# Major Land Resource Area 003X
# Olympic and Cascade Mountains

Accessed: 06/21/2026

---

## Ecological site keys

## MLRA 3

---

**I. Site located north of the Columbia River.**

**A. Within a national park soil survey or in an area joining with a national park in the Washington Cascades Range**

**1 NORTH CASCADES NATIONAL PARK**

**i. Site is forested and more than 25 percent is covered with trees**

**a. Site is on east slope of North Cascade Mountains.**

**1) Site is at lower elevations, typically 1,000 to 3,500 feet above sea level but as much as 5,000 feet in some areas. The soils on this site are dry by summer**

**a) Site is common on many landforms, including mountain slopes, valley sides, stream terraces, and ridgelines. High-frequency/ low-intensity wildfire plays an important role in plant community dynamics. Douglas-fir and ponderosa pine are the most commontrees, and pinegrass is common in the understory. If yes, the site is Frigid/Xeric Coniferous (F003XN927WA). ...** F003XN927WA – Frigid/Xeric Coniferous

**b) Site is not common and is limited in extent. It is in distinct areas of active disturbance on mountain slopes and valley sides. Disturbances include rockfalls, debris torrents, and avalanches. Deciduous trees and shrubs such as bigleaf maple, bitter cherry, hazelnut, and vine maple are most common. Site is distinctly different from adjacent conifer-covered slopes. If yes, the site is Frigid/Xeric Active Natural Disturbance (F003XN928WA). ...** F003XN928WA – Frigid/Xeric Active Natural Disturbance

**2) Site is at middle elevations,**

**a) Site is at middle elevations, typically 2,500 to 4,800 feet above sea level but as much as 6,000 feet in some areas. Soils tend to remain moist into summer. Windthrow is an important element in plant community dynamics. Pacific silver fir and Engelmann spruce are the dominant trees. If yes, the site is Low Cryic/Udic East Coniferous (F003XN929WA). ...** F003XN929WA – Low Cryic/Udic East Coniferous

**b) Site is limited in extent, but it is in many landscape positions. It is at middle elevations, typically 1,700 to 5,000 feet above sea level but as much as 6,500 feet in some areas. Soils are dry in summer. Subalpine fir and Engelmann spruce are common. If yes, the site is Cryic/Xeric Coniferous (F003XN923WA). ...** F003XN923WA – Cryic/Xeric Coniferous

**b. Site typically is on west slope of North Cascade Mountains, but areas are throughout the mountains**

**1) Site is limited in extent, on steep slopes or at the toe of a slope, and dominantly supports deciduous trees and shrubs**

**a) Site is at elevations of 3,000 to 6,000 feet above sea level. It is on avalanche paths and runouts or in other areas that are frequently disturbed, such as talus slopes and debris torrent deposits. Sitka alder, red elderberry, green false hellebore, and ladyfern are common. If yes, the site is Cryic/Udic Active Natural Disturbance (F003XN926WA). ...** F003XN926WA – Cryic/Udic Active Natural Disturbance

**b) Site is limited in extent and at lower elevations (1,300 to 3,900 feet above sea level). It typically is on avalanche paths and runouts or in other areas that are frequently disturbed, such as talus slopes and debris torrent deposits. Vine maple, prickly currant, red huckleberry, and brackenfern are common. If yes, the site is Frigid/Udic Natural**

**Disturbance (F003XN922WA). ...** F003XN922WA – Frigid/Udic Active Natural Disturbance

**2) Site is at higher elevations (3,000 to 5,800 feet above sea level). It extends from glacial valleys and cirque basins to mountain slopes and ridgelines. Mountain hemlock and subalpine fir are the dominant trees,and pink mountainheather, blue huckleberry, Sitka valerian, and false hellebore are common in the understory. If yes, the site is High Cryic/Udic Coniferous (F003XN925WA). ...** F003XN925WA – High Cryic/Udic Coniferous

