

CLASSIFICATION OF HISTORICAL VEGETATION IN OREGON, AS RECORDED BY GENERAL LAND OFFICE SURVEYORS

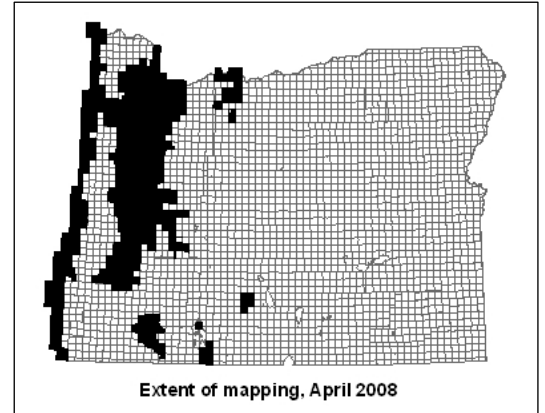
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Revised April 2008

This classification of historical vegetation is updated frequently.

To help differentiate vegetation units in this list more rapidly, those from east of the Cascade Range are printed in *italics*. Text in quotes identifies descriptors as used by surveyors when recording vegetation. Descriptors used by surveyors that do not include information on vegetation type (e.g., "swale" but without reference to species) are listed in a lookup table that keys them to the appropriate vegetation class. Discontinued codes, needed for tracking and updating changes in mapping units, are also listed in a lookup table.



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Descriptive terms used by surveyors

In classifying historical vegetation, certain descriptions used by General Land Office (GLO) surveyors take precedence over distances to witness trees or other variables that influence classification. These are more or less standard diagnostic terms that were used repeatedly in GLO surveys across the country.

1. The general descriptors range from open features to closed features:

- "Prairie" = Prairie
- "Openings," "Open woods" = Savanna
- "Scattering timber" = Woodland
- "Timber" = Forest

2. Distances to witness trees, as shown in the following keys are secondary indicators and are "trumped" by the descriptors.

Key to vegetation classes described by G.L.O. surveyors

Note: there will be exceptions to the general patterns described in the survey notes, so ecological judgment should be used in applying these guidelines.

Key to vegetation classes

- 1a. Stand described as "timber," "scattering timber," "scant," "sparsely timbered," or "openings" dominated by trees.....2
- 1b. Stand described as "prairie," "plains," "fern opening," "brush," "thicket," "willow swamp," or unvegetated.....9
- 2a. Stand usually described as "timber," "scattering timber," rarely as "openings" or "open;" distance to witness trees mostly < 200 (400) links3
- 2b. Stand usually described as "openings," "scattering timber," or "timber;" distance to witness trees mostly (100) 200-800 (1750) links.....5
- 3a. Distance to witness trees mostly 100-200 (400) links4
- 3b. Distance to witness trees mostly < 100 links, typically < 50 links 15
- 4a. Understory "dense," with hazel, "shrub oak," "young oak," "scrub oak," or oak "grubs;" distance to witness trees mostly 100-200 links..... **Woodland (O)**
- 4b. Understory (or stand when understory not described) "open," or with "good grazing;" with grass, fern, hazel, "shrub oak;" distance to witness trees mostly (100) 200-400 links **Savanna (S)**
- 5a. Stand described as "openings" or "timber;" distance to witness trees mostly 100-200 (400) links6

5b. Stand described as "scattering timber" or "timber"; distance to witness trees mostly 100-800 (1750) links	7
6a. Stand described as "timber" or "openings;" understory "dense," with hazel, "shrub oak," "young oak," "scrub oak," or oak "grubs;" distance to witness trees mostly < 200 links.....	Woodland (O)
6b. Stand described as "openings," or with "good grazing;" or not described; understory "open," with grass, fern, hazel, "shrub oak," or not described; distance to witness trees mostly 100-400 links.....	Savanna (S)
7a. Distance to witness trees mostly 200-800 (1750) links; corners often lacking one or more witness trees; understory lacking shrubs, or not described	Prairie (P)
7b. Distance to witness trees mostly 100-200 (400) links; corners usually with all witness trees present; understory with shrubs.....	8
8a. Understory "dense," with hazel, "shrub oak," "young oak," "scrub oak," or oak "grubs;" distance to witness trees mostly 100-200 links	Woodland (O)
8b. Understory open, or with "good grazing," or not described; with grass, fern, hazel, "shrub oak;" distance to witness trees mostly (100) 200-400 links	Savanna (S)
9a. Stand with no reference to vegetation or stand structure; includes "gravel bar," "sand bar," and "rocky barren"	Unvegetated (U)
9b. Stand including reference to vegetation or stand structure.....	10
10a. Stand with shrubs, including willows	11
10b. Stand lacking shrubs	12
11a. Shrub species listed; stand described as "brush," "thicket," "swamp," or "rocky" or "stony" openings or "barrens" with low sagebrush	Shrubland (H)
11b. Shrub species not listed; stand described only as "glade" or "alkali bottom," where species composition is unknown.....	Composition unknown (N)
12a. Stand described as "prairie," "plains," "open land," or "fern prairie," distance to witness trees mostly 200-800 (1750) links, or witness trees absent	Prairie (P)
12b. Stand described otherwise, witness trees absent.....	13
13a. Stand described as "fern openings" in forest, woodland or savanna	Herbaceous upland communities (E)
13b. Stand described otherwise	14
14a. Stand described as having water (river, pond, lake, slough, bayou), including seasonally-flooded sites, or with hydrophytic vegetation (tule, "swamp grass," "wire grass," pond lily, skunk cabbage, wapato); includes "marsh," "swamp," "wet meadow," or "slough" where species composition is unknown	Water, emergent wetland or aquatic bed (W)
14b. Stand described only as "glade" or "alkali bottom," where species composition is unknown.....	

.....**Composition unknown (N)**

- 15a. Stand described as "openings," "open timber;" understory with "some grass," "good grazing, or not described"..... **Savanna (S)**
- 15b. Stand described as "timber" or "scattering timber;" understory various 16
- 16a. Stand described as "scattering timber;" may have trees 6-15 inches in diameter within 100 links, but larger trees are further than 100 links; sometimes with "good grass" or "good grazing" **Woodland (O)**
- 16b. Stand described as "timber" 17
- 17a. All or most witness trees present, no mention of "good grass" or "good grazing" **Forest (F)**
- 17b. More than half of witness trees absent, "good grass" or "good grazing" present **Woodland (O)**

Key to oak - madrone forest subclasses in western Oregon

- 1a. Madrone present2
- 1b. Madrone absent 10
- 2a. Madrone used as witness trees; oak used either as witness trees or in line description, or oak absent...
..... 3
- 2b. Madrone used only in line description 6
- 3a. Oak used as witness trees, particularly black oak FFOM
- 3b. Oak used only in line description, or oak absent..... 4
- 4a. Hemlock absent..... FFOM, FFC
- 4b. Hemlock present..... 5
- 5a. Rhododendron present; middle to upper elevations FFHE
- 5b. Rhododendron absent; lower to middle elevations FED
- 6a. Oak used as witness trees FFOM
- 6b. Oak used only in line description, or oak absent..... 7
- 7a. Conifers fir only; oak absent..... FF
- 7b. Conifers fir or various; oak if present used only in line description 8
- 8a. Trees fir and white oak, or oak species unspecifiedFFO
- 8b. Trees various, including fir, western hemlock, cedar, redwood; oak present or absent..... 9
- 9a. Western hemlock present; lowlands or montane FFHC, FFHE
- 9b. Western hemlock absent; lowlands in Umpqua Valley and southward FFC

10a. Only black oak present, or both black and white oak present..... FB, FBF, FFOM, FOB
10b. Only white oak present, or species of oak unspecified.....
.....FFA, FFHC, FFHPP, FFO, FO, FOA, FOFP

Equivalent forest, woodland, and savanna subclasses

Forest	Woodland	Savanna	Ecoregion
FA	--	SA	WV
FALW	--	--	WV
FAS	--	--	KM
FAT	--	--	KM
FAW	--	--	WV
FB	OB	SB	KM
FBF	OBF	SBF	KM
FCS	--	--	CR
FD	OD	--	EC
FE	--	--	CR
FED	OFED	--	CR, KM, WC, WV
FF	OFZ	SF	CR, WC, WV
FFA	--	--	WV
FFC	OFC	SFC	KM
FFCL	--	--	CR, WC, WV
FFDF	--	--	KM
FFHA	--	--	CR
FFHB	OFHB	--	WC
FFHC	OFHC	SFHC	CR, WV
FFHE	OFHE	--	KM, WC
FFHO	OFHO	SFHO	CR, KM
FFHP	--	--	CR, WC
FFHPP	--	--	WV
FFHPT	OFHPT	--	EC
FFPT	OFPT	--	EC
FFHV	OFHV	--	CR
FFHW	--	--	CR
FFM	--	--	CR
FFO	OFOZ	SOF	WV
FFOC	--	--	KM
FFOM	OFOM	SFOM	KM, WV
FFON	--	--	KM
FFP	OFP	SFP	WV, EC
FFPE	--	--	EC
--	OFPC	--	CR

