
<i>Pseudotsuga menziesii/ Arctostaphylos uva-ursi</i>		350	6	
<i>Pseudotsuga menziesii/ Juniperus communis</i>		360		
<i>Pseudotsuga menziesii/Arnica cordifolia</i>		370		
<i>Abies grandis/Spiraea betulifolia</i>		505	4	2
<i>Abies grandis/Physocarpus malvaceus</i>	<i>Coptis occidentalis Physocarpus malvaceus</i>	506	4	2
		507	4	
		508	4	

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 4				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Abies grandis/Asarum caudatum</i>	<i>Asarum caudatum</i>	516		
	<i>Menziesia ferruginea</i>	517		7
	<i>Taxus brevifolia</i>	518		7
		519		7
<i>Abies grandis/Clintonia uniflora</i>	<i>Clintonia uniflora</i>	520	11	7
	<i>Aralia nudicaulis</i>	521	11	7
	<i>Physocarpus malvaceus</i>	522	11	
	<i>Menziesia ferruginea</i>	524	11	7
	<i>Taxus brevifolia</i>	525	11	7
		526	11	7
<i>Abies grandis/Senecio triangularis</i>		529	7	

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 5				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Thuja plicata/Clintonia uniflora</i>	<i>Clintonia uniflora</i>	530	11	
	<i>Aralia nudicaulis</i>	531	11	8
	<i>Menziesia ferruginea</i>	532	11	
	<i>Xerophyllum tenax</i>	533	11	8
	<i>Taxus brevifolia</i>	534	11	8
			535	11
<i>Thuja plicata/Asarum caudatum</i>	<i>Asarum caudatum</i>	545	11	
	<i>Menziesia ferruginea</i>	546	11	8
	<i>Taxus brevifolia</i>	547	11	8
		548	11	8
<i>Thuja plicata/Gymnocarpium dryopteris</i>		555	11	8
<i>Tsuga heterophylla/Gymnocarpium dryopteris</i>		565	11	8
<i>Tsuga heterophylla/Clintonia uniflora</i>	<i>Clintonia uniflora</i>	570	11	
	<i>Aralia nudicaulis</i>	571	11	8
	<i>Xerophyllum tenax</i>	572	11	8
	<i>Menziesia ferruginea</i>	573	11	8
		574	11	8
<i>Tsuga heterophylla/Asarum caudatum</i>	<i>Aralia nudicaulis</i>	575	11	
	<i>Menziesia ferruginea</i>	576	11	8
	<i>Asarum caudatum</i>	577	11	8
		578	11	8

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 6				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Thuja plicata/Athyrium filix-femina</i>	<i>Adiantum pedatum</i>	540		
	<i>Athyrium filix-femina</i>	541		9
		542		9
<i>Thuja plicata/Oplopanax horridum</i>		550	11	9
<i>Thuja plicata/Adiantum pedatum</i>		560		9

Habitat Type Groups Comprising Habitat Group 7				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Picea/Clintonia uniflora</i>	<i>Vaccinium caespitosum</i>	420	9	
	<i>Clintonia uniflora</i>	421	9	
		422	9	
<i>Picea/Linnaea borealis</i>		470	7	
<i>Tsuga heterophylla/Menziesia ferruginea</i>		579		
<i>Abies lasiocarpa/Clintonia uniflora</i>	<i>Clintonia uniflora</i>	620	9	
	<i>Aralia nudicaulis</i>	621	9	5
	<i>Vaccinium caespitosum</i>	622	9	
	<i>Xerophyllum tenax</i>	623	9	
	<i>Menziesia ferruginea</i>	624	9	5
			625	9
<i>Abies lasiocarpa/Linnaea borealis</i>	<i>Linnaea borealis</i>	660	9	
	<i>Xerophyllum tenax</i>	661	9	
		662	9	
<i>Abies lasiocarpa/Menziesia ferruginea</i>	<i>Coptis occidentalis</i>	670	9	
	<i>Luzula hitchcockii</i>	671		5
	<i>Xerophyllum tenax</i>	672		5
	<i>Vaccinium scoparium</i>	673		5
		674		5
<i>Tsuga mertensiana/Menziesia ferruginea</i>	<i>Luzula hitchcockii</i>	680	9	
	<i>Xerophyllum tenax</i>	681		5
		682		5

