

Major Land Resource Area 043A

Northern Rocky Mountains

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Ecological site keys

MLRA 43A – Subdivisions

- I. Site is North of limit of continental glaciation and/or north of MLRA 44A (Spokane-Pend Oreille Valleys)
 - A. Site is on glaciated hills and mountains west of Republic Graben and Sanpoil River Valley; LRU01 Okanogan Plateau
 - B. Site is east of or within Republic Graben and Sanpoil River Valley
 - 1 Site is west of Kettle Crest
 - i. Site is on hill slopes, terraces and valley floors below 800m elevation (within Republic Graben/Sanpoil River Valley); LRU03 Columbia-Colville Valleys
 - ii. Site is on hill or mountain slopes at or above 800m elevation
 - a. Site is on hill or mountain slopes below 1070m elevation; LRU01 Okanogan Plateau
 - b. Site is on mountain slopes above 1070m elevation; LRU02 Western Selkirk Highlands
 - 2 Site is east of Kettle Crest
 - i. Site is west of the Kootenai River Valley
 - a. Site is west of Pend Oreille River
 - 1) Site is on hillslopes and terraces below 800m elevation; LRU03 Columbia-Colville Valleys
 - 2) Site is on mountain slopes and ridges above 800m elevation
 - a) Site is on mountain slopes and ridges west of Colville River; LRU02 Western Selkirk Highlands
 - b) Site is east of Colville River; LRU03 Selkirk Mountains
 - b. Site is east of Pend Oreille River
 - 1) Site is on hill or mountain slopes above 1000m elevation; LRU04 Selkirk Mountains
 - 2) Site is on hill slopes or terraces below 1000m elevation; see MLRA 44A key
 - ii. Site is east of the Kootenai River Valley
 - II. Site is South of limit of continental glaciation and/or south of MLRA 44A (Spokane-Pend Oreille Valleys)
 - A. Site is in canyonlands in the Clearwater River drainage at elevation below 800m; LRU08 Clearwater Canyons
 - B. Site is north of Clearwater-Lochsa River system and above 800m elevation
 - 1 Site is on hill and low mountain slopes below 1070m elevation
 - i. Site is on hills and plateaus with basalt bedrock and/or Tertiary sediment deposits; LRU07 Eastern Columbia Plateau Embayments
 - ii. Site is on hill or low mountain slopes with other geologies; LRU09 Western Bitterroot Foothills
 - 2 Site is above 1070m elevation
 - i. Site is on metasedimentary geology of the Belt Supergroup; LRU11 Bitterroot Metasedimentary Zone
 - ii. Site is on other granitic or metamorphic geology; LRU10 Clearwater Mountains
 - III. Site resides in the Purcell or Cabinet Mountains, or the Lewis, Livingston, Swan or Mission ranges. Please go to Key 10.

43A LRU 1-4 mesic/xeric zone - Draft key (4MOS)

1) depth to SHWT <75cm

a) mineral soil materials

i) water table mostly >24 inches during May-Oct (MWD)...F043AY501WA ... F043AY501WA – Warm Mesic Xeric Loamy Foothills, Terraces, High Water Table (Ponderosa Pine/Shrub) Pinus Ponderosa / Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus

ii) Water table <24 inches during May to Oct (PD)...R043AY510WA ... R043AY510ID – Cool-Mesic Aquic Loamy Flood Plains (CAST/CAREX)

b) Organic soil materials...none proposed

2) depth to SHWT >75cm

a) warm-mesic zone...(EX043AESG03)

i) sandy...F043AY509WA ... F043AY509WA – Warm, Xeric, Sandy, Outwash Terraces and Plains (Ponderosa Pine/Dry Grass) Pinus ponderosa / Pseudoroegneria spicata , Pinus ponderosa / Festuca idahoensis

ii) not sandy

(1) low awc...F043AY510WA ... F043AY510WA – Warm, Xeric, Loamy Hillsides, Low Available Water Capacity (Ponderosa Pine/Dry Grass) Pinus ponderosa / Pseudoroegneria spicata , Pinus ponderosa / Festuca idahoensis

(2) loamy

(a) mixed ash...F043AY511WA ... F043AY511WA – Warm, Xeric, Loamy Hillsides, Mixed ash surface (Ponderosa Pine/Dry Grass) Pinus ponderosa / Pseudoroegneria spicata, Pinus ponderosa / Festuca idahoensis

(b) ashy...F043AY512WA ... F043AY512WA – Warm, Xeric, Loamy Mountainsides, ashy surface (Ponderosa Pine/Dry Grass) Pinus ponderosa / Pseudoroegneria spicata , Pinus ponderosa / Festuca idahoensis

b) mesic to cool mesic zone

i) mesic

(1) Xeric...none proposed

(2) Dry-xeric

(a) Low Awc...R043AY507WA ... R043AY507WA – Cool-Mesic Dry-Xeric Loamy Low AWC (PSSP/FEID/ACNE)

ii) cool-mesic

(1) Xeric or dry-xeric

(a) Dry-xeric...R043AY506WA ... R043AY506WA – Cool-Mesic Dry-Xeric Loamy Hills and Mountains (PSSP/FECA/FEID)

(b) xeric...(EX043AESG02)

(i) sandy...F043AY508WA ... F043AY508WA – Warm Mesic Xeric Sandy Hill slopes and Outwash terraces (Ponderosa Pine Dry Shrub, Grass) Pinus ponderosa / Purshia tridentata – Festuca idahoensis - Pseudoroegneria spicata