Forest	Woodland	Savanna	Ecoregion
FFPT	OFPT	--	EC, WC
FFR	--	--	CR
FFSP	--	--	KM
FFSY	--	--	CR
FFY	--	--	CR, WC, WV
FL	--	--	CR, WV
FM	--	--	KM
FO	OOZ	SO	WV
FOA	--	SOA	WV
FOAM	--	--	CR, KM
FOB	OOB	SOB	KM, WV
FOFP	OFOPZ	SOF	WV
--	--	SOP	WV
FP	OP	--	EC
FPC	OPC	--	EC
FPD	OPD	--	EC
FPDF	--	--	EC
FPDS	--	--	EC
FPDSF	--	--	EC
FPF	OPF	--	EC
FPFC	OPFC	--	EC
FPFCS	OPFCS	--	EC
FPFE	--	--	EC
--	OPFO	--	CR
FPO	OPO	SPO	EC
FPOF	OPOF	--	EC, Gorge
FPSF	--	--	EC
FPVF	--	--	KM
FPW	OPZ	SP	WV
FSH	OSH	SSH	CR
FSHL	--	--	CR
FSHY	--	--	CR
FSL	OFSL	--	CR
FSP	OSP	SSP	CR
FT	--	--	WV

Classification of historical vegetation

Any map units in the following classification may have disturbance modifiers added as a suffix, as described by surveyors:

Bu.....Burned forest, often with "scattering" trees (> 100 links distant) surviving fire. Used when (1) "burn" or "fire" is mentioned specifically, (2) in contrast to adjacent "green timber," or (3) in dead standing or fallen timber, or presence of dead "stubs." Older burns may have openings, brush, and "groves" or "thickets" of young trees (alder, fir) up to 12-14 inches in diameter.

St.....Storm-damaged forest ("sleetbreak" = broken limbs, bent trees, windfall etc.).

E. Herbaceous uplands

EF....."Fern openings," "fern land," or "open fern hills," usually in forest, woodland or savanna. May contain hazel. Use only when openings with entry and exit points are recorded by surveyors. NO TREES. If "fern prairie," use PB. If "fern openings" occur in woodland or with "scattering fir," use OFZ.

F. Forest [Distances to witness trees mostly < 100 links [66 ft.]; stands described as "*timber*," "*heavy*," "*dense*," "*thick*;" understory brushy or ferny]

Upland forest

FB.....Black oak forest. Southern Lane County and southward. NO WHITE OAK.

FBF.....Black oak - Douglas fir forest. Understory may have vine maple, hazel, oak. Umpqua Valley and southward. NO WHITE OAK.

FD.....*Lodgepole pine forest.*

FE.....Alder "groves" and "flats" if no mention of water or "swamp." Usually on mountain slopes, benches, and flats. May contain cherry. NO CONIFERS.

- FED.....Low to mid-elevation (to 2500 ft) mixture of (a) xeric Douglas fir – chinquapin - madrone ("laurel") forest on S to W slopes and ridgetops, and (b) more mesic Douglas fir - western red cedar - western hemlock forest on N slopes and bottoms. May include incense cedar ("redwood"), black and white oak, ponderosa pine, sugar pine, grand fir, yew, red alder, maple, dogwood. "Dense" understory may include salal, madrone, hazel, vine maple, viburnum, ocean spray, ceanothus, poison oak, manzanita. Consistent presence of madrone and use of madrone and chinquapin (but not oaks) as witness trees, and abundance of hazel is diagnostic. If oaks are dominant witness trees, or if hemlock is absent, use FFOM.
- FEDBuAs above, burned, often with scattered trees surviving fire.
- FFDouglas fir forest, often with bigleaf maple, dogwood, red alder, ash, western red cedar, and grand fir. Brushy understory may include vine maple, hazel, salal, willow, briars, fern, viburnum, Oregon grape, rhododendron, yew, fern. Madrone, chinquapin or ceanothus may be present in dry sites, but are not used for witness trees. More mesic stands in Coast Range may include cherry, salmonberry, cascara. NO HEMLOCK, NO OAK.
- FFBuAs above, burned, often with scattered trees surviving fire. May include alder or willow.
- FFCLow to mid-elevation xeric Douglas fir forest with combinations of incense cedar, madrone ("laurel"), ponderosa pine, sugar pine, and bigleaf maple. Dense understory may include fir, hazel, canyon live oak, vine maple, yew, salal, madrone, arrowwood, ceanothus ("mountain balm"), briars, fern, huckleberry, dogwood, manzanita, chinquapin, grass. Madrone frequently used for witness trees. Umpqua Valley and southward. NO HEMLOCK, NO WHITE OR BLACK OAK. Similar to FED, but lacking mesic conifer component on N slopes.
- FFCBu.....As above, burned, often with scattered trees surviving fire. May include alder or willow.
- FFDFLow to mid-elevation xeric Douglas fir - mixed hardwood forest. Ponderosa pine and hardwoods are codominant or secondary. Mid- or late-successional stands where hardwood trees and pine are being replaced by Douglas fir. Some shade-tolerant grasses present. Differs from FFON by having more Douglas fir. Rogue Valley.
- FFHAAs in FFHC, with silver or noble fir ("larch"). Understory mostly mesic deciduous species. Coast Range. NO SPRUCE. If spruce is present, use FSH.
- FFHB.....Montane (3500 ft to timberline) silver fir, noble fir ("larch"), or mountain hemlock forest with mostly broadleaved evergreen understory. With various combinations of Douglas fir, western hemlock, western red cedar, western white pine, and Engelmann spruce. Sparse to dense understory may include rhododendron, Oregon grape, vine maple, hazel, huckleberry, "white maple," "honey laurel," "soapbrush." Stands

- "medium" to "scattering" near timberline = OFHB. Cascade Range. Intergrades with FFHC and FFHE. NO OAK OR BIGLEAF MAPLE.
- FFHBBu.....As above, burned, often with scattered trees surviving fire.
- FFHC.....Mesic mixed conifer (or "fir, etc.") foothill forest (usually <2000 ft) with mostly deciduous understory. May include various combinations of Douglas fir, western hemlock, red cedar, grand fir, with lesser amounts of bigleaf maple, dogwood, white oak, red alder, madrone ("laurel"). Myrtle sometimes present in southern Coast Range. Sparse to very dense understory may include vine maple, huckleberry, thimbleberry, rhododendron, gooseberry, blackberry, salmonberry, "whortleberry," cascara ("shittim," "chittim"), willow, yew, salal, hazel, ferns, Oregon grape, devils club ("devils walking stick," "walking stick," "devils walking cane"). From southern Lane County and southward, this type intergrades with FED, FFHB, FFHO. NO ASH, BLACK OAK, SILVER FIR, NOBLE FIR ("larch"), LARCH ("tamarack"), SPRUCE, OR PINE.
- FFHCBu.....As above, burned, often with scattered trees surviving fire. May include "peavine," grass, blackberries or raspberries.
- FFHCSt.....As above, storm-damaged ("sleet break" = broken limbs, bent trees, windfall etc.).
- FFHE.....Mid-elevation (1500-4000 ft) mixed conifer forest with mostly broadleaved evergreen understory. With various combinations of Douglas fir, white fir, western hemlock, western red cedar, western white pine, sugar pine (southern Cascades only), "bull pine," incense cedar, madrone ("laurel"), bigleaf maple, dogwood, red alder, and grand fir. Sparse to dense understory may include rhododendron, Oregon grape, yew, vine maple, chinquapin, live oak, madrone, ceanothus ("mountain balm," "balm," "greasewood," "chaparral," "buckbrush," "chamise," "slickleaf"), manzanita, salal, hazel, ocean spray, huckleberry, "tasselwood." Cherry and thimbleberry occasional. Sometimes with "bunchgrass" or "good grazing," but trees not described as "scattering" or "openings." Soils rocky. Consistent presence of rhododendron, ceanothus, chinquapin, manzanita, and madrone in understory is diagnostic, with only occasional use as witness trees. NO WHITE OAK, BLACK OAK, PONDEROSA PINE, SILVER FIR, NOBLE FIR ("larch").
- FFHEBu.....As above, burned, often with scattered trees surviving fire.
- FFHO.....Southern mixed xeric conifer forest with mostly broadleaved evergreen understory. Various combinations of Douglas fir, western hemlock, Port Orford cedar ("white cedar"), grand fir ("yellow fir"), white fir, oak (species unspecified), white oak, live oak, tan oak, madrone, chinquapin, myrtle, bigleaf maple, red alder, cherry, redwood, pine (except shore pine). Sparse to very dense understory may include salal, huckleberry, Sargent oak, live oak, oak "brush," "young oak," madrone, rhododendron, yew, salal, ceanothus ("greasewood," "bluewood,"), manzanita, elder, gooseberry, briars, poison oak, vine maple, dogwood, "oleander," hazel,

fern, bracken, ceanothus ("wild lilac"), "barberry," or blackberry. Witness trees include fir, oak, madrone, chinquapin, myrtle. "Elk brush" or "elkwood" absent or only occasional. Sometimes with "bunchgrass" or "good grazing," but trees not described as "scattering" or "openings." May include willow, ash, cascara, cherry, whortleberry, elderberry, or salmonberry near water. Southern Coast Range. NO SPRUCE, SHORE PINE, RED CEDAR, SALMONBERRY.