**3) Site typically is at low elevations (below 3,200 feet above sea level). It typically is on gently sloping or flat flood plains and terraces associated with streams and rivers. It is in lower positions of glacially carved valleys in the North Cascade Mountains. Black cottonwood and red alder are common trees. Common understory plants include vine maple, salmonberry, wild ginger, and ladyfern. If yes, the site is Frigid Riparian Forest (F003XN920). ...** F003XN920WA – Frigid Riparian Forest

**4) Site is in many landscape positions at middle elevations (2,200 to 4,600 feet above sea level). It is cold and moist with snow commonly persisting until late in spring or early in summer. Pacific silver fir and western hemlock are common trees. Black huckleberry, false azalea, oakfern, and queenscup beadlily are common in the understory. If yes, the site is Low Cryic/Udic West Coniferous (F003NX924WA). ...** F003XN924WA – Low Cryic/Udic West Coniferous

**5) Site is dominantly on cool, moist, lower slopes of the North Cascade Mountains at elevations of as much as 4,600 feet above sea level. It extends across many landscape positions. Western hemlock and western redcedar are the dominant overstory trees. If yes, the site is Frigid/Udic Coniferous (F003XN921WA). ...** F003XN921WA – Frigid/Udic Coniferous

**ii. Site may have some trees (25 percent cover or less), but low shrubs, forbs, grasses, and grasslike plants are more abundant.**

**a. Site is wetland**

**1) Site is at or below an elevation of 2,100 feet. Typically, these wetland areas are on stream terraces, flood plains, and depressions where subirrigation is common. Sedges, grasses, and grasslike plants are dominant. Shrubs such as alpine laurel, bog Labrador tea, salmonberry, mountain ash, and cranberry may be present. Low Mountain Unforested Wetlands (R003XN613WA). ...** R003XN613WA – Low Mountain Unforested Wetlands

**2) Site is at middle to high elevations (2,000 to 4,600 feet above sea level). These wetland areas are also associated with stream terraces, flood plains, and depressions that are subirrigated. Sedges, grasses, and grasslike plants are dominant. Sphagnum moss and white marsh marigold are also common. If yes, the site is High Mountain Unforested Wetlands (R003XN603WA). ...** R003XN603WA – High Mountain Unforested Wetlands

**b. Site is at high elevations (3,800 to 6,000 feet above sea level). It generally is in steep areas, is distinct, and is of limited extent, but the vegetation is clearly differs from that of adjacent sites. The site consists of areas of active natural soil disturbances such as debris slides, avalanches, and rockfalls. If yes, the site is Subalpine Parkland – Active Natural Soil Disturbance (R003XN512WA). ...** R003XN512WA – Subalpine Parkland Active Natural Soil Disturbance

**c. Site is at high elevations (3,000 to 7,000 feet above sea level). Shrubs are dominant; white mountainheather, pink mountainheather, Sitka mountain-ash, Cascade huckleberry, and black huckleberry are most common. Forbs, may be present in smaller amounts. If yes, the site is Subalpine Parkland – Minor Natural Soil Disturbance (R003XN502). ...** R003XN502WA – Subalpine Parkland Minor Natural Soil Disturbance

**2 MOUNT RAINIER NATIONAL PARK**

**i. Site may have some trees (25 percent cover or less), but low shrubs, forbs, grasses, and grasslike plants are more abundant.**

**a. Site is in an unforested bog or fen**

**1) Site is at an elevation of 2,100 to 4,600 feet above sea level. Common plants include mannagrass, American skunkcabbage, water sedge, black alpine sedge, rushes, bluejoint reedgrass, and white marsh marigold. If yes, the site is Southern Washington Cascades Low Cryic Bog or Fen (R003XN640WA). ...** R003XN640WA – Southern

Washington Cascades Low Cryic Bog or Fen

**2) Site is at an elevation of 3,600 to 6,500 feet above sea level and is in depressions of cirque floors and swales of terraces. Common plants include tufted bulrush, American skunkcabbage, water sedge, bluejoint reedgrass, white marsh marigold, and black alpine sedge. If yes, the site is Southern Washington Cascades High Cryic Bog or Fen (R003XN641WA). ...** R003XN641WA – Southern Washington Cascades High Cryic Bog or Fen