(ii) not sandy

1 low awc...F043AY507WA ... F043AY507WA – Warm Mesic Xeric Loamy Foothills/Mountainsides, low AWC subsoils (Ponderosa Pine Dry Shrub, Grass) Pinus ponderosa / Purshia tridentata – Festuca idahoensis - Pseudoroegneria spicata

2 loamy

a. mixed ash...F043AY506WA ... F043AY506WA – Warm Mesic Xeric Loamy Foothills/Mountainsides, mixed ash surface (Ponderosa Pine Dry Shrub, Grass) Pinus ponderosa / Purshia tridentata – Festuca idahoensis - Pseudoroegneria spicata

b. ashy...F043AY505WA ... F043AY505WA – Warm Mesic Xeric Loamy

Foothills/Mountainsides, ashy surface (Ponderosa Pine Dry Shrub, Grass) Pinus ponderosa / Purshia tridentata – Festuca idahoensis - Pseudoroegneria spicata
(2) moist xeric ... F043AY502WA – Warm Mesic Xeric Loamy Foothills, Terraces, mixed ash surface (Ponderosa Pine/Shrub) Pinus Ponderosa / Symphoricarpos albus, Pinus Ponderosa / Physocarpus malvaceus

43A LRU 1-4, frigid/xeric zone - Draft key (4MOS)

A. Cool-frigid...(EX043AESG04)

a. High WT...use F043AY514WA ... F043AY514WA – Cool-Frigid, Xeric, Loamy Mountainsides, mixed ash surface (Douglas Fir/Cool Dry Grass) Pseudotsuga menziesii - Calamagrostis rubescens

b. Not High WT

i. Dry-xeric

1 Aspen dominates site...F043AY533WA (aspen-pinegrass) ... F043AY533WA – Cool-Frigid, Dry-Xeric, Loamy Mountainsides (Aspen Cool Grass) Populus tremuloides/Calamagrostis rubescens

2 Conifers dominate site

a. Sandy...F043AY516WA ... F043AY516WA – Cool-Frigid, Xeric, Sandy Outwash Terraces, mixed ash surface (Douglas-fir/Cool Dry Grass) Pseudotsuga menziesii - Calamagrostis rubescens

b. Loamy

i. Low awc...F043AY515WA ... F043AY515WA – Cool-Frigid, Xeric, Loamy Mountainsides, low AWC subsoils (Douglas Fir/Cool Dry Grass) Pseudotsuga menziesii - Calamagrostis rubescens

ii. Loamy

1 Ashy...F043AY513WA ... F043AY513WA – Cool-Frigid, Xeric, Loamy Mountainsides, ashy surface (Douglas-Fir/Cool Dry Grass) Pseudotsuga menziesii - Calamagrostis rubescens

2 Mixed ash...F043AY514WA ... F043AY514WA – Cool-Frigid, Xeric, Loamy Mountainsides, mixed ash surface (Douglas Fir/Cool Dry Grass) Pseudotsuga menziesii - Calamagrostis rubescens

ii. Moist-xeric

1 Sandy...F043AY586WA ... F043AY586WA – Frigid, Xeric, Sandy, Outwash Terraces (Douglas-fir-Grand Fir Cool Shrub)

2 Loamy

a. Mountain sides...F043AY531WA ... F043AY531WA – Cool-Frigid, Moist-Xeric, Loamy Mountainsides, ashy surface (Douglas-fir-Grand Fir Cool Shrub) Douglas-fir-grand fir/low huckleberry-big huckleberry-dwarf huckleberry

b. Terraces...F043AY532WA ... F043AY532WA – Cool-Frigid, Moist-Xeric, Loamy Terraces, ashy surface (Douglas-fir-Grand Fir Cool Shrub) Douglas-fir-grand fir/low huckleberry-big huckleberry-dwarf huckleberry

B. Frigid or warm-frigid

a. Warm-frigid

i. Aquic Xeric ... R043AY513ID

ii. Other

1 Xeric (EX043AESG05)

a. High WT ... F043AY534WA – Warm-Frigid, Aquic, Loamy Footslopes and Flood Plains (Aspen Low Shrub) Populus tremuloides/Symphoricarpos albus

b. No high WT

i. Sandy...F043AY585WA ... F043AY585WA – Warm-Frigid, Xeric, Sandy, Outwash Terraces (Douglas-fir Warm Dry Shrub)

ii. Not sandy

1 Low awc...F043AY519WA ... F043AY519WA – Warm-Frigid, Xeric, Loamy Slopes, low AWC subsoils (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus malvaceus - Symphoricarpos albus

2 Loamy

a. Ashy...F043AY517WA ... F043AY517WA – Warm-Frigid, Xeric, Loamy Foothills/Mountainsides, ashy surface (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus malvaceus - Symphoricarpos albus

b. Mixed ash...F043AY518WA ... F043AY518WA – Warm-Frigid, Xeric, Loamy Slopes, mixed ash surface (Douglas-Fir/Warm Dry Shrub) Pseudotsuga menziesii / Physocarpus malvaceus - Symphoricarpos albus