FFHOBu.....As above, burned, often with scattered trees surviving fire.

FFHP.....As in FFHC, with white pine.

FFHPP.....Mixed conifer forest with ponderosa pine. May include Douglas fir, red cedar, and western hemlock, with lesser amounts of bigleaf maple, white oak, red alder, ash and dogwood. Understory may include vine maple, hazel, viburnum, briars, yew. More xeric than FFHC, more mesic than FFP. NO BLACK OAK.

FFHPPBu.....As above, burned, often with scattered trees surviving fire.

FFHPT.....Mesic mixed conifer montane forest (2000 ft to timberline) with mixed deciduous-broadleaved evergreen understory. May include various combinations of larch ("tamarack"), noble fir ("larch"), white fir, "black fir," Douglas fir, western hemlock, cedar, mountain hemlock, white pine, whitebark pine, "silver pine," Engelmann spruce, lodgepole pine ("black pine"), ponderosa pine, alder, dogwood, chinquapin, willow ("bur willow" probably *Salix scouleriana*). Light to dense undergrowth may include rhododendron, vine maple, serviceberry, huckleberry, Devils club, salal, ceanothus ("buckbrush," "slickleaf," "snowbrush") manzanita, maple (species unspecified). Oak sometimes present at lower elevations. Stands "medium" to "scattering" near timberline = OFHPT. Frequent presence of larch ("tamarack") is diagnostic. Intergrades with FFHE and FFHB at lower elevations and with increasing incidence of Douglas fir. NO SUGAR PINE. Eastern Columbia Gorge, Eastern Cascades.

FFHV.....Unmappable mixture of mostly northern mesic mixed conifer forest on north slopes, with elements of southern xeric conifer forest on S to W slopes and ridgetops. Includes various combinations of Douglas fir, western hemlock, red cedar, Port Orford cedar ("white cedar"), grand fir, with lesser amounts of bigleaf maple, dogwood, red alder, madrone ("laurel"). Myrtle occasional. Dense to "impassable" understory of "elk brush" or "elkwood" is diagnostic, but may also include salmonberry, vine maple, salal, briars, ceanothus ("greasewood," "bluewood"), "whortleberry," huckleberry, cascara. Rhododendron occasional. Witness trees primarily fir, hemlock, cedar. Southern Coast Range. NO OAK, SPRUCE, OR PINE.

FFHVBu.....As above, burned, often with scattered trees surviving fire.

FFHW.....Montane (3500-5600 ft) mixed conifer forest with white oak. Oak associated with rocky openings or balds, probably shrubby but not described as such. With various combinations of Douglas fir, white fir, western

hemlock, western red cedar, western white pine, incense cedar, incense cedar, madrone ("laurel"), chinquapin, and dogwood. Sparse to dense understory may include rhododendron, Oregon grape, yew, vine maple, chinquapin, ceanothus ("mountain balm," "balm," "greasewood," "chaparral," "buckbrush," "chamise," "slickleaf"), manzanita, salal, hazel, huckleberry, and willow. Cherry occasional. Soils rocky. Intergrades with FFHE. Presence of oak is diagnostic. Cascade Range. NO BIGLEAF MAPLE OR PONDEROSA PINE.

- FFM.....Dry Douglas fir, chinquapin, and myrtle ("greenbay") forest. Cedar (Port Orford cedar?) and white fir occasional. Consistent use of chinquapin as witness trees is diagnostic. May include madrone, red alder, bigleaf maple. Understory may include "elk brush," ceanothus ("blue wood"), manzanita, gooseberry, salmonberry, vine maple, whortleberry, elderberry, salal, "hyssop," dogwood, yew. NO OAK, NO PINE. Southern Coast Range.
- FFODouglas fir - white oak (or oak species unspecified) forest, often with bigleaf maple. Brushy understory of hazel, young oaks, oak brush, oak stump sprouts, young Douglas fir, bracken, briars, willow. May include red cedar, western hemlock, ash, alder, vine maple, yew, young ash, and ferns if uplands and bottomlands are not segregated by surveyor. May include madrone in southern Lane County and southward, but not used for witness trees. If distance to witness trees > 100 links, use OFOZ. NO BLACK OAK, PONDEROSA PINE, OR INCENSE CEDAR ("REDWOOD").
- FFOBu.....As above, burned, often with scattered trees surviving fire.
- FFOC.....Mid to upper-elevation moist Douglas fir forest, usually with madrone ("laurel"). May include some ponderosa pine and black oak, rarely with bigleaf maple or Pacific yew. Understory may contain chinquapin, dogwood, hazel, "bugwood" (*Cercocarpus betuloides*), serviceberry, willow, and cherry. White or grand fir may have been present but was not identified in GLO survey notes. Rogue Valley.
- FFOM.....Low to mid-elevation xeric Douglas fir - black oak - white oak - madrone ("laurel") forest, often with ponderosa pine or sugar pine. Oak and madrone consistently used for witness trees. May also include bigleaf maple, myrtle, incense cedar ("redwood"), and red cedar. Dense or open understory may include hazel, poison oak, chinquapin, madrone, willow, oak brush, briars, ferns, ninebark, Oregon grape, salal, sometimes only madrone. Vine maple occasional. Differs from FED in consistent use of oaks as witness trees, and abundance of madrone. Southern Lane County and southward. NO HEMLOCK.
- FFOMBu.....As above, burned, often with scattered trees surviving fire.
- FFONLow to mid-elevation xeric mixed hardwood - ponderosa pine forest with Douglas fir. Black oak, white oak, and madrone ("laurel") usually present, sometimes with minor amounts of incense cedar. Understory

- unspecified or with "some" to "thick" manzanita, ceanothus ("greasewood," "lilac"), occasionally with "plum," willow, or cherry at higher elevation. May include "arrowwood" (*Holodiscus discolor*), "chimesal," hazel, and bigleaf maple. Some shade-tolerant grasses present. May include 20-40% unmappable inclusions of drier OPMO or "openings." Early to mid-seral, on droughty sites. Differs from FFDF by having less Douglas fir. Rogue Valley.
- FFPMesic Douglas fir - ponderosa pine forest. Understory may include ash, madrone, red alder, hazel, Oregon grape, vine maple, fern, salal. Oak and hemlock occasional to scarce. Willamette Valley, Hood River Valley.
- FFPEDry Douglas fir - ponderosa pine forest. May include grand fir ("white fir") or incense cedar. Understory may include pine, fir, manzanita, willow, ceanothus ("chaparral"). May have "scattering" oak or larch along creek bottoms. NO VINE MAPLE, MADRONE, HEMLOCK. East slope Cascades.
- FFPBuAs above, burned, often with scattered trees surviving fire.
- FFPTMid-montane ([1500] 3000-4000 ft) transitional conifer forest, with grand fir ("white fir"), Douglas fir ("red fir"), ponderosa pine, larch ("tamarack"). May have white oak at lower elevations. Usually dense undergrowth may include maple (species unspecified), "soft maple," vine maple, aspen, alder, "laurel," willow, hazel, and regenerating fir, pine, and larch. Hemlock or cedar limited to upper elevations or canyons. NO SPRUCE OR LODGEPOLE PINE. East slope of Mount Hood, East Cascades.
- FFRRedwood forest, with various combinations of Douglas fir, oak (species unspecified), white oak, madrone, myrtle, bigleaf maple. Understory may include young oak, salal, manzanita, hazel, whortleberry, fern. Extreme south coast.
- FFSP.....Low to mid-elevation xeric sugar pine - ponderosa pine - Douglas fir forest, usually with madrone ("laurel") and black oak. Most common on south aspects with pine as dominant, but may occur on north aspects with Douglas fir as dominant. Soils often noted as granitic. South slopes may have more open canopy with grass or bunchgrass in understory. Rogue Valley.
- FFSt.....Storm-damaged Douglas fir forest.
- FFSYYoung Sitka spruce forest with various combinations of Douglas fir, grand fir, western hemlock, red cedar, red alder, bigleaf maple. "Dense" understory of vine maple, salmonberry, thimbleberry, huckleberry, salal, devils club, gooseberry, cascara, elderberry, dogwood, briars, "whortleberry," Oregon grape, cherry, fern. May rarely contain shore pine. Primarily loam soils, with wetland pockets on bottomlands. Higher elevations may include silver or noble fir ("larch"). May contain myrtle and chinquapin along southern coast.