**b. Site is on debris-covered glaciers at an elevation of 3,600 to 7,200 feet above sea level. The soils are shallow and have permafrost within 20 inches of the surface. Common plants include stunted conifers, Sitka alder, fireweed, willowherb, hawkweed, rushes, and Scouler's willow. If yes, the site is Southern Washington Cascades Debris-covered Glaciers (R003XN545WA). ...** R003XN545WA – Southern Washington Cascades Debris Covered Glaciers

**c. Site is at an elevation of 3,300 to 7,000 feet above sea level and is in alpine parklands.**

**1) Site is associated with soils that typically are ponded during the growing season. The primary plant is black sedge. If yes, the site is Southern Washington Cascades Wet Subalpine Parkland (R003XN540WA). ...** R003XN540WA – Southern Washington Cascades Wet Subalpine Parkland

**2) Site is on the south- and west-facing slopes of Mount Rainier. The mean annual precipitation is 77 to 140 inches. Common plants include Cascade huckleberry, pink mountain heather, white mountain heather, black sedge, and spreading phlox. If yes, the site is Southern Washington Cascades Moist Subalpine Parkland (R003XN541WA). ...** R003XN541WA – Southern Washington Cascades Moist Subalpine Parkland

**3) Site is on the north- and east-facing slopes of Mount Rainier. The mean annual precipitation is 59 to 122 inches. Common plants include fescue, smooth woodrush, false hellebore, mountain cinquefoil, Cascade desertparsley, and Cascade huckleberry. If yes, the site is Southern Washington Cascades Subalpine Parkland (R003XN542WA). ...** R003XN542WA – Southern Washington Cascades Subalpine Parkland

**d. Site is at an elevation of 4,600 to 11,000 feet above sea level. It is in alpine tundra, at the upper limits of plant growth. It commonly is covered with snow much of the growing season**

**1) Site has a short growing season as a result of a heavy snowpack. Plants are subject to intense solar radiation and high winds. Vegetation is sparse. Common plants include Davis' knotweed, tundra aster, penstemon, common juniper, spreading phlox, and arctic lupine. If yes, the site is Southern Washington Cascades Alpine Tundra (R003XN543WA). ...** R003XN543WA – Southern Washington Cascades Alpine Tundra

**2) Site is adjacent to water and melting snow for much of the growing season. It has a seasonal high water table at the soil surface to a depth of 8 inches below the surface. Vegetation is patchy and restricted to areas that have a higher content of soil moisture and availability of nutrients. Common plants include Tiling's monkeyflower, partridgefoot, and black alpine sedge. the site is Southern Washington Cascades Wet Alpine Tundra (R003XN544WA). ...** R003XN544WA – Southern Washington Cascades Wet Alpine Tundra

**ii. Site is forested, and more than 25 percent is covered with trees**

**a. Site commonly is on gently sloping or flat flood plains and terraces associated with streams and rivers in the southern Washington Cascades**

**1) Site is at an elevation of 1,600 to 2,100 feet above sea level. Common trees are black cottonwood, western hemlock, western redcedar, and red alder. Common understory plants include Cascade Oregon grape, western rattlesnake plantain, ladyfern, western brackenfern, and queencup beadlily. If yes, the site is Southern Washington Cascades Frigid Riparian Forest (F003XN940WA). ...** F003XN940WA – Southern Washington Cascades Frigid Riparian Forest

**2) Site is at an elevation of 2,000 to 6,100 feet above sea level. Common trees are black cottonwood, Pacific silver fir, western redcedar, and Sitka alder. Common understory plants include vine maple, Barclay's willow, red huckleberry,**

**and western swordfern. If yes, the site is Southern Washington Cascades Low Cryic Riparian Forest (F003XN944WA).**

**...** F003XN944WA – Southern Washington Cascades Low Cryic Riparian Forest

**3) Site is at an elevation of 1,700 to 6,900 feet above sea level. Common overstory species are Alaska cedar, Sitka alder, Pacific silver fir, and Engelmann spruce. Common understory plants include vine maple, Barclay's willow, five-leaved bramble, fireweed, and pearly everlasting. If yes, the site is Southern Washington Cascades High Cryic Riparian Forest (F003XN949WA). ...** F003XN949WA – Southern Washington Cascades High Cryic Riparian Forest