2 moist-xeric...(EX043AESG06)

a. Low awc...F043AY523WA

b. Loamy

i. Ashy...F043AY521WA ... F043AY521WA – Warm-Frigid, Moist- Xeric Loamy Foothills/Mountainsides, ashy surface (Grand Fir Warm Dry Shrub) Abies grandis - Pseudotsuga menziesii / Physocarpus malvaceus - Symphoricarpos albus

ii. Mixed ash...F043AY522WA ... F043AY522WA – Warm-Frigid, Moist- Xeric Loamy Foothills/Mountainsides, mixed ash surface (Grand Fir Warm Dry Shrub) Abies grandis - Pseudotsuga menziesii / Physocarpus malvaceus - Symphoricarpos albus

b. Frigid

i. Moist-xericABGR/LIBO...none proposed

MLRA 43A PES- Areas of Purcell or Cabinet Mountains, Lewis, Livingston, Mission and Swan Ranges - PES

I. Site Forested

A. Site receives additional effective moisture - Subirrigated Cool-Moist Woodland ... F043AP907MT – Subirrigated Cool Moist Woodland Group

B. Site does not receive additional effective moisture

1 Site in moist conditions (25-35 inches mean annual precipitation and 38-42 degrees F mean annual temperature and 70-90 days frost free, 2200-5000 feet elevation). Surface soil texture is gravelly ashy silt loam or gravelly silt loam or gravelly loam.

i. soils ashy - Ashy Cool- Moist Woodland ... F043AP902MT – Ashy Cool Moist Woodland Group

ii. Soils not ashy - Upland Cool - Moist Woodland ... F043AP910MT – Upland Cool Moist Woodland Group

2 Site in high elevation; cold conditions (35-70 or 50-70 frost free days, 30-60 or 40-0-60 inch mean annual precipitation, 37-43 degrees F mean annual temperature, 4000-8000 feet elevation).

i. soils shallow - Shallow Cold Woodland ... F043AP904MT – Shallow Cold Woodland Group

ii. Soils not shallow - Upland Cold Woodland ... F043AP908MT – Upland Cold Woodland Group

3 Site in moderate elevations; cool conditions (70-90 days frost free, 20-28 inches mean annual precipitation, 40-45 degree F mean annual temperature, 3000-5000 feet elevation).

i. Soils shallow - Shallow Cool Woodland ... F043AP905MT – Shallow Cool Woodland Group

ii. Soils not shallow - Upland Cool Woodland ... F043AP909MT – Upland Cool Woodland Group

4 Site in low elevations; warm conditions (70-95 or 75-105 frost free days, 17-25 inches mean annual precipitation, 40-45 degrees F mean annual temperature, 2900-5000 feet elevation).

i. Soils shallow - Shallow Warm Woodland ... F043AP906MT – Shallow Warm Woodland Group

ii. Soils not shallow - Upland Warm Woodland ... F043AP911MT – Upland Warm Woodland Group

II. Site not forested

A. Site located in a floodplain - Bottomland (receives additional water, in the aquic soil moisture regime, frigid soil temperature regime, 0-2 percent slopes, 3200-4100 feet elevation). ... R043AP802MT – Bottomland Group

B. Site not located in a floodplain

1 Site receives additional effective moisture - Subirrigated Grassland (has high water table within 100 cm of surface, 20-30 inch mean annual precipitation, 41-45 degree F mean annual temperature, 75-95 days frost free). ... R043AP807MT – Subirrigated Grassland Group

2 Site does not receive additional effective moisture

i. Soils Shallow - Shallow Grassland (14-25 inches mean annual precipitation, 43-46 degrees F mean annual temperature, 70-100 frost free days, 2900-5000 feet elevation). ... R043AP805MT – Shallow Grassland Group

ii. Soils not shallow

a. Site in Alpine Lifezone - Upland Alpine (45-85 inches mean annual precipitation, 32-39 degrees F mean annual temperature, 25-50 days frost free, 5200-8500 feet elevation). ... R043AP809MT – Upland Alpine Group

b. Site not in Alpine - Upland Grassland (14-19 inches mean annual precipitation, 41-45 degrees F mean annual temperature, 90-105 days frost free, 2700-4500 feet elevation). ... R043AP810MT – Upland Grassland Group

43A LRU 1-4, frigid/udic zone - Draft key (4MOS)

I. Warm frigid

A. Aquic ... R043AY512ID – Warm-Frigid Aquic-Udic Loamy Flood Plains (Wet) (DECA/CAREX)

B. Other

a. Dry udic (EX043AESG07)

i. Sandy; ... F043AY530WA – Warm-Frigid, Dry-Udic, Sandy Outwash Terraces, mixed ash surface (Grand Fir Moist Herb) *Abies grandis*/*Clintonia uniflora*

ii. Loamy

1 .Ashy surface ... F043AY529WA – Warm-Frigid, Dry-Udic, Loamy Foothills/Mountainsides, ashy surface (Grand Fir Moist Herb) *Abies grandis*/*Clintonia uniflora*

2 Mixed ash; none proposed

b. Udic (EX043AESG08)

i. High Water Table (<75cm) ... F043AY527WA – Warm-Frigid, Udic, Loamy Foothills/Valleys, high water table (western redcedar, moist herb) *Thuja plicata* / *Clintonia uniflora*

ii. No High Water Table(>75cm)