- FFYYoung Douglas fir forest, burned within last 20 years. Diameters < 12-14 inches. May include cedar, hemlock, alder, maple, rhododendron, salal, ceanothus, hazel, madrone, "birch."
- FM.....Madrone ("laurel") forest or "thicket."
- FOWhite oak forest, "oak brush," "scrub oak," "oak grubs," or "oak and hazel brush." May contain willow. Use HO for Southern Coast Range. NO BLACK OAK.
- FOB.....White oak - black oak forest, often with madrone ("laurel") and ponderosa pine. Understory may include hazel, poison oak, bigleaf maple, willow, oak, fern, briars. Southern Lane County and southward. NO FIR.
- FOFPWhite oak - Douglas fir - ponderosa pine forest. May include hazel, vine maple, salal, rose, and ferns. Willamette Valley and south. NO BLACK OAK OR MADRONE.
- FOFPBuAs above, burned, often with scattered trees surviving fire.
- FP.....*Ponderosa pine forest, with bitterbrush and manzanita.*
- FPC.....*Ponderosa pine and cedar (probably incense cedar) forest. Understory unspecified.*
- FPD.....*Ponderosa pine - lodgepole pine forest. Understory with bitterbrush, manzanita, sagebrush, gooseberry, and young pine. Occasionally with juniper. NO SUGAR PINE.*
- FPDF*As above, with Douglas fir or white fir codominant.*
- FPDS.....*Ponderosa pine - lodgepole pine - sugar pine forest. May include manzanita, bitterbrush, mountain mahogany, young pine.*
- FPDSF*As above, with Douglas fir or white fir codominant. May include young fir, wild cherry.*
- FPF*Ponderosa pine - Douglas fir (or white fir) forest. May include juniper, mountain mahogany, manzanita, bitterbrush, buckbrush (Ceanothus velutinus) and deerbrush (Ceanothus integerrimus), low sagebrush, bunchgrass.*
- FPFC.....*Ponderosa pine - fir (Douglas fir, red or white fir) - incense cedar forest. May include juniper, chinquapin, Klamath plum, bunchgrass, pinegrass. Klamath and Lake Counties.*
- FPFCS.....*As above, with sugar pine.*
- FPFE.....*Ponderosa pine - Douglas fir or white fir - Engelmann spruce forest. NO JUNIPER.*
- FPOWhite oak - ponderosa pine forest. Understory "scant," "scarce," or dense. May contain grass ("good grazing," good pasturage"), hazel, ceanothus ("chaparral"), oak, pine, willow, alder, cottonwood, rose, hawthorn, manzanita. NO FIR. Eastern Columbia River Gorge, east slope Cascades.
- FPOFWhite oak - ponderosa pine - Douglas fir forest mostly < 3000 ft. "Scant" to dense undergrowth of oak, fir, pine, hazel, aspen, alder, rose, "soft maple," willow, "bur willow," "laurel," cherry, "arrowwood," thimbleberry, dogwood, chinquapin, vine maple, huckleberry, manzanita, gooseberry, ceanothus ("chaparral," "buckbrush," "snowbrush"). May contain larch ("tamarack"), hemlock, cedar, alder, and white pine near

western edge of range, > 2500 ft, or in creek bottoms. Eastern Columbia Gorge, east slope Cascades.

- FPSF* *Ponderosa pine - sugar pine - Douglas fir (or white fir) forest. Understory with manzanita and young pine. NO LODGEPOLE PINE.*
- FPVF* Valley floor ponderosa pine - mixed hardwood forest. Usually with "groves" of black oak, white oak, and madrone. Douglas fir, incense cedar, and hawthorn ("thorn") often present. Understory may contain ceanothus ("lilac," "greasewood"), and grass. On uplands, river terraces and large alluvial fans, some with groundwater but rarely flooded. May contain unmappable inclusions of SWO, with less pine and more white oak and grass. May also contain 10-20% unmappable inclusions of FAT and PF in flood zones. Rogue Valley.
- FPW* Ponderosa pine forest in Willamette Valley. Understory unspecified.
- FSt* Storm-damaged forest ("sleetbreak" = broken limbs, bent trees, windfall etc.), species unspecified.
- FSH* Sitka spruce forest with various combinations of Douglas fir, grand fir, western hemlock, red cedar, red alder, bigleaf maple. "Dense" understory of vine maple, salmonberry, thimbleberry, huckleberry, salal, devils club, gooseberry, cascara, elderberry, dogwood, briars, "whortleberry," Oregon grape, cherry, fern. May rarely contain shore pine, hazel, "lilac." Primarily loam soils, with wetland pockets on bottomlands. Higher elevations may include silver or noble fir ("larch"). May contain myrtle and chinquapin along southern coast.
- FSHBu* As above, burned, often with scattered trees surviving fire. May include lots of alder with widely scattering conifers and dense understory of salmonberry and salal.
- FSHSt* Storm-damaged Sitka spruce forest.
- FSHY* Young Sitka spruce forest, burned within last 20 years. Diameters < 12 inches. May include cedar, hemlock, alder, maple, vine maple, salmonberry, thimbleberry, huckleberry, salal.
- FSP* Shore pine forest on sandy soils, including "pine flats" and "pine groves." May include Douglas fir, Sitka spruce, western hemlock, and madrone, with Port Orford cedar ("white cedar") and chinquapin present in Coos and Curry counties. Understory may include manzanita, salal, evergreen huckleberry, rhododendron, chinquapin. Alder, willow, crabapple, and salmonberry may occur near water. Intermixed with PD on partly stabilized dunes.
- FSPBu* As above, burned, often with scattered trees surviving fire. May include understory of salal and evergreen huckleberry.

Riparian and wetland forest

- FAAsh "swamp" or "swale," sometimes with red alder or bigleaf maple. Understory may include briars.
- FALWAsh – alder - willow swamp, sometimes with bigleaf maple. May include vine maple, crabapple, gooseberry, salmonberry, ninebark, hardhack, cattail, "coarse grass," and briars. Myrtle present in southwestern Oregon. Ground "very soft," "miry," or "muddy," usually with extensive beaver dams. With inclusions of WG and WMU.
- FASAsh "swale" with willow and briars, sometimes "brushy" or "thick." Depressions associated with creeks. Rogue Valley.
- FATMixed hardwood riparian forest ("creek timber") with various combinations of ash, white alder, black cottonwood, white oak, black oak, willow, and less often bigleaf maple. Ponderosa pine, incense cedar, fir, and cherry occasional. Understory may contain a dense mixture of grape vines, nettles, and "briars" with hazel and hawthorn occasional. Pacific yew sometimes present at higher elevations. May include unmappable inclusions of HUR. Rogue Valley.
- FAWAsh - willow swamp, "very thick," sometimes with ninebark and briars.
- FCSCedar swamp, often "dense," with red alder and western hemlock.
- FFANorthern mixed riparian forest, with various combinations of bigleaf maple, ash, black cottonwood, red alder, white alder, white oak, dogwood and willow. Douglas fir, grand fir, ponderosa pine, and red cedar may be present in small quantities. Understory may include willow, hazel, ninebark, rose, hardhack, vine maple, crabapple, viburnum, gooseberry, blackberry, hawthorn, and yew. Differs from FFCL by having fewer conifers. Differs from FOA in having more conifers and greater diversity of mesic deciduous taxa. Large, complex floodplains may contain unmappable inclusions of FA, HR, HS, HW, and WMU. NO BLACK OAK.
- FFABu.....As above, burned, often with scattered trees surviving fire.
- FFCL.....Red alder - mixed conifer riparian forest, with various combinations of red cedar, grand fir, Douglas fir, western hemlock, bigleaf maple, black cottonwood, and sometimes ash. Understory may include yew, dogwood, vine maple, elder, hazel, willow, salmonberry, thimbleberry, devils club, spiraea, ninebark, nettles. Crabapple may be present in wetter areas. Differs from FFA by larger conifer component. NO OAK OR SPRUCE.
- FFCLBuAs above, burned, often with scattered trees surviving fire.
- FL.....Red alder swamp, usually with salmonberry, sometimes willow and bigleaf maple. Wetter than FFCL.
- FOA.....White oak - ash riparian forest, sometimes with ponderosa pine, Douglas fir, cottonwood, bigleaf maple, alder, and willow. "Dense" understory may include vine maple. Differs from FFA in having fewer conifers and fewer mesic deciduous taxa. NO BLACK OAK.