**b. Site is composed primarily of deciduous tree species in areas of active disturbance on mountain slopes and valley sides. Disturbances include rockfalls, debris torrents, and avalanches**

**1) Site is at an elevation of 2,100 to 6,600 feet above sea level. The vegetation is primarily Sitka alder, vine maple, red elderberry, thimbleberry, salmonberry, and devilsclub. Repeated avalanches do not allow for the establishment of a forested overstory; however, seedlings of Pacific silver fir, noble fir, and western hemlock may be present. If yes, the site is Southern Washington Cascades Low Cryic Deciduous Forest (F003XN948WA). ...** F003XN948WA – Southern Washington Cascades Low Cryic Deciduous Forest

**2) Site is at an elevation of more than 3,600 feet above sea level. The vegetation is primarily Sitka alder, Sitka mountain ash, Sitka valerian, and vine maple. Repeated avalanches do not allow for the establishment of a forested overstory; however, seedlings of mountain hemlock, Alaska cedar, subalpine fir, and Pacific silver fir may be present. If yes, the site is Southern Washington Cascades High Cryic Deciduous Forest (F003XN952WA). ...** F003XN952WA – Southern Washington Cascades High Cryic Deciduous Forest

**c. Site is composed primarily of coniferous tree species. If yes, go to "m." m. Site commonly is at an elevation of 1,600 to 4,600 feet above sea level, in the southern Washington Cascades. Western hemlock typically in the overstory.**

**1) Site commonly is at an elevation of 1,600 to 4,600 feet above sea level, in the southern Washington Cascades. Western hemlock typically in the overstory**

**a) Site is in depressions and swales and on terraces, glacial-valley walls, and debris aprons that are subject to frequent periods of ponding in April through June. Common tree species are western redcedar, red alder, western hemlock, and Douglas-fir. Southern Washington Cascades Wet Frigid Coniferous Forest (F003XN941WA). ...** F003XN941WA – Southern Washington Cascades Wet Frigid Coniferous Forest

**b) Site is in depressions and stream channels of terraces, debris aprons, and valley walls. A seasonal high water table is at a depth of 10 to 20 inches from the soil surface some time during the growing season. Common overstory species are western hemlock, western redcedar, Douglas-fir, and Sitka spruce. Southern Washington Cascades Moist Frigid Coniferous Forest (F003XN942WA). ...** F003XN942WA – Southern Washington Cascades Moist Frigid Coniferous Forest

**c) Site is on debris aprons, mountain slopes, valley walls, and ridges. Common overstory species are western hemlock, Douglas-fir, and western redcedar. Common understory species include Cascade Oregon grape, salal, vine maple, red huckleberry, baldhip rose, western rattlesnake plantain, and twinflower. If yes, the site is Southern Washington Cascades Frigid Coniferous Forest (F003XN943WA). ...** F003XN943WA – Southern Washington Cascades Frigid Coniferous Forest

**2) Site commonly is at an elevation of 1,800 to 5,700 feet above sea level, in the southern Washington Cascades**

**a) Site is in depressions and swales and on terraces, and debris aprons that are subject to frequent periods of ponding in April through June. Common overstory species are western redcedar, red alder, Douglas-fir, and western hemlock. Common understory species are devilsclub, vine maple, salmonberry, thimbleberry, American skunkcabbage, western swordfern, deer fern. Southern Washington Cascades Wet Low Cryic Coniferous Forest (F003XN945WA). ...** F003XN945WA – Southern Washington Cascades Wet Low

Cryic Coniferous Forest

**b) Site is in swales and on terraces and debris aprons of glacial valley walls. A seasonal high water table is at a depth of 10 to 20 inches from the soil surface some time during the growing season. Common overstory species are Pacific silver fir, western redcedar, bigleaf maple, western hemlock, and red alder. Understory species include devilsclub, vine maple. Southern Washington Cascades Moist Low Cryic Coniferous Forest (F003XN946WA). ...**