Habitat Type Groups Comprising Habitat Group 7				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Tsuga mertensiana/Clintonia uniflora</i>	<i>Menziesia ferruginea</i>	685		
	<i>Xerophyllum tenax</i>	686		5
		687		5
<i>Abies lasiocarpa/Vaccinium scoparium</i>	<i>Thalictrum occidentale</i>	733		
<i>Abies lasiocarpa/Alnus sinuata</i>		740		
<i>Abies lasiocarpa/Luzula hitchcockii</i>	<i>Menziesia ferruginea</i>	832	10	

Habitat Types Comprising Habitat Group 8				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Picea/Equisetum arvense</i>		410	9	
<i>Picea/Galium triflorum</i>		440	9	
<i>Picea/Smilacina stellata</i>		480	8	
<i>Abies lasiocarpa/Oplopanax horridum</i>		610	9	
<i>Abies lasiocarpa/Galium triflorum</i>	<i>Galium triflorum</i>	630		
	<i>Calamagrostis canadensis</i>	631	9	
		632		
<i>Abies lasiocarpa/Streptopus amplexifolius</i>	<i>Menziesia ferruginea</i>	635		
	<i>Ligusticum canbyi</i>	636		5
		637		5
<i>Abies lasiocarpa/Calamagrostis canadensis</i>	<i>Calamagrostis canadensis</i>	650	9	
		651	9	5
	<i>Ligusticum canbyi</i>	652		5
	<i>Galium triflorum</i>	653	9	
	<i>Vaccinium caespitosum</i>	654	7	5
	<i>Ledum glandulosum</i>	653		5
<i>Tsuga mertensiana/Streptopus amplexifolius</i>	<i>Luzula hitchcockii</i>	675		
	<i>Menziesia ferruginea</i>	676		5
		677		5

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 9				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Picea/Vaccinium caespitosum</i>		450	7	
<i>Abies lasiocarpa/Vaccinium caespitosum</i>		640	7	3
<i>Abies lasiocarpa/Linnaea borealis</i>	<i>Vaccinium scoparium</i>	663	7	
<i>Abies lasiocarpa/Xerophyllum tenax</i>	<i>Vaccinium globulare</i>	690		
	<i>Vaccinium scoparium</i>	691	8	4
	<i>Coptis occidentalis</i>	692	8	4
	<i>Luzula hitchcockii</i>	693	7	4
		694		4
<i>Tsuga mertensiana/Xerophyllum tenax</i>	<i>Luzula hitchcockii</i>	710	8	
	<i>Xerophyllum tenax</i>	711		4
		712		4
	<i>Vaccinium scoparium</i>	713	7	4
<i>Abies lasiocarpa/Vaccinium globulare</i>		720	7	4
<i>Abies lasiocarpa/Vaccinium scoparium</i>	<i>Calamagrostis rubescens</i>	731		
<i>Abies lasiocarpa/Calamagrostis rubescens</i>		750		4
<i>Abies lasiocarpa/Arnica cordifolia</i>		780		
<i>Pinus contorta/Purshia tridentate</i>		910		3
<i>Pinus contorta/Vaccinium caespitosum c.t.</i>		920	7	3
<i>Pinus contorta/Linnaea borealis c.t.</i>		930	7	
<i>Pinus contorta/Calamagrostis rubescens c.t.</i>		950	7	3

Table H-2 (continued). Summary information for forested Habitat Type Groups within the South Fork Clearwater River Subbasin.

Habitat Types Comprising Habitat Group 10				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Abies lasiocarpa/Vaccinium scoparium</i>	<i>Vaccinium scoparium</i>	730		3
		732	7	
<i>Abies lasiocarpa-Pinus albicaulis/Vaccinium scoparium</i>		820	10	6
<i>Abies lasiocarpa/Luzula hitchcockii</i>	<i>Vaccinium scoparium</i>	830		6
		831	10	
<i>Tsuga mertensiana/Luzula hitchcockii</i>	<i>Vaccinium scoparium</i>	840	10	
		841	10	6
		842	10	
<i>Pinus contorta/Xerophyllum tenax c.t.</i>		9225		3
<i>Pinus contorta/Vaccinium scoparium</i>		940	7	3

Habitat Types Comprising Habitat Group 11				
Habitat Type	Phase	Code	Fire Group Code	
			MT	ID
<i>Pinus albicaulis-Abies lasiocarpa h.t.s.</i>		850	10	6
<i>Alpine larch-Abies lasiocarpa h.t.s.</i>		860	10	6
<i>Pinus albicaulis h.t.s.</i>		870	10	6

c.t. =

h.t.s. = habitat type series