- FOAM.....Southern mixed riparian forest with various combinations of oak, ash, bigleaf maple, myrtle, willow, alder, Douglas fir, grand fir ("yellow fir"), and white fir. "Dense" or "brushy" understory may include hazel, fern, ninebark, wild grape, poison oak, and briars, with salal or salmonberry near coast. May include ponderosa pine on gravelly soils. South coast and Umpqua Valley.
- FPVF.....Ponderosa pine - black oak - white oak - madrone forest (pine or oak "groves") on floor of Rogue Valley. Douglas fir, incense cedar, and hawthorn ("thorn") often present. Understory may contain ceanothus ("lilac," "greasewood"), and grass. On uplands, river terraces and large alluvial fans, some with groundwater but rarely flooded. May contain unmappable inclusions of SWO, with less pine and more white oak and grass. May also contain 10-30% unmappable inclusions of FAT in flood zones.
- FSHL.....Riparian Sitka spruce forest with various combinations of Douglas fir, grand fir, western hemlock, red cedar, red alder, cottonwood, bigleaf maple, ash. Myrtle present farther south. "Dense" understory of salmonberry, salal, vine maple, willow, thimbleberry, "bearberry," elderberry, briars. Crabapple present in wetter areas. Intergrades with FSL. Subject to occasional overflow only at extreme high water.
- FSHLBuAs above, burned, often with scattered trees surviving fire.
- FSL.....Sitka spruce swamp, with various combinations of willow, red alder, red cedar, hemlock. Rarely with ash or bigleaf maple. Dense understory may include salmonberry, crabapple, elderberry, gooseberry, briars, ferns, skunk cabbage, vine maple. Ground "very soft," "miry," or "muddy." Includes "rich bottom tide land," "subject to inundation," "subject to overflow." Regular or periodic overflow implied, not just extreme high water. NO FIR.
- FTBlack cottonwood riparian forest, often with ash, maple, willow, rose, briars, nettles, and crabapple. NO CONIFERS.

H. Shrubland and "thickets"

- HA.....Manzanita shrubland.
- HB.....Brush fields or thickets on slopes and ridges, with few or no witness trees. May be unspecified "brush," or include vine maple, red alder, salmonberry, thimbleberry, rhododendron, hazel, cherry, fern, salal, willow, young fir, "birch," ceanothus ("greasewood," "buckbrush"), chinquapin, garrya ("tassel") or madrone southward along coast.
- HBBuAs above, burned, with few or no trees remaining.
- HC.....Crabapple swamp, often with willow, alder, salmonberry, huckleberry, briars.
- HCH "Chaparral" thicket or "thick growth" at low elevation, species unspecified.

- Probably a mixture of manzanita and ceanothus ("greasewood"), sometimes with "plum," white oak, and poison oak. Rogue Valley.
- HD.....Brush fields or thickets on bottoms or wet terraces, with few or no trees. May include willow, vine maple, elderberry, red alder, cherry, crabapple, salmonberry, thimbleberry, dogwood, salal, sedge.
- HE.....Ceanothus ("greasewood," "snowbrush," "balm," "laurel") shrubland, usually dense. May also contain manzanita and willow (*S. scouleriana*).
- HF.....Maple "thicket" or "flat," species unspecified.
- HG.....Brush fields on dry coastal bluffs. Dense stands with combinations of salal, huckleberry, thimbleberry, garrya ("tassel"), twinberry, hazel, "lilac," crowberry, coyote bush. May contain scattered and scrubby shore pine, Sitka spruce, red alder.
- HL.....Alder "thicket," species unspecified. Presumably *A. viridis* ssp. *sinuata* on slopes in Cascades at ca. 4000 ft.
- HM.....*Mountain mahogany shrubland (Cercocarpus ledifolius)*.
- HN.....Ceanothus ("greasewood") "brush" or "thickets" on plains or uplands. May contain occasional white oak or pine. Rogue Valley.
- HNM.....Ceanothus ("greasewood") "brush" or "thickets" on mounded plains or tableland. Differs from HN by being on plains with mound and swale topography. Rogue Valley.
- HO.....Oak "brush" or "oak grubs" with Sargent oak, madrone ("laurel"), chinquapin, myrtle, ceanothus ("greasewood"), manzanita, salal, rhododendron, hazel, whortleberry, willow, "lilac." May contain huckleberry, red alder, poison oak, salmonberry, cascara, fern near water or in gullies. Sometimes with scattered fir or pine, but trees not used as witnesses. Southern Coast Range. Use FO for interior valleys and Columbia River Gorge.
- HOBu.....As above, burned, with few or no trees remaining.
- HR.....Rose or briar thickets, "briar brush."
- HS.....Spiraea ("hardhack" or "hardbush") brush or "swamp." May contain rose.
- HSB.....*Sagebrush - bitterbrush shrubland, sometimes with grass.*
- HSG.....*"Rocky" or "stony" low sagebrush/ bunchgrass shrubland in "rocky openings" or "rocky barrens." Sometimes with a few scattered ponderosa pine or juniper. Presumably with more shrub cover than PS.*
- HSP....."Dense" or "scrubby" shore pine. May include Sitka spruce, Douglas fir, red alder, salmonberry.
- HSR.....*Sagebrush bottomland ("sage land") with rye grass, bunch grass, Klamath plum, serviceberry. Soil dry and sandy. Klamath and Lake Counties.*
- HSS.....Shrub swamp ("brushy swamp," "marshy thicket," "swampy thicket"), composition unknown.
- HU.....Brush, composition unknown. Includes "thickets" if no species or other descriptors are given.
- HUR....."Creek brush" and "thickets" in riparian zones or "brushy bottoms." Sometimes with willow, grapevines, briars, and probably occasional hardwood trees, or composition unknown. Rogue Valley.

- HV.....Vine maple swamp or thicket, sometimes with "elk briar" and willow (wetland and upland).
- HW.....Willow swamp or "willow swale," sometimes "scattering." May include alder, cascara, ninebark, hardhack, briars, salmonberry, gooseberry, "swamp grass." Includes riparian stands on gravel or sand bars, with cottonwood or driftwood. May contain small amounts of ash, alder, or bigleaf maple, with trees mostly peripheral. NO CRABAPPLE.
- HWS.....Willow "swale" or narrow drainages, sometimes with ash, white alder, or cottonwood. Rogue Valley.
- HZ.....Hazel brush or thicket.

N. Composition unknown

- NA.....*"Alkali bottom," composition unknown. "Grass" may be present (saltgrass or Great Basin wild rye).*
- NG.....*"Glade," "opening," "open ground," or "open space" in forest or shrubland, composition unknown. If grass is present, or if "glade" is in prairie, use P. An isolated open area in forest, not to be confused with savanna "openings."*

O. Woodland [Distances to witness trees mostly 100-200 (400) links [66-132 (265) ft; stands described as "timber," "thinly timbered," "scattering," "scattering timber," "open." Understory brushy in Willamette Valley but may be grassy elsewhere. Woodland also applies when (1) more than half of witness trees are absent, (2) there is no mention of burned timber, and (3) good grazing is present, despite spacing of remaining trees being <100 links].

- OB.....Black oak woodland. Southern Lane County and southward.
- OBF.....Black oak - Douglas fir woodland. Understory may include hazel, oak. Umpqua Valley and southward.
- OD.....*Lodgepole pine woodland.*
- OFC.....Low to mid-elevation xeric Douglas fir - incense cedar woodland with combinations of ponderosa pine, sugar pine, bigleaf maple, and madrone ("laurel"). Umpqua Valley and southward. NO HEMLOCK, NO OAK. Similar to OFED, but lacking mesic conifer component on N slopes.
- OFED.....Low to mid-elevation mixture of (1) xeric Douglas fir - chinquapin - madrone ("laurel") woodland on S to W slopes and ridgetops, and (2) more mesic Douglas fir - western red cedar - western hemlock woodland or forest on N slopes and bottoms. May include incense cedar ("redwood"), black and white oak, ponderosa pine, grand fir, yew, red alder, maple, dogwood. "Dense" understory may include hazel, vine maple, viburnum, ocean spray, ceanothus, manzanita. Use of madrone