F003XN946WA – Southern Washington Cascades Moist Low Cryic Coniferous Forest

**c) Site is on debris aprons, bedrock benches, ridges, and glacial valley walls. A seasonal high water table is at a depth of 19 to 40 inches from the soil surface some time during the growing season. Commonly overstory species are Pacific silver fir, western hemlock, noble fir, and western redcedar. Understory species consist of black mountain huckleberry, red huckleberry. Southern Washington Cascades Low Cryic Coniferous Forest (F003XN947WA) ...**

F003XN947WA – Southern Washington Cascades Low Cryic Coniferous Forest

**3) Site commonly is at an elevation of 3,200 to 7,900 feet above sea level, in the Southern Washington Cascades. Mountain hemlock is present**

**a) Site is on debris aprons of mountain slopes, lahars, cirque floors, and swales of glacial-valley walls. A seasonal high water table is at a depth of 10 to 20 inches from the soil surface some time during the growing season. Common overstory species are mountain hemlock and Alaska cedar. Commonly understory species are Cascade azalea, devilsclub,Southern Washington Cascades Moist High Cryic Coniferous Forest (F003XN950WA). ...**

F003XN950WA – Southern Washington Cascades Moist High Cryic Coniferous Forest

**b) Site is on debris aprons of mountain slopes, glacial-valley walls, and ridges. A seasonal high water table is at a depth of 19 to 40 inches from the soil surface some time during the growing season. Common overstory species include mountain hemlock and subalpine fir. Understory species include rusty menziesia, black mountain huckleberry, Sitka mountain ash. Southern Washington Cascades High Cryic Coniferous Forest (F003XN951WA).**

**...** F003XN951WA – Southern Washington Cascades High Cryic Coniferous Forest

**B. DISSECTED MOUNTAINS NOT WITHIN OR IN AN AREA ADJOINING A NATIONAL A PARK IN THE CASCADES OR OLYMPICS OF WASHINGTON**

**1 Bedrock lithology mainly metamorphic and intrusive in the Northern Cascades Range LRU A (North Cascades)**

**i. Disturbance process present; Site resides in avalanche chute; reference community dominated by Sitka alder. Site is Avalanche, R003XA304WA. ...** R003XA304WA – Avalanche Sitka alder (Alnus viridis)

**ii. Disturbance process not present**

**a. Site resides in a floodplain, overstory dominated by black cottonwood, if yes, the site is Floodplain (F003XA303WA) ...**

F003XA303WA – Flood Plain black cottonwood

**b. Site does not reside in a floodplain; Site is in the cryic soil temperature regime an udic soil moisture regime.**

**1) Resides in glacial trough valleys at 2500 to 4250 feet on moderate to steep slopes (30-65%); overstory and regenerating layers dominated by western hemlock. If yes, then site is Low glacial trough valleys Moist Forest/TSHE. (F003XA305WA). ...** F003XA305WA – Low Glacial Trough Valleys Moist Forest western hemlock

**2) Resides east of Cascade Crest at elevations of 4100-5700 feet on slopes 25-50%; overstory and regenerating layers dominated by Subalpine fir. If yes, then site is East mountain slopes Forest/ABLA (F003XA306WA). ...**

F003XA306WA – East Mountain Slopes Forest subalpine fir

**3) Resides on terraces, mountain slopes at 3000-5300 feet on moderate to steep slopes (20-50%); overstory and regenerating layers dominated by Pacific silver fir. If yes, then site is Mountain slopes Forest/ ABAM. (F003XA307WA). ...** F003XA307WA – Mountain Slopes Forest Pacific silver fir

**4) Resides on cirques and adjacent mountain slopes at 4300 to 5800 feet on moderate slopes (15-40%). Overstory and regenerating layers dominated by mountain hemlock.If yes, then site is High cirque Forest/ TSME. (F003XA308WA). ...**

F003XA308WA – High Cirque Forest mountain hemlock

**5) Resides on glacial trough valleys 4270 ft to 6850 ft, on moderate to steep slopes (25-60%). Herbaceous species dominated. If yes, then site is High glacial trough valleys/ PARKLAND. (F003XA309WA). ...** F003XA309WA – High Glacial Trough Valleys Parkland Mountain Hemlock, Subalpine Larch, and Whitebark Pine