1 Sandy; none proposed

2 Loamy

a) Low AWC ... F043AY528WA – Warm-Frigid, Udic, Loamy Foothills/Mountainsides, low AWC subsoils (western redcedar, moist herb) *Thuja plicata* / *Clintonia uniflora*

b) Not Low AWC

i) Ashy surface ... F043AY526WA – Warm-Frigid, Udic, Loamy Foothills/Mountainsides, ashy surface (western redcedar, moist herb) *Thuja plicata* / *Clintonia uniflora*

ii) Mixed ash; none proposed

II. Frigid or cool frigid

a. Udic (EX043AESG09)

i. High Water Table (<75cm) ... F043AY527WA – Warm-Frigid, Udic, Loamy Foothills/Valleys, high water table (western redcedar, moist herb) *Thuja plicata* / *Clintonia uniflora*

ii. No High Water Table (>75cm)

1 Sandy; none proposed

2 Loamy

i. Low AWC ... F043AY557ID – Frigid, Udic, Loamy, Mountains and Valleys, Low Available Water (western hemlock/moist herb) Western hemlock/Brides bonnet-wild ginger

ii. Not as above

a) Ashy surface ... F043AY524WA – Frigid, Udic, Loamy, Foothills/Mountainsides, ashy surface (Western Hemlock/Moist Forbes) Tsuga heterophylla / Clintonia uniflora , Tsuga heterophylla / Asarum caudatum

b) Mixed ash ... F043AY525WA – Frigid, Udic, Loamy Foothills/Mountainsides, mixed ash surface (Western Hemlock/Moist Forbes) Tsuga heterophylla / Clintonia uniflora , Tsuga heterophylla / Asarum caudatum

b. Moist Xeric

i. Low AWC ... R043AY516ID – Cool-Frigid Moist-Xeric Loamy Low AWC Mountain Slopes (FECA/FEID/FEVI)

ii. Loamy; none proposed

MLRA 43A - ESD Key – LRU 7-11 – Frigid/Xeric Zone - Draft Key

1 Warm-Frigid

A. Aquic-Xeric ... R043AY513ID – Warm-Frigid Aquic-Xeric Loamy Flood Plains (Semi-wet) (DACA/CAREX)

B. Other

a. Xeric (EX43AESG13)

i. Sandy ... F043AY540ID – Warm-Frigid, Xeric, Unglaciaded, Sandy, Mountain slopes (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

ii. Loamy

1 Fragipan present...F043AY541ID ... F043AY541ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Hills, Fragipans (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

2 Fragipan not present

a. Low Available Water Capacity...F043AY542ID ... F043AY542ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Mountains and Breaks, Low Available Water (Douglas-fir) Douglas fir / mallow ninebark - common snowberry

b. Moderate to High Available Water Capacity

i. Metasedimentary geology

1 Ashy surface...F043AY543ID ... F043AY543ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Metasedimentary, Hills and Mountains, Ashy surface (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

2 Mixed ash surface...F043AY544ID ... F043AY544ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Metasedimentary, Hills and Mountains, Mixed ash surface (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

ii. Other geology

1 Seasonal HWT(perched)...use F043AY541ID ... F043AY541ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Hills, Fragipans (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

2 Seasonal HWT not present

a. Basalt geology...F043AY545ID ... F043AY545ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Basalt, Hills and Canyons (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry

b. Other geology

- i. Ashy surface...use F043AY543ID ... F043AY543ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Metasedimentary, Hills and Mountains, Ashy surface (Douglas-fir/dry shrub) Douglas fir / mallow ninebark - common snowberry
- ii. Mixed ash surface...F043AY546ID ... F043AY546ID – Warm-Frigid, Xeric, Unglaciaded, Loamy, Hills, Mountains and Canyons, Mixed ash Surface Douglas fir / mallow ninebark - common snowberry

b. Moist-Xeric (EX43AESG14)

i. Fragipan present...F043AY547ID ... F043AY547ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Hills, Fragipans, (grand fir/warm shrub) grand fir/ mallow ninebark - common snowberry

ii. Fragipan not present

A. Sandy

B. Loamy

1 Low Available Water Capacity...F043AY548ID ... F043AY548ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Hills and Mountains, Low Available Water, (grand fir) grand fir/ mallow ninebark - common snowberry

2 Moderate to High Available Water Capacity

a. Metasedimentary geology

- i. Ashy surface...F043AY549ID ... F043AY549ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Mountains, Metasedimentary, Ashy Surface, (grand fir) grand fir/ mallow ninebark - common snowberry
- ii. Mixed ash surface...F043AY550ID ... F043AY550ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Hills and Mountains, Metasedimentary, Mixed Ash Grand fir/ mallow ninebark - common snowberry

b. Other geology

i. Basalt geology ... F043AY551ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Canyons and Hills, Basalt, (grand fir/warm shrub) Grand fir/ mallow ninebark - common snowberry

ii. Other geology

1 Ashy surface ... F043AY552ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Hills and Mountains, Ashy Surface (grand fir) grand fir/ mallow ninebark - common snowberry

2 Mixed ash surface...F043AY553ID ... F043AY553ID – Warm-Frigid, Moist-Xeric, Unglaciaded, Loamy, Hills and Mountains, Mixed Ash Surface, (grand fir/warm shrub) Grand fir/mallow ninebark- common snowberry

2 Frigid

MLRA 43A - ESD Key – LRU 7-11 – Mesic/Xeric Zone - Draft Key (4MOS)