- and chinquapin (but not oaks) as witness trees, and abundance of hazel is diagnostic. If oaks are dominant witness trees, use OFOM.
- OFHB.....Montane (3500 ft to timberline) silver fir, noble fir ("larch"), or mountain hemlock woodland with mostly broadleaved evergreen understory. Stands near timberline "medium" or "scattering." With various combinations of Douglas fir, western hemlock, western red cedar, western white pine, and Engelmann spruce. Sparse to dense understory may include rhododendron, Oregon grape, vine maple, hazel, huckleberry, "white maple," "honey laurel," "soapbrush." Cascade Range. Intergrades with OFHC and OFHE. NO OAK OR BIGLEAF MAPLE.
- OFHC.....Mesic mixed conifer woodland, with various combinations of Douglas fir, red cedar, and western hemlock, with lesser amounts of bigleaf maple, white oak, ash, madrone, and red alder. Understory may include vine maple, dogwood, hazel, viburnum, fern, briars, yew, and rarely grass.
- OFHCBu.....As above, burned, often with scattered trees surviving fire.
- OFHE.....Mid-elevation (1500-4000 ft) mixed conifer woodland with mostly broadleaved evergreen understory. With various combinations of Douglas fir, white fir, western hemlock, western red cedar, western white pine, sugar pine, "bull pine," incense cedar, madrone ("laurel"), bigleaf maple, dogwood, red alder, and grand fir. Sparse to dense understory may include rhododendron, Oregon grape, yew, vine maple, chinquapin, live oak, madrone, ceanothus ("mountain balm," "balm," "greasewood," "chaparral," "buckbrush," "chamise"), manzanita, salal, hazel, ocean spray, huckleberry, "tasselwood. Sometimes with "bunchgrass" or "good grazing."
- OFHO.....Southern mixed xeric conifer woodland with mostly broadleaved evergreen understory. Various combinations of Douglas fir, western hemlock, Port Orford cedar ("white cedar"), grand fir, oak, white oak, tan oak, live oak, madrone, chinquapin, myrtle, red alder. Dense understory may include Sargent oak, live oak, madrone, rhododendron, yew, salal, evergreen huckleberry, ceanothus ("greasewood," "bluewood"), manzanita, elder, gooseberry, briars, tall fern. Sometimes with "bunchgrass" or "good grazing." May include willow, ash, cascara, cherry, whortleberry, elderberry, or salmonberry near water. Southern Coast Range. NO SPRUCE.
- OFHOBu.....As above, burned, often with scattered trees surviving fire.
- OFHPT.....Mesic mixed conifer montane woodland (2000 ft to timberline) with mixed deciduous-broadleaved evergreen understory. May include various combinations of larch ("tamarack"), noble fir, white fir, "black fir," Douglas fir, western hemlock, cedar, mountain hemlock, white pine, whitebark pine, "silver pine," Engelmann spruce, lodgepole pine ("black pine"), ponderosa pine, alder, dogwood, chinquapin, willow ("bur willow" probably *Salix scouleriana*). Light to dense undergrowth may include rhododendron, vine maple, serviceberry, huckleberry, Devils

club, salal, ceanothus ("buckbrush," "slickleaf," "snowbrush") manzanita, maple (species unspecified). Stands near timberline "medium" to "scattering," with dwarf juniper. Frequent presence of larch ("tamarack") diagnostic. Oak sometimes present at lower elevations. Intergrades with FFHE at lower elevations and with increasing incidence of Douglas fir. NO SUGAR PINE. Eastern Columbia Gorge, Eastern Cascades.

- OFHV.....Unmappable mixture of mostly northern mesic mixed conifer forest on north slopes, with elements of xeric conifer forest on S to W slopes and ridgetops. Includes various combinations of Douglas fir, western hemlock, red cedar, Port Orford cedar ("white cedar"), grand fir, with lesser amounts of bigleaf maple, dogwood, red alder, madrone ("laurel"). Myrtle occasional. Dense to "impassable" understory of "elk brush" or "elkwood" is diagnostic, but may also include salmonberry, vine maple, salal, briars, ceanothus ("greasewood," "bluewood"), "whortleberry," and cascara. "Good grass," rhododendron, or dead timber occasional. Witness trees primarily fir, hemlock, cedar. Southern Coast Range. NO OAK, SPRUCE, OR PINE.
- OFOM.....Xeric mixture of Douglas fir, black and white oak, and madrone. May include ponderosa pine, bigleaf maple, incense cedar ("redwood"), and red cedar. Dense brushy understory may include hazel, poison oak, oak sprouts, madrone, willow, oak brush, bracken, sometimes only madrone. Vine maple occasional. Differs from OFED in consistent use of oaks as witness trees, and abundance of madrone. Southern Lane County and southward. NO HEMLOCK.
- OFOPZ.....White oak - Douglas fir - ponderosa pine woodland. Brushy understory of hazel, young oak, oak sprouts, bracken, briars. May include "small openings," "part openings," or "some open." NO HEMLOCK OR CEDAR. More open than FFO. Differs from SOFP in having brushy undergrowth.
- OFOPZBuAs above, burned, often with scattered trees surviving fire.
- OFOZ.....Douglas fir - white oak woodland, often with bigleaf maple. Brushy understory of hazel, young oaks, oak brush, oak stump sprouts, young fir, bracken, and briars. Willow, chinquapin, or madrone sometimes present. NO BLACK OAK OR PINE. May also include red cedar, western hemlock, ash, alder, vine maple, yew, young ash, and ferns if uplands and bottomlands are not segregated by surveyor. More open than FFO. Differs from SOF in having brushy understory. If distance to witness trees < 100 links, use FFO.
- OFOZBuAs above, burned, often with scattered trees surviving fire.
- OFP.....Douglas fir - ponderosa pine woodland. Often dense understory may include hazel, willow, alder, vine maple, salal. Columbia River Gorge. Oak or hemlock occasional to scarce.

- OFPC.....Southern xeric Douglas fir - ponderosa pine woodland, understory unknown. Southern Coast Range. Adjacent to OFHO. NO HEMLOCK, CEDAR, SHORE PINE.
- OFPT.....Mid-montane ([1500] 3000-4000 ft) transitional woodland, with fir (species unspecified), ponderosa pine, larch ("tamarack"). White oak at lower elevations. Usually dense undergrowth may include maple (species unspecified), "soft maple," vine maple, aspen, alder, "laurel," willow, hazel, and regenerating fir, pine, and larch. May contain hemlock and cedar at upper elevations or in canyons. NO SPRUCE OR LODGPOLE PINE. East slope of Mount Hood, East Cascades.
- OFSL.....Sitka spruce swamp with widely scattered trees and dense shrub understory. May include various combinations of willow, red alder, red cedar, hemlock. Rarely with ash or bigleaf maple. Dense understory may include salmonberry, crabapple, elderberry, gooseberry, briars, ferns, skunk cabbage, vine maple. Ground "very soft," "miry," or "muddy." Includes "rich bottom tide land," "subject to inundation," "subject to overflow." Regular or periodic overflow implied, not just extreme high water. NO FIR.
- OFZ.....Douglas fir woodland, often with bigleaf maple, alder or dogwood. Brushy understory may include hazel, vine maple, young Douglas fir, bracken or "ferns." May include "small openings," "part openings," or "some open." "Fern openings" may be present, but these lack entrance and exit points, or the stand occurs in "open fern hills with scattering firs." If "fern opening" has entrance and exit points, use EF. Madrone, chinquapin or ceanothus may be present in dry sites, but are not used for witness trees. NO OTHER CONIFERS, NO OAK. More open than FFO. Differs from SF in having brushy or fern understory. Use with caution in burned-over areas, as surveyor may just be selecting widely scattered live trees among dead ones; in this case map as FF.
- OFZBuAs above, burned, often with scattered trees surviving fire.
- OJ.....*Juniper woodland, often with bunchgrass. Sometimes on rocky scabland.*
- OOBWhite oak - black oak woodland, often with madrone ("laurel") and ponderosa pine. "Dense" understory may include hazel, poison oak, madrone, bigleaf maple, willow, oak, fern, briars. Southern Lane County and southward. NO FIR. If understory not described, use SOB.
- OOP.....Mixed white oak - black oak woodland with ponderosa pine scattered or in pockets, usually with madrone ("laurel"). Understory "thick" or with "a few bunches" of ceanothus ("greasewood"), manzanita, and sometimes "bugwood" (*Cercocarpus betuloides*), "plum," "lilac," or "good grazing." Low to mid-elevation plains and foothills. With 10-40% inclusions of FPVF, OWM, or SWO. Rogue Valley.
- OOZWhite oak woodland. Brushy understory of hazel, oak sprouts, bracken and other shrubs. NO FIR, NO BLACK OAK. More open than FFO. Differs from SO in having brushy understory.