**6) Resides on glacial valley walls at 5500 ft to 7150 ft on moderate to steep slopes (30 to 60%); herbaceous and shrub dominated areas. If yes, then site is High glacial valley walls/ALPINE. (R003XA310WA). ...** R003XA310WA – High Glacial Valley Walls Alpine

**2 Bedrock lithology mainly sedimentary, metasedimentary, and extrusive in the Olympic Mountains LRU B (Olympic Mountains)**

**i. Area is in the uplands, in the cryic soil temperature regime and the udic soil moisture regime**

**a. Resides on mountain slopes at 2900-4100 feet on slopes 60-95%; overstory and regenerating layers dominated by western hemlock. If yes, then site is Low mountain slopes Moist Forest/ TSHE. (F003XB305WA). ...** F003XB305WA – Low Mountain Slopes Moist Forest western hemlock

**b. Resides on cirques and adjacent mountain slopes at 2700-3600 feet on slopes 45-80%. Overstory and regenerating layers dominated by Pacific silver fir. If yes, then site is High mountain slopes Forest/ ABAM. (F003XB307WA). ...**

F003XB307WA – High Mountain Slopes Forest Pacific silver fir

**c. Resides on cirque walls at 2800-4100 feet on slopes 45-80%. Overstory and regenerating dominated by mountain hemlock. If yes, then site is High cirques Forest / TSME. (F003XB308WA). ...** F003XB308WA – High Cirque Walls Forest mountain hemlock

**3 Bedrock lithology mainly Tertiary extrusive volcanics with widespread Pleistocene alpine glaciation…… LRU C (Glaciated Western Cascades)**

**i. Resides in a floodplain, site resides in the mesic soil temperature regime and aquic soil moisture regime. If yes, then site is Floodplain (F003XC303WA). ...** F003XC303WA – Flood Plain black cottonwood

**ii. Site resides in the upland, in the cryic soil temperature regime and the udic soil moisture regime.**

**a. Resides on mountain slopes, 3000-5200 feet on slopes of 0-3%; overstory and regenerating layers dominated by western hemlock. If yes, then site is Low mountain slopes Moist Forest/ TSHE. (F003XC305WA). ...** F003XC305WA – Low Mountain Slopes Moist Forest western hemlock

**b. Resides on glacial valley floors, at 3800-6300 feet on slopes of 2-12%; overstory and regenerating layers dominated by Subalpine fir. If yes, then site is High glacial valley floors Forest/ ABLA. (F003XC306WA). ...** F003XC306WA – High Glacial Valley Floors Forest subalpine fir

**c. Resides on mountain slopes, at 3300-5500 feet on slopes 30-60%; overstory and regenerating layers dominated by Pacific silver fir. If yes, then site is High mountain slopes Forest/ ABAM. (F003XC307WA). ...** F003XC307WA – High Mountain Slopes Forest Pacific silver fir

**d. Resides on cirques and adjacent mountain slopes, 3600-5722 feet on slopes 24-54%; overstory and regenerating layers dominated by mountain hemlock. If yes, then site is High cirques Forest/ TSME. (F003XC308WA). ...**

F003XC308WA – High Cirques Forest mountain hemlock

**e. Resides on mountain slopes at 3940-7000 feet on slopes 30-90%; dominated by shrub, herbaceous species with tree clumps, lower slopes may be dominated by whitebark pine. If yes, then site is Mountain slopes parkland and forest; PARKLAND/PIAL. (F003XC309WA). ...** F003XC309WA – Mountain Slopes Parkland and Forest whitebark pine