1 Warm-Mesic

a. Aquic-Xeric...R043AY509ID ... R043AY509ID – Warm-Mesic Aquic-Xeric Loamy Flood Plains (riparian forest/shrub)

b. Non Aquic-Xeric

i. Dry-Xeric (PSSP/FEID/ACNE)

1 Loamy...R043AY503ID ... R043AY503ID – Warm-Mesic Dry-Xeric Loamy Hills and Canyons (PSSP/FEID/POSE)

2 Low AWC...R043AY502ID ... R043AY502ID – Warm-Mesic Dry-Xeric Loamy Low AWC Hills and Canyons (PSSP/FEID/ACNE)

ii. Xeric... EX43AESG11 (Ponderosa pine/dry grass)

1 Low Available Water Capacity... F043AY536ID ... F043AY536ID – Warm-Mesic, Xeric, Unglaciaded, Loamy Hillsides and Canyons, Low Available Water (Ponderosa Pine) Ponderosa pine/bluebunch wheatgrass-Idaho fescue

2 Moderate to High Available Water Capacity... F043AY535ID ... F043AY535ID – Warm-Mesic, Xeric, Unglaciaded, Loamy Canyons and Terraces (Ponderosa Pine/Dry Grass) Ponderosa pine/bluebunch wheatgrass-Idaho fescue

2 Mesic

a. Dry-xeric

i. Loamy...R043AY504ID ... R043AY504ID – Mesic Dry-Xeric Loamy Hills and Canyons (FEID/PSSP/ELGL)

ii. Low AWC ... R043AY505ID – Mesic Dry-Xeric Loamy Low AWC Hills and Canyons (FEID/PSSP)

b. Xeric... EX43AESG12

i. Low Available Water Capacity... F043AY537ID

ii. Moderate to High Available Water Capacity

1 Basalt geology...F043AY538ID ... F043AY538ID – Mesic, Xeric, Unglaciaded Canyons and Benches, Loamy, Basalt (Ponderosa pine/Shrub) ponderosa pine / common snowberry- mallow ninebark)

2 Other geology...F043AY539ID ... F043AY539ID – Mesic, Xeric, Unglaciaded Hills and Canyons, Loamy (Ponderosa pine/Shrub) ponderosa pine / common snowberry- mallow ninebark)

MLRA 43A - ESD Key – LRU 7-11 – Frigid/Udic Zone - Draft Key (4MOS)

1) Cool-Frigid/Moist-Udic...Grand Fir Mosaic-2 F043AY555ID ... F043AY555ID – Cool-Frigid, Moist-Udic, Loamy, Mountains, Grand Fir Mosaic Grand fir/Bracken fern-Coneflower

2) Frigid or Warm-Frigid

a) Frigid

i) Frigid-Aquic

(1) Organic materials in seeps, depressions and backswamps...R043AY511ID ... R043AY511ID – Frigid Aquic Organic Depressions and Seeps (CAREX/SPHAG)

(2) Mineral materials on narrow floodplains...R043AY517ID ... R043AY517ID – Frigid Aquic-Udic Loamy Flood Plains (ALIN/COSE/CAREX)

ii) Frigid/Udic-EX43AESG15

(1) Frangipan not present

(A) Apparent water table within 30 inches of surface some time during Apr-Oct period ...use F043AY560ID ... F043AY560ID – Frigid, Udic, Unglaciaded, Loamy, Hills, Mountains and Valleys, Mixed ash surface (western hemlock) Western hemlock/Brides bonnet-wild ginger

(B) Water table not as above

(i) Low Available water Capacity... F043AY557ID ... F043AY557ID – Frigid, Udic, Loamy, Mountains and Valleys, Low Available Water (western hemlock/moist herb) Western hemlock/Brides bonnet-wild ginger

(ii) Moderate to High Available Water Capacity

1 Metasedimentary Geology... F043AY558ID ... F043AY558ID – Frigid, Udic, Unglaciaded, Loamy, Hills and Mountains, Metasedimentary (western hemlock/moist herb) Western hemlock/Brides bonnet-wild ginger

2 Other Geology

a. Ashy surface... F043AY559ID ... F043AY559ID – Frigid, Udic, Unglaciaded, Loamy, Hills, Mountains and Valleys, Ashy surface (western hemlock/moist herb) Western hemlock/Brides bonnet-wild ginger

b. Mixed ash surface... F043AY560ID ... F043AY560ID – Frigid, Udic, Unglaciaded, Loamy, Hills, Mountains and Valleys, Mixed ash surface (western hemlock) Western hemlock/Brides bonnet-wild ginger

(2) Fragipan present... F043AY556ID ... F043AY556ID – Frigid, Udic, Unglaciaded, Loamy, Hills, Fragipan (western hemlock/moist herb) Western hemlock/Brides bonnet-wild ginger

b) Warm-Frigid

i) Aquic

(1) Floodplains of large river systems

a. Mineral soils...F043AY584ID ... F043AY584ID – Warm-Frigid, Aquic-Udic, Flood Plains (POBAT/POTR/COSE)

b. Organic soils...R043AY511ID ... R043AY511ID – Frigid Aquic Organic Depressions and Seeps (CAREX/SPHAG)

(2) Floodplains and terraces foothill drainageways

(a) Somewhat poorly drained to poorly drained sites (high water table during May-Oct = 14 to 30 inches)...R043AY513ID ... R043AY513ID – Warm-Frigid Aquic-Xeric Loamy Flood Plains (Semi-wet) (DACA/CAREX)

