



United States Department of Agriculture
US Forest Service
Natural Resource Manager (NRM)



FSVeg Common Stand Exam User Guide Region 4 Appendices

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APPENDIX A: ADMINISTRATIVE AND PROCLAIMED FOREST CODES

Table 1: Region 4 codes

Admin Number	Administrative Forest Name	Proclaimed Number	Proclaimed Forest Name
01	Ashley	01	Ashley
02	Boise	02	Boise
03	Bridger – Teton	03	Bridger
03	Bridger – Teton	16	Teton
07	Dixie	07	Dixie
08	Fishlake	08	Fishlake
10	Manti-Lasal	10	Manti-Lasal
12	Payette	12	Payette
13	Salmon – Challis	06	Challis
13	Salmon – Challis	13	Challis
14	Sawtooth	14	Sawtooth
15	Caribou – Targhee	05	Caribou
15	Caribou – Targhee	15	Targhee
17	Humboldt – Toiyabe	09	Humboldt
17	Humboldt – Toiyabe	17	Toiyabe
19	Wasatch – Cache – Uinta	04	Cache
19	Wasatch – Cache – Uinta	18	Uinta
19	Wasatch – Cache – Uinta	19	Wasatch

APPENDIX B: DISTRICT CODES

Table 2: Region 4 codes

Forest	Code	District
Ashley	1	Flaming Gorge
Ashley	2	Vernal
Ashley	3	Roosevelt
Ashley	4	Duchesne
Boise	1	Mountain Home
Boise	3	Idaho City
Boise	4	Cascade
Boise	5	Lowman
Boise	6	Emmett
Bridger – Teton	1	Kemmerer
Bridger – Teton	2	Big Piney
Bridger – Teton	3	Greys River
Bridger – Teton	4	Jackson
Bridger – Teton	6	Buffalo
Bridger – Teton	7	Pinedale
Caribou – Targhee	33	Montpelier – Cache
Caribou – Targhee	34	Palisades – Caribou
Caribou – Targhee	51	Dubois
Caribou – Targhee	52	Ashton – Island Park
Caribou – Targhee	53	Montpelier – Caribou
Caribou – Targhee	54	Palasades – Targhee
Caribou – Targhee	55	Soda Springs
Caribou – Targhee	56	Teton Basin

Forest	Code	District
Caribou – targhee	57	Westside
Dixie	1	Pine Valley
Dixie	2	Cedar City
Dixie	3	Powell
Dixie	4	Escalante
Dixie	5	Fremont River (Dixie)
Fishlake	1	Fillmore
Fishlake	2	Fremont River (Fishlake)
Fishlake	3	Beaver
Fishlake	4	Richfield
Fishlake	5	Fremont River (Dixie)
Humboldt – Toiyabe	1	Carson
Humboldt – Toiyabe	2	Bridgeport
Humboldt – Toiyabe	3	Austin
Humboldt – Toiyabe	4	Tonopah
Humboldt – Toiyabe	5	Spring Mountain NRA
Humboldt – Toiyabe	6	Mountain City
Humboldt – Toiyabe	7	Ruby Mountain
Humboldt – Toiyabe	8	Jarbridge
Humboldt – Toiyabe	9	Ely
Humboldt – Toiyabe	10	Winnemucca
Manti – Lasal	1	Sampete
Manti – Lasal	2	Ferron
Manti – Lasal	3	Price
Manti – Lasal	4	Moab

Forest	Code	District
Manti – Lasal	5	Monticello
Payette	1	Council
Payette	2	Weiser
Payette	3	New Meadows
Payette	4	McCall
Payette	6	Krassel
Salmon – Challis	1	Salmon – Cobalt
Salmon – Challis	2	Challis-Yankee Fork
Salmon – Challis	4	Lost River
Salmon – Challis	6	Middle Fork
Salmon – Challis	7	North Fork
Salmon – Challis	8	Leadore
Sawtooth	1	Minidoka
Sawtooth	3	Ketchum
Sawtooth	4	Sawtooth NRA
Sawtooth	5	Fairfield
Uinta	1	Heber
Uinta	2	Pleasant Grove
Uinta	3	Spanish Fork
Wasatch-Cache-Uinta	1	Salt Lake
Wasatch-Cache-Uinta	2	Pleasant Grove
Wasatch-Cache-Uinta	3	Heber-Kamas Wasatch
Wasatch-Cache-Uinta	4	Evanston-Mountain View
Wasatch-Cache-Uinta	5	Mountain View
Wasatch-Cache-Uinta	6	Ogden