- OP *Ponderosa pine woodland. Understory sometimes dense with manzanita, bitterbrush, mountain mahogany, buckbrush (Ceanothus velutinus), deerbrush (Ceanothus integerrimus), young pine, low sagebrush, and bunchgrass.*
- OPC *Ponderosa pine and cedar (probably incense cedar) woodland. Understory unspecified.*
- OPD *Ponderosa pine - lodgepole pine woodland.*
- OPF *Ponderosa pine - fir (Douglas fir, red or white fir) woodland. May include juniper, mountain mahogany, manzanita, bitterbrush, buckbrush (Ceanothus velutinus), deerbrush (Ceanothus integerrimus), low sagebrush, bunchgrass.*
- OPFC *Ponderosa pine - fir (Douglas, red or white fir) - incense cedar woodland or "timber" if no witness trees are used. May include juniper, chinquapin, Klamath plum, bunchgrass, pinegrass. Klamath and Lake Counties.*
- OPFCS *As above, with sugar pine.*
- OPFO *"Scattering" Douglas fir - pine woodland. May contain oak, madrone, chinquapin. Understory with combinations of young oak, rhododendron, huckleberry, salal. South Coast. NO CEDAR, MYRTLE, HEMLOCK, GRAND FIR.*
- OPJ *Ponderosa pine - juniper woodland, sometimes with extensive but unmappable inclusions of low sagebrush and bunchgrass. May contain scattered bitterbrush, mountain mahogany, or deerbrush (Ceanothus integerrimus).*
- OPJS *Ponderosa pine - juniper woodland, with dense mountain mahogany, manzanita, and bitterbrush. Low sagebrush and bunchgrass occasional.*
- OPMO *Ponderosa pine - black oak - white oak woodland, usually with madrone ("laurel"), with lesser amounts of Douglas fir and incense cedar. Understory unspecified or containing ceanothus ("greasewood") and manzanita, with "plum," "bugwood" (*Cercocarpus betuloides*), or grass occasional. May have 10-40% unmappable inclusions of FFDF, FFON, OOP, PU, or SWO. On valley floor or hill and mountain slopes, Rogue Valley.*
- OPO *White oak - ponderosa pine woodland. Understory "scant" or dense, may contain hazel, ceanothus ("chaparral"), oak, pine, willow, alder, cottonwood, rose, hawthorn, manzanita. Eastern Columbia River Gorge and east slope of Mount Hood.*
- OPOF *Unmappable mix of open white oak - ponderosa pine - Douglas fir woodland on ridges and south slopes and more dense white oak - ponderosa pine - Douglas fir forest on north slopes. May contain larch ("tamarack") above 2500 ft. May have a dense shrub layer or a grassy understory ("good grazing," "good pasturage"). Understory may include oak, fir, pine, hazel, willow, "bur willow," "laurel," cherry, "arrowwood," thimbleberry, dogwood, vine maple, huckleberry, manzanita, gooseberry, ceanothus ("buckbrush," "chaparral," "snowbrush"). May contain hemlock and cedar near western edge of range, at upper elevations, or in canyons.*

- Eastern Columbia River Gorge and eastern slopes of Mount Hood.
- OPOM.....Ponderosa pine - white oak woodland ("open pine timber") on mounded plains, with lesser amounts of black oak. Understory sometimes "thick," with *Ceanothus cuneatus* ("greasewood") and sometimes manzanita. Madrone absent or minor. On valley plains or tableland with "openings" interspersed throughout, often with vernal pools in treeless intermounds. Rogue Valley.
- OPZ.....Ponderosa pine woodland ("timber" or "pine openings") with hazel understory. NO OTHER CONIFERS OR OAKS.
- OSH.....Sitka spruce woodland with various combinations of Douglas fir, western hemlock, red cedar, grand fir, red alder, bigleaf maple. "Dense" understory may contain vine maple, salmonberry, thimbleberry, huckleberry, salal, garrya ("tassel"), twinberry, hazel, "lilac," "crowberry," coyote bush. Rarely with shore pine, hazel. Primarily loam soils, with wetland pockets on bottomlands.
- OSP.....Shore pine woodland on sandy soils or rocky headlands. May include scattering Douglas fir, Sitka spruce, western hemlock, or madrone, with Port Orford cedar ("white cedar") along south coast. Understory may include salal, manzanita, hazel, ceanothus ("lilac"), evergreen huckleberry, and rhododendron. Alder, willow, and salmonberry may occur near water. If "openings," "good grassland," or "good grazing," use SSP. Intermixed with PD on partly stabilized dunes.
- OSW.....White oak "swale," with no additional information. Probably a seasonally moist/dry shallow drain or bottom with brush and/or grass understory. Rogue Valley.
- OWB.....White oak woodland, often with black oak. Understory unspecified or "thick" or with "patches" of *Ceanothus cuneatus* ("greasewood") or manzanita, often with grass or "good grazing." Ponderosa pine, "bugwood" (*Cercocarpus betuloides*) or madrone ("laurel") occasional but are not diagnostic. May include 10-40% unmappable inclusions of SWO and PU. On droughty hill and ridge slopes, Rogue Valley. Intergrades with SWO.
- OWM.....White oak woodland on slopes with "bugwood" (*Cercocarpus betuloides*). On xeric north-facing hillslopes between prairie and forest. Ponderosa pine or black oak uncommon and not diagnostic. Rogue Valley.

P. Prairie [Distances to witness trees mostly 200-800 (1750) links [132-528 (1155) ft]; stands described as various types of "prairie" or "plains;" understory mostly herbaceous or graminoid.]

- P.....Prairie, wet and dry undifferentiated. Includes "swale" and "glade" if adjacent line segments are prairie. May contain "thickets" or "scattering" trees if most distances > 100 links. If "tidal prairie" use WSM.
- PA.....Dry prairie on valley floor, plains, and non-flooding or non-riparian

bottomlands. Trees absent or with “scattering” or “a few scattering” white oak, sometimes black oak or ponderosa pine. May have unmappable inclusions of PBS containing patches of *Ceanothus cuneatus* (“greasewood”). May also contain 10-20% unmappable inclusions of HUR, FAT, PBS, and PF. On both clayey and loamy soils. Rogue Valley and southern Cascades.

- PABS.....Mixture of valley floor prairie and mounded prairie (PA, PBS). Rogue Valley.
- PASHMixture of valley floor prairie and a "few scattering bunches" of ash, with seasonal moisture or occasional flooding (PA, PF). On bottomlands with meandering creek channels and “swaley” areas. May include scattered white oak, ponderosa pine and hawthorn. It cannot be determined from GLO notes if tree density in ash clumps fits forest or woodland spacing.
- PB....."Brushy prairie," "brush and fern prairie," "fern prairie," containing mostly fern and salal. In southern Coast Range, may contain hazel, chinquapin, whortleberry, thimbleberry, bunchgrass.
- PBSMounded prairie on valley floor or tablelands, with intermound vernal pools and rock netting. Mounds may have thick "patches" of *Ceanothus cuneatus* ("greasewood"). May also contain “a few scattering oak,” sometimes with ceanothus undergrowth. Rogue Valley.
- PDSand dune prairie or grassland, "sandy prairie," "sandy plains," "sand hills covered with grass," "sand glades." Sometimes with unmappable inclusions of FSP, OSP or SSP islands or "glades."
- PFWet or seasonally wet "creek prairie," "prairie bottom," "marshy swale," "springy swale," or "swaley" prairie in floodplains and riparian zones. With seasonal moisture or occasional flooding.
- PFAT.....Mixture of "creek prairie," "creek timber," and "creek brush." Rogue Valley.
- PFDCreek or valley bottom, sometimes with “good grass.” Willows, briars, or other woody species along creek. May include “scattering timber” of yellow pine and some seasonally dry prairie undifferentiated from the wet bottoms. Southern Cascades.
- PM.....Mounded prairie.
- PS*"Rocky," "stony," or "gravelly" prairie with bunchgrass, low sagebrush, sometimes with a few scattered ponderosa pine or juniper. Presumably with more grass cover than HSG.*
- PSP.....*Prairie with scattered ponderosa pine, sagebrush ("sage"), bitterbrush ("greasewood"), and bunchgrass.*
- PUXeric upland prairie on steep or gentle slopes, or tops of ridges. May have scattering trees, most with distances from corners > 100 links, and inclusions of woodland or savanna. Understory unspecified or with references to abundant grass (“good grazing,” "hills covered with grass," "good grass," "bald hills,” etc.). Intergrades with PA in Rogue Valley.
- PW.....Seasonally or perennially wet prairie, "prairie marsh," "swamp prairie." May have scattering ash trees or willow "patches" or "strips," most with distances from corners > 100 links. If "tidal prairie" use WSM.

S. Savanna [Distances to witness trees mostly (100) 200-400 links [(66) 132-265 ft]; stands described as "openings" or "scant". Understory "open," mostly herbaceous or graminoid but may contain some shrubs. With "good grazing," "good pasturage," "splendid grass," "good for stock," "grass in abundance," or not described.]