(b) Poorly to very poorly drained sites (high water table during May-Oct = 0 to 14 inches)... R043AY512ID ... R043AY512ID – Warm-Frigid Aquic-Udic Loamy Flood Plains (Wet) (DECA/CAREX)

ii) Other

(1) Dry-Udic-EX43AESG16

(a) Fragipan present... F043AY561ID ... F043AY561ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills, Fragipan (grand fir/moist herb) Grand Fir/Bride's Bonnet

(b) Fragipan not present

(i) Low Available Water Capacity... F043AY562ID ... F043AY562ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Mountains, Low Available Water (grand fir/moist herb) Grand Fir / Bride's Bonnet

(ii) Moderate to High Available Water Capacity

1 Metasedimentary Geology

a. Ashy surface... F043AY563ID ... F043AY563ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Mountains, Metasedimentary, Ashy surface (grand fir) (grand fir) Grand Fir / Bride's Bonnet

b. Mixed ash surface... F043AY564ID ... F043AY564ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills and Mountains, Metasedimentary, Mixed Ash surface Grand Fir / Bride's Bonnet

2 Other Geology

a. Basalt geology

i. Ashy surface... use F043AY565ID ... F043AY565ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills, and Canyons, Basalt (grand fir/moist herb) Grand fir/Bride's Bonnet

ii. Mixed ash surface... F043AY565ID ... F043AY565ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills, and Canyons, Basalt (grand fir/moist herb) Grand fir/Bride's Bonnet

b. Other geology

i. Ashy surface... F043AY566ID ... F043AY566ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills and Mountains, Ashy surface (grand fir/moist herb) Grand Fir / Bride's Bonnet

ii. Mixed ash surface... F043AY567ID ... F043AY567ID – Warm-Frigid, Dry-Udic, Unglaciaded, Loamy, Hills and Mountains, Mixed Ash surface (grand fir) Grand Fir / Bride's Bonnet

(2) Other

(A) Udic...EX43AESG17 (Western redcedar/moist herb)

(a) Fragipan present

(i) Ashy Surface... F043AY568ID ... F043AY568ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills, Fragipan, Ashy surface (western redcedar/moist herb) Western Redcedar / Bride's Bonnet - Wild Ginger

(ii) Mixed ash surface... F043AY569ID ... F043AY569ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills, Fragipan, Mixed ash surface (western redcedar) Western Redcedar / Bride's Bonnet - Wild Ginger

(b) Fragipan not present

(i) Apparent water table within 30 inches of surface some time during Apr-Oct period.... F043AY576ID ... F043AY576ID – Warm-Frigid, Udic, Unglaciaded, Loamy, High Water Table (western redcedar/moist herb) Western Redcedar / Bride's Bonnet - Wild Ginger

(ii) Not as above

1 Metasedimentary geology

a. Ashy Surface... F043AY570ID ... F043AY570ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills and Mountains, Metasedimentary, Ashy surface Western Redcedar / Bride's Bonnet - Wild Ginger Western Redcedar / Bride's Bonnet - Wild Ginger

b. Mixed ash surface... F043AY571ID ... F043AY571ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills and Mountains, Metasedimentary, Mixed ash surface Western Redcedar / Bride's Bonnet - Wild Ginger

2 Other geology

a. Basalt geology

i. Ashy Surface... F043AY572ID ... F043AY572ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills and Canyons, Basalt, Ashy surface (western redcedar) Western Redcedar / Bride's Bonnet - Wild Ginger

ii. Mixed ash surface... F043AY573ID ... F043AY573ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills and Canyons, Basalt, Mixed ash surface Western Redcedar / Bride's Bonnet - Wild Ginger

b. Other geology

i. Ashy Surface... F043AY574ID ... F043AY574ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills and Mountains, Ashy surface (western redcedar) Western Redcedar / Bride's Bonnet - Wild Ginger

ii. Mixed ash surface... F043AY575ID ... F043AY575ID – Warm-Frigid, Udic, Unglaciaded, Loamy, Hills, Mountains and Valleys, Mixed ash surface (western redcedar/moist herb) Western Redcedar / Bride's Bonnet - Wild Ginger

(B) Very moist-Udic ... F043AY577ID – Warm-Frigid, Very Moist-Udic Loamy

Foothills/Mountainsides (Western redcedar, fern) Western Redcedar / Oakfern-Maidenhair fern

MLRA 43A - ESD Key – LRU 7-11 – Cryic/Udic Zone - Draft Key (4MOS)

1 Warm-Cryic

a. Aquic

i. Mineral soils...R043AY514ID ... R043AY514ID – Warm-Cryic Aquic-Udic Loamy Flood Plains (DECE/CAREX/ABLA)

ii. Organic soils...use R043AY511ID ... R043AY511ID – Frigid Aquic Organic Depressions and Seeps (CAREX/SPHAG)

b. Not Aquic

i. Dry-Udic... R043AY501ID ... R043AY501ID – Warm-Cryic Dry-Udic Loamy Mountains (Beargrass/Thinleaf huckleberry-Sitka Valerian)

ii. Moist-Udic... EX43AESG18

1 Metasedimentary geology... F043AY578ID ... F043AY578ID – Warm-Cryic, Moist-Udic, Loamy, Mountain slopes, Metasedimentary, Ashy surface (Subalpine Fir-Mountain Hemlock/ Moist Herb) Subalpine Fir-Mountain Hemlock/Bride's Bonnet