**II. Site located south of the Columbia River.**

**A. . Located within Crater Lake National Park Refer to LRU F (or 6) Key (Mazama Cascades).**

**1 Site located within Crater Lake National Park**

**i. . Located above timberline**

**a. Largest diurnal temperature extremes; droughtiest site Ashy Alpine Desert 50-70 PZ (R003XY011OR) ...**

R003XY011OR – Ashy Alpine Desert 50-70 PZ

**b. Topographic thermal protection; greater moisture holding capacity**

**1) Concave slope shape; soil seasonally saturated above of an aquitard Ashy Alpine Swale 50-70 PZ (R003XY013OR) ...**

R003XY013OR – Ashy Alpine Swale 50-70 PZ

**2) . Otherwise Ashy Alpine Meadow 50-70 PZ (R003XY012OR) ...** R003XY012OR – Ashy Alpine Meadow 50-70 PZ

**ii. Located at timberline; open forest containing whitebark pine typical High Cascades Tree Line (F003XY700OR) ...**

F003XY700OR – High Cascades Tree Line

**iii. Located below timberline**

**a. . Groundwater discharge or throughflow; non-forested communities typical**

**1) Adjacent to high-elevation forested sites typically supporting mountain hemlock**

**a) . Edges of fens or along perennial streams Meadow Fen 40-60 PZ (R003XY015OR) ...** R003XY015OR – Meadow Fen 40-60 PZ

**b) Located in fens**

**(1) . Entire soil profile composed of muck or peat; peat hummocks common Sphagnum Fen 40-60 PZ (R003XY017OR) ...** R003XY017OR – Sphagnum Fen 40-60 PZ

**(2) Mineral soil present in lower part of the soil profile Woodland Fen 40-60 PZ (R003XY018OR) ...**

R003XY018OR – Woodland Fen 40-60 PZ

**2) Adjacent to mid-elevation forested sites typically supporting Shasta red fir, western hemlock, or incense cedar**

**a) Aquic soil moisture regime; sedges and forbs typical Ashy Glacial Meadow 40-60 PZ (R003XY019OR) ...**

R003XY019OR – Ashy Glacial Meadow 40-60 PZ

**b) Udic soil moisture regime; grasses typical, but readily invaded by conifers Ashy Glacial Prairie 40-60 PZ (R003XY020OR) ...** R003XY020OR – Ashy Glacial Prairie 40-60 PZ

**b. . Basins where microclimate is harsh**

**1) microclimate prevents development of forested communities Pumice Desert 40-60 PZ (DEPRESSIONAL) (R003XY010OR) ...** R003XY010OR – Pumice Desert 40-60 PZ (Depressional)

**2) microclimate allows forested communities HC High Pumice Basin (F003XY707OR) ...** F003XY707OR – HC High Pumice Basin

**c. Otherwise; forested communities typical**

**1) South slopes of cinder cones; mountain hemlock forest typical High Cascades Dry, South Slopes (F003XY702OR) ...** F003XY702OR – High Cascades Dry South Slopes

**2) Otherwise**

**a) High-elevation sites; natural fire regime is stand-replacing, estimated fire return interval >200 years; mountain hemlock forest typical**

**(1) . North-facing slopes High Cascades Wet (F003XY701OR) ...** F003XY701OR – High Cascades Wet

**(2) . South-facing slopes; droughty in summer High Cascades Dry (F003XY705OR) ...** F003XY705OR – High Cascades Dry

**(3) Otherwise High Cascades Moist (F003XY706OR) ...** F003XY706OR – High Cascades Moist

**b) Mid-elevation sites; natural fire regime is mixed-severity; Shasta red fir forest typical**

**(1) Lowest elevations; soil is medial, not ashy; Douglas-fir important Pseudotsuga menziesii/Vaccinium membranaceum/Chimaphila umbellata (F003XY709OR) ...** F003XY709OR – Pseudotsuga menziesii/Vaccinium membranaceum/Chimaphila umbellata

**(2) Otherwise**

**(a) Natural fire return interval is relatively frequent; ponderosa pine typically present**

**(1) Associated with Umak soil series Abies xshastensis-Pinus monticola/Arctostaphylos nevadensis (F003XY708OR) ...** F003XY708OR – Abies ×Shastensis, Pinus Monticola, and Arctostaphylos Nevadensis

**(2) Otherwise; Southern Cascades Mid-Elevation Dry (F003XY704OR) ...** F003XY704OR – Southern Cascades Mid-Elevation Dry