- SAAsh savanna.
- SB.....Black oak savanna, often with ponderosa pine and madrone ("laurel").
Southern Lane County and southward.
- SBFBlack oak - Douglas fir savanna. Umpqua Valley and southward.
- SFDouglas fir savanna. NO OAK.
- SFCLow to mid-elevation xeric Douglas fir savanna with combinations of
incense cedar, madrone ("laurel"), ponderosa pine, sugar pine, and
bigleaf maple. Understory with grass. Madrone frequently used for
witness trees. Umpqua Valley and southward. NO HEMLOCK, NO
WHITE OR BLACK OAK.
- SFHC.....Northern mesic mixed conifer (or "fir, etc.") savanna with little understory
and "good grazing." May include various combinations of Douglas fir,
western hemlock, red cedar, grand fir, with lesser amounts of bigleaf
maple, dogwood, white oak, red alder, madrone ("laurel"). From southern
Lane County and southward, this type intergrades with FFHE, FED,
FFHO. NO ASH, BLACK OAK, SILVER OR NOBLE FIR ("larch"),
OR PINE.
- SFHOSouthern mixed xeric conifer savanna with various combinations of Douglas
fir, western hemlock, Port Orford cedar ("white cedar"), grand fir, oak,
live oak, madrone, chinquapin, myrtle. Sparse understory may include
Sargent oak, live oak, madrone, rhododendron, yew, salal, evergreen
huckleberry, ceanothus ("greasewood," "bluewood"), manzanita, elder,
gooseberry, briars. With "bunchgrass" or "good grazing." Southern Coast
Range. NO SPRUCE.
- SFOM.....Lower-elevation (mostly < 2000 ft) xeric Douglas fir - white oak - black oak
- madrone ("laurel") savanna, often with ponderosa pine or sugar pine.
Oak and madrone consistently used for witness trees. May also include
bigleaf maple, incense cedar ("redwood"), and red cedar. Southern Lane
County and southward.
- SFPDouglas fir - ponderosa pine savanna.
- SOWhite oak savanna. If thick understory is present, use OOZ.
- SOA.....White oak - ash savanna.
- SOB.....White oak - black oak savanna, usually with madrone ("laurel"), often with
ponderosa pine. May contain unmappable inclusions of "brush" or "thick
undergrowth" (= woodland) in ravines and along streams. Southern Lane
County and southward. NO DOUGLAS FIR.

- SOFWhite oak - Douglas fir savanna. Understory mostly herbaceous. Madrone may be present from southern Lane County and southward.
- SOFPWhite oak - Douglas fir - ponderosa pine savanna.
- SOPWhite oak - ponderosa pine savanna.
- SPPine savanna. Usually ponderosa pine, or pine species unspecified. May include Jeffrey pine on ultramafic soils.
- SPOWhite oak - ponderosa pine savanna in eastern Columbia River Gorge and east slope of Mount Hood.
- SSH "Lightly timbered" Sitka spruce savanna with "no undergrowth." May contain various combinations of Douglas fir, western hemlock, red cedar, grand fir, red alder, bigleaf maple.
- SSPShore pine savanna on sandy soils or rocky headlands. May include Douglas fir, Sitka spruce, western hemlock, madrone, with Port Orford cedar ("white cedar") and chinquapin present in Coos and Curry counties. Understory may include salal, evergreen huckleberry, rhododendron, chinquapin, madrone, manzanita. Rarely with hazel. Red alder, willow, and salmonberry may occur near water. May include "openings," "good grazing," "good grassland," or "bunchgrass." Intermixed with PD on partly stabilized dunes.
- SSPBuAs above, burned, often with scattered trees surviving fire.
- SWOWhite oak savanna, sometimes with ponderosa pine or black oak. Understory usually unspecified. Often occurring as unmappable inclusions in woodland or prairie, or with inclusions of OWB. Valley floor and foothills, Rogue Valley. Differs from SO in occasional presence of ponderosa pine and black oak. Differs from SOB by only occasional presence of black oak, and absence of madrone.

U. Unvegetated

- UGGravel bars and riverwash. May have scattered willow or "brush" in unmappable patches.
- URRock outcrops, talus, exposed bedrock, scree slopes, "barren slopes," "boulder fields," "rocky glades," rocky scablands, rocky coastal headlands, unvegetated or sparsely-vegetated landslides, "fault line," "fault crack."
- USSand bar, "sandy barrens," sand dunes (witness trees > 400 links distant), tidal mudflats (estuarine or riverine), "quicksand." May have scattered willow or "brush" in unmappable patches.

W. Water and wetlands (except wet prairie)

- W.....Water bodies >1 chain across. Includes ocean, rivers, sloughs, ponds, beaver ponds, lakes, "marshy lakes" and "bayous."
- WD.....Montane fen ("swamp") with "scattering" lodgepole pine.
- WG....."Grass marsh."
- WK.....Skunk cabbage marsh.
- WMU.....Marsh, "wet meadow," "marshy bottomland," composition unknown. If "tidal marsh" use WSM. If "prairie marsh" use PW. If "grass marsh" use WG.
- WP.....Pond lily aquatic bed, sometimes with skunk cabbage.
- WPC.....Coastal sphagnum bog with cranberry, shore pine, red alder, bracken fern. May include unmappable mix of crabapple swamp, salal thickets, shore pine thickets.
- WS.....Seasonally-flooded lake, pond or slough > 1 chain across. Includes "shoal lakes," "shoal ponds," vernal pools.
- WSM.....Tidal marsh, salinity undifferentiated. Includes "tide lands," "tidal prairie," "grass tide marsh," "tide bottom prairie," "coarse grass tide prairie," "subject to overflow at high tide," and "freshet" if along coast. Few or no trees. Sitka spruce or crabapple may be included on elevations or at landward edge of marsh. Use only if "tide" specifically mentioned. Use FSL if witness trees are < 100 links distant.
- WSP.....Unmappable mixture of shore pine swamp and undifferentiated "marsh." May contain dwarf shore pine, Sitka spruce, crabapple, salal. Ground "mucky," some flooded. Similar to WPC but lacking cranberry and sphagnum.
- WSU....."Swamp," composition unknown. If "swamp prairie" or "good grazing" use PW.
- WT.....Perennially-flooded tule marsh, with "water" and "swamp grass." Sometimes with inclusions of drier "hay meadow" (WTG).
- WTG.....*Seasonally-flooded "hay meadow" with bluejoint, "wild hay grass," "wire grass," "meadow grass," and rye grass "subject to overflow." Sometimes called "lake" or "marsh," with inclusions of wetter tule and "swamp grass" (WT) in deeper water. Mowed by ranchers for hay.*
- WU.....Wetland, composition unknown. Includes "swale" in forest or shrubland. If "swale" is in prairie, use P.
- WW.....Wapato marsh, sometimes with "rushes" or pond lily.

Lookup table for vegetation units lacking species names

"Bald hills" = P.

"Bar" = UG.

"Bayou," composition unknown = W.

"Briar brush" or "briar thicket" = HR.

"Brush," composition unknown = HU.

"Brushy swamp," "brushy marsh," composition unknown = HSS.

"Dead" forest = use "Bu" suffix.

"Fallen timber" = If not adjacent to burned or storm-damaged forest, do not map. If adjacent to burned forest, map as burn. If adjacent to storm-damaged forest, map as storm damage.

"Glade," composition unknown. In prairie = P, in forest or shrubland = NG unless "good grass" or "good grazing" is present, in which case = P.

"Grass" = P.

"Grassy glade" = P.

"Marsh," composition unknown = WMU.

"Marshy thicket," composition unknown = HSS.

"Opening," "open ground," "open space" in forest, composition unknown = NG. Isolated open area in forest, not to be confused with savanna "openings."

"Plains" = P.

"Shoal lake" = WS.

"Slough," composition unknown = W.

"Swale," composition unknown: in prairie = P, in forest or shrubland = WU.

"Swamp" or "bog swamp," composition unknown = WSU.

"Swampy lake" = W.

"Swampy thicket," composition unknown = HSS.

"Thicket," composition unknown = HU.

"Wet meadow," composition unknown = WMU.

"Young" forest = use "Y" suffix.

Discontinued codes and their equivalents (old code => new code)

BU => HU	FPP => FPD	OPMOM => OPOM
F => EF	FW => HW	OPS => OP
FA (Rogue Valley) => FAS	FWLM => FALW	OPV => OPMO
FAL => FALW	G => UG	PFH => PFAT
FASP => PASH	NSU => WSU	PFOAZ => OFOAZ
FAW (Rogue Valley) => FAS	NU => HU	PFOZ => OFOZ
FBBu => HBBu	NWU => WU	PM (Rogue Valley) => PBS
FCL => FFCL	OBW => OWB	PO => OWB & PF
FFD => FF	OFHCP => FFHPP	PV => WS
FFDE => FFDF	OFHCPBu => FFHPPBu	R => UR
FFHCA => FFHA	OFHZ => OFHC	S => US
FFHCB => FFHCBu	OFOAPZ => OFOPZ	SFH ==> SSH
FFHCP => FFHP	OFOAZ => OFOZ	SO (Rogue Valley) => SWO
FFHMC => FFHC	OFOAZBu => OFOZBu	SOBF => SFOM
FFOAZ => FFO	OFOB => OOB	SOBFP => SFOM
FFOB => OFOBZ	OFOBZ => OFOM	SOBP => SOB
FFOBZ => OFOBZ	OFPZ => FFP	T => WT
FFOPZ => OFOPZ	OFPZBu => FFPBu	UW => W
FFOZ => OFOZ	OOFB => OFOM	UWM => WMU
FFZ => OFZ	OPF => FPF	UWS => WS
FFZBu => OFZBu	OPFJ => OPJ	V => PV
FOBF => FFOM	OPFP => FPFE	WSS => HSS
FOZ => OOZ	OPFS => FPF	
FPO => FPVF	OPG => OP	