2 Other geology

a. Mountain sides... F043AY579ID ... F043AY579ID – Warm-Cryic, Moist-Udic, Loamy, Mountain slopes, Ashy surface (Subalpine Fir-Mountain Hemlock/ Moist Herb) Subalpine Fir-Mountain Hemlock/Bride's Bonnet

b. Avalanche chutes... F043AY580ID ... F043AY580ID – Warm-Cryic, Moist-Udic, Loamy, Avalanche Chutes and Drainages (Sitka alder-Miner's Lettuce)

2 Cryic or Cool-Cryic

a. Cryic

i. Moist-Udic...EX43AESG19

1 Low Available Water Capacity... F043AY581ID ... F043AY581ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Low AWC (Subalpine Fir-Mountain Hemlock/ Cool Shrub-Beargrass) Subalpine Fir-Mountain Hemlock/ Menziesia -Beargrass

2 Moderate to High Available Water Capacity

a. Metasedimentary geology... F043AY582ID ... F043AY582ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Metasedimentary, Ashy surface (Subalpine Fir-Mountain Hemlock/ Cool Shrub-Beargrass) Subalpine Fir-Mountain Hemlock/ Menziesia -Beargrass

b. Other geology... F043AY583ID ... F043AY583ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Ashy surface Subalpine Fir-Mountain Hemlock/ Menziesia -Beargrass

ii. Cryic/Very Moist-Udic...ABLA/STAM (not proposed)

b. Cool-Cryic...PIAL (not proposed)

43A Areas of Purcell or Cabinet Mountains, Lewis, Livingston, Mission and Swan Ranges

I. Resides in the Lewis and/or Livingston Ranges in the northeastern most portion of this MLRA.

A. Alpine LifeZone

1 Treeline - Krummholtz ... F043AX958MT – Alpine Krummholtz Coniferous subalpine fir-whitebark pine/grouse whortleberry *Abies lasiocarpa*-*Pinus albicaulis* (*Picea engelmannii*)/*Vaccinium scoparium*

2 Nonforested

i. Site has concave shape, vegetation dominated by low growing sedges ... R043AX979MT – Alpine Nivation Hollow Payson's sedge / black alpine sedge -northern singlespike sedge / Drummond's rush (*Carex paysonis*/ *Carex nigricans*-*Carex scirpoidea*/ *Juncus drummondii*)

ii. Site experience frost heave action resulting in solifluction lobes ... R043AX971MT – Alpine Solifluction Terrace *Dryas octopetala* (*Arctostaphylos uva-ursi*/*Salix arctica*)

iii. Site is a steep, unstable to stabilizing colluvial slope ... R043AX962MT – Alpine Unstable Talus rocky ledge penstemon (*Penstemon ellipticus*)

iv. Site has shallow soils on a cirque floor ... R043AX972MT – Alpine Shallow Cirque Floors Arctic willow – pink mountainheath-alpine laurel /smallwing sedge -shortstalk sedge (*Salix arctica*-*Phyllodoce empetriformis*/*Kalmia polifolia*/*Carex microptera*-*Carex podocarpa*)

v. Site is a shallow meadow ... R043AX963MT – Alpine Shallow Meadow yellow avalanche-lily-Scouler's St. Johnswort-alpine leafybract aster-Sitka valerian- heartleaf arnica/Hitchcock's smooth woodrush

B. Subalpine LifeZone

1 Forested

- i. Upper subalpine ... F043AX954MT – Upper Subalpine Cold Coniferous subalpine fir (Engelmann spruce) /thinleaf huckleberry-rusty menziesia/ Hitchcock's smooth woodrush-beargrass/yellow avalanche lily.
- ii. Mid Subalpine
 - a. Cool dry site conditions ... F043AX956MT – Subalpine Coniferous Cool Moderately Dry subalpine fir (*Abies lasiocarpa*) / Engelmann spruce (*Picea engelmannii*)
 - b. Cool, moist site conditions ... F043AX955MT – Subalpine Coniferous Cool Moist subalpine fir (*Abies lasiocarpa*)-Engelmann spruce (*Picea engelmannii*)
- iii. Lower Subalpine
 - a. Moderately dry site conditions ... F043AX951MT – Lower Subalpine Cool Dry Coniferous subalpine fir- Engelmann spruce/ Sitka alder/ thinleaf huckleberry/ common beargrass
 - b. Moist site conditions ... F043AX952MT – Lower Subalpine Cool Moist Coniferous subalpine fir- Engelmann spruce/Rocky Mountain maple-thinleaf huckleberry/thimbleberry
 - c. Frigid soil temperature regime ... F043AX957MT – Lower Subalpine Frigid Coniferous western redcedar (*Thuja plicata*)-western hemlock (*Tsuga heterophylla*)

2 Non-forested

- i. Site is an avalanche including head, chute and run-out zones. ... R043AX961MT – Subalpine Avalanche Rocky Mountain maple-Redosier dogwood *Acer glabrum*-*Conus sericea* ssp. *sericea*-*Amelanchier alnifolia*