**(b) Natural fire return interval otherwise; white fir typically present South Cascades - (F003XY703OR) ...** F003XY703OR – South Cascades Mid-Elevation

**2 Site located outside Crater Lake National Park; cryic soil temperature regime; udic soil moisture regime; Shasta red fir important MC Low Cryic Udic Forest Group (F003XF001OR) (new PES) ...** AX003X06F001 – Mazama High Cascades Low Cryic Udic Forest Group

**B. . Located outside Crater Lake National Park**

**1 Undissected, Plio-Pleistocene Volcanic Plateaus**

**i. located south of Waldo Lake (Willamette NF) and Lookout Mountain (Deschutes NF); Mazama coarse ash and pumice usually present LRU F or 6 (Mazama Cascades)**

**ii. Location otherwise; Mazama coarse ash and pumice mantle usually absent LRU D or 4 (High Cascades)**

a. **Aquic soil moisture regime; entire soil profile composed of muck or peat; peat hummocks common Sphagnum Fen 40-60 PZ (R003XY017OR) (pre-existed PES Project)** ... R003XY017OR – Sphagnum Fen 40-60 PZ

b. **Udic soil moisture regime**

1) **Frigid soil temperature regime; located east of the Cascade crest; natural fire regime is mixed-severity**

a) **MAP >60 inches; western hemlock typically present Frigid Udic Maritime Mountain Slopes 60-90 PZ (F003XD806OR)** ... F003XD806OR – Frigid Udic Maritime Mountain Slopes 60-90 PZ

b) **MAP 40 to 60 inches; western hemlock absent Frigid Udic Maritime Mountain Slopes 40-60 PZ (F003XD805OR)** ... F003XD805OR – Frigid Udic Maritime Mountain Slopes 40-60 PZ

2) **Cryic soil temperature regime; natural fire regime is stand-replacing; mountain hemlock forest typical HC High Cryic Udic Forest Group (F003XD001OR)** ... AX003X04G001 – High Cascades High Cryic Udic Forest Group

**2 . Dissected Mountains**

i. **Widespread Pleistocene alpine glaciation; natural fire regimes are predominantly stand-replacing LRU C or 3 (Glaciated Western Cascades)**

a. **Mesic soil temperature regime; udic soil moisture regime; below the snowpack zone GWC Mesic Udic Forest Group (F003XC003OR)** ... AX003X03B003 – Glaciated Middle Cascades Mesic Udic Forest Group

b. **Frigid soil temperature regime; udic soil moisture regime GWC Frigid Udic Forest Group (F003XC004OR)** ... AX003X03C004 – Glaciated Middle Cascades Frigid Udic Forest Group

c. **Cryic soil temperature regime; udic soil moisture regime; Pacific silver fir a shade-tolerant tree GWC Cryic Udic Forest Group (F003XC007OR)** ... AX003X03F007 – Glaciated Middle Cascades Cryic Udic Forest Group

ii. **Limited Pleistocene alpine glaciation; natural fire regimes are predominantly mixed-severity LRU E or 5 (Western Cascades)**

a. **Mesic or frigid soil temperature regime**

1) **Floodplains;WC Floodplain Group (F003XE001OR)** ... AX003X00Z001 – Western Middle Cascades Flood Plain Group

2) **Non-floodplains**

a) **Aquic soil moisture regime;WC Swamp Group (F003XE002OR)** ... AX003X00Z014 – Western Middle Cascades Swamp Group

b) **Udic soil moisture regime**

(1) **Mesic soil temperature regime; below the snowpack zone WC Mesic Udic Forest Group (F003XE003OR)** ... AX003X00B003 – Western Middle Cascades Mesic Udic Forest Group

(2) **Frigid soil temperature regime WC Frigid Udic Forest Group (F003XE004OR)** ... AX003X00D004 – Western Middle Cascades Frigid Udic Forest Group

**b. Cryic soil temperature regime; Pacific silver fir a shade-tolerant tree; mountain hemlock absent; mixed-severity fire typical WC Low Cryic Udic Forest Group (F003XE005OR)** ... AX003X00F005 – Western Middle Cascades Low Cryic Udic Forest Group