C. Montane LifeZone

1 Forested

- i. Site resides on a floodplain ... F043AX960MT – Montane Deciduous Alluvial Flood Plain black cottonwood (paper birch)/redosier dogwood *Populus balsamifera* ssp. *trichocarpa* (*Betula papyrifera*)/*Cornus sericea* ssp. *sericea*
- ii. Site does not reside on a floodplain ... F043AX959MT – Montane Warm Dry Coniferous Douglas fir/white spirea-common snowberry/pinegrass

2 Non-forested

i. Riparian areas

- a. Soils organic and vegetation dominated by sedges ... R043AX973MT – Montane Fen woollyfruit sedge (*Carex lasiocarpa*)
- b. Soils organic and vegetation of shrubs and sedges ... R043AX974MT – Montane Swale Drummond's willow (*Salix drummondii*)-alderleaf buckthorn (*Rhamnus alnifolia*)
- c. Soils subirrigated and not organic

ii. Non-riparian areas

- a. Site is a loamy outwash terrace ... R043AX966MT – Montane Loamy Outwash Terrace Richardson's needlegrass (*Achnatherum richardsonii*)
- b. Site is a stable colluvial slope ... R043AX968MT – Montane Stable Colluvial Slope Saskatoon serviceberry-common snowberry/Sitka alder/ Rocky mountain maple/thimbleberry/mountain brome-Geyer's sedge

II. Site does not reside in the Lewis or Livingston Ranges and is not forested, and resides in the 13-17 or 17-20 inch precipitation range

A. Range site in 13-17" precipitation zone and is listed below, otherwise go to PES key. Sites included here: Gravelly, Droughty, Droughty steep, Shallow Droughty, Very shallow.

1 Moderately deep to very deep soils and skeletal. Soils moderately deep, deep, or very deep (≥ 20 " deep to bedrock, lithic, or paralithic root restrictive layer). Soil skeletal to within 20" of soil surface (averages $> 35\%$ rock fragments in the 10"-20" layer)

ii. Droughty Soils Soil loamy-skeletal or clayey-skeletal

- a. Steep slopes Slope $\geq 15\%$ – Droughty Steep (DrStp) ... R043AA038MT – Droughty Steep (Drstp) LRU 43A-A
- b. Flat to moderate slopes Slope $< 15\%$ – Droughty (Dr) ... R043AA036MT – Droughty (Dr) LRU

43A-A

2 Shallow to very shallow soils

- i. Shallow soils Soil shallow (10" – 20" deep to bedrock, lithic, or paralithic root restrictive layer) ...
R043AA138MT – Shallow Droughty (Swdr) LRU 43A-A

B. Range site in 17-20" precipitation zone and is listed below, otherwise go to PES key. Sites included here: Droughty, Droughty Steep, Loamy steep, Stony, Shallow Droughty, Thin Loamy.

- 1 Soils shallow and droughty ... R043AB138MT – Shallow Droughty (Swdr) LRU 43A-B

2 Soils moderately deep to deep Soils moderately deep, deep, or very deep (≥ 20" deep to bedrock, lithic, or paralithic root restrictive layer)

ii. Not stony surface

- a. Soil skeletal to within 20" of soil surface (averages > 35% rock fragments in the 10"-20" layer). Soil loamy-skeletal or clayey-skeletal

- 1) Slope < 15% – Droughty (Dr) ... R043AB036MT – Droughty (Dr) LRU 43A-B

- 2) Slope ≥ 15% – Droughty Steep (DrStp) ... R043AB038MT – Droughty Steep (Drstp) LRU 43A-B

b. Soils not skeletal

- 1) Soils loamy and steep and mollic epipedon present: Soil not skeletal within 20" of soil surface (averages < 35% rock fragments in the 10"-20" layer) and Slope ≥15% and Clay content is < 32% (ribbon < 2" long) in surface mineral 4" ... R043AB040MT – Loamy Steep (Lostp) LRU 43A-B

III. ALL OTHER SITES NOT LISTED ABOVE USE SEPARATE KEY (PES KEY 4)- See separate expanded key for forested and non-forested provisional ecological sites.

43A LRU 1-4, cryic/udic zone - Draft key (4MOS)

A. Warm-cryic...F043AY520WA ... F043AY520WA – Warm-Cryic, Moist-Xeric, Loamy, Ashy Mountain Slopes (Subalpine Fir Cool Shrub, low elevation)

B. Cryic

a. Aquic...F043AY589WA ... F043AY589WA – Cryic, Aquic, Loamy, Flood Plains (Engelmann spruce/ladyfern) (PIEN/COSE/ATFI)

b. Other

i. Udic EX043AESG19 Cryic,

- 1 Sandy...use F043AY581ID ... F043AY581ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Low AWC (Subalpine Fir-Mountain Hemlock/ Cool Shrub-Beargrass) Subalpine Fir-Mountain Hemlock/ Menziesia - Beargrass

- 2 Loamy

- a. Low AWC...F043AY581ID ... F043AY581ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Low AWC (Subalpine Fir-Mountain Hemlock/ Cool Shrub-Beargrass) Subalpine Fir-Mountain Hemlock/ Menziesia -Beargrass

- b. Ashy...use F043AY583ID ... F043AY583ID – Cryic, Moist-Udic, Loamy, Mountain slopes, Ashy surface Subalpine Fir-Mountain Hemlock/ Menziesia -Beargrass

ii. Other

- 1 Xeric...none proposed

- 2 Moist-xeric...R043AY508WA ... R043AY508ID – Cryic Moist-Xeric Loamy Mountain Slopes (ERIG/ASTER/MERT)