Forest	Code	District
Wasatch-Cache-Uinta	7	Logan
Wasatch-Cache-Uinta	8	Spanish Fork
Wasatch-Cache-Uinta	9	Heber-Kamas Uinta

APPENDIX C: STATE CODES

Table 3: Region 4 codes

Code	State
CO	Colorado
ID	Idaho
NV	Nevada
UT	Utah
WY	Wyoming

APPENDIX D: COUNTY CODES

Table 4: Colorado County codes

Code	County
77	Mesa
85	Montrose

Table 5: Idaho County codes

Code	County
1	Ada
3	Adams
5	Bannock

Code	County
7	Gear Lake
9	Benewah
11	Bingham
13	Blaine
15	Boise
17	Bonner
19	Bonneville
21	Boundary
23	Butte
25	Camas
27	Canyon
29	Caribou
31	Cassia
33	Clark
35	Clearwater
37	Custer
39	Elmore
41	Franklin
43	Fremont
45	Gem
47	Gooding
49	Idaho
51	Jefferson
53	Jerome
55	Kootenai

Code	County
57	Latah
59	Lemhi
61	Lewis
63	Lincoln
65	Madison
67	Minidoka
69	Nez Perce
71	Oneida
73	Owyhee
75	Payette
77	Power
79	Shoshone
81	Teton
83	Twin Falls
85	Valley
87	Washington

Table 6: Nevada County codes

Code	County
1	Churchill
3	Clark
5	Douglas
7	Elko
9	Esmeralda
11	Eureka
13	Humboldt

Code	County
15	Lander
17	Lincoln
19	Lyon
21	Mineral
23	Nye
27	Pershing
29	Storey
31	Washoe
33	White Pine
500	Independent City(s)
510	Carson City

Table 7: Utah County codes

Code	County
1	Beaver
3	Box Elder
5	Cache
7	Carbon
9	Daggett
11	Davis
13	Duchesne
15	Emery
17	Garfield
19	Grand
21	Iron
23	Juab

Code	County
25	Kane
27	Millard
29	Morgan
31	Piute
33	Rich
35	Salt Lake
37	San Juan
39	Sanpete
41	Sevier
43	Summit
45	Tooele
47	Unitah
49	Utah
51	Wasatch
53	Washington
55	Wayne
57	Weber

Table 8: Wyoming County codes

Code	County
1	Albany
3	Big Horn
5	Campbell
7	Carbon
9	Converse
11	Crook

Code	County
13	Fremont
15	Goshen
17	Hot Springs
19	Johnson
21	Laramie
23	Lincoln
25	Natrona
27	Niobrara
29	Park
31	Platte
33	Sheridan
35	Sublette
37	Sweetwater
39	Teton
41	Uinta
43	Washakie
45	Weston

APPENDIX E: EXISTING VEGETATION REFERENCES & CODES

Table 9: Existing Vegetation References

Code	Name	Author
SAF	Forest Cover Types of the United States and Canada.	F.H. Eyre, Editor. Society of American Foresters (1980)
SRM	Society for Range Management	Society of Range Management

Table 10: Existing SAF Vegetation codes (Forest Cover Type of the Society of American Foresters – SAF)

Code	Description
000	Non Forest Types
206	Englemann spruce-subalpine fir
208	Whitebark pine
210	Interior Douglas-fir
211	White fir
212	Western larch
213	Grand fir
215	Western white pine
217	Aspen
218	Lodgepole pine
219	Limber pine
220	Rocky Mountain juniper
235	Cottonwood – willow
237	Interior ponderosa pine
239	Pinyon – juniper

Table 11: Existing SRM Vegetation codes (Rangeland Cover Types of Society of Range Management – SRM)

Code	Description
001	Urban
002	Agriculture
004	Forest Land
005	Water
007	Barren Land

Code	Description
000	Non-vegetated
102	Idaho fescue
104	Antelope bitterbrush-bluebunch wheatgrass
105	Antelope bitterbrush-Idaho fescue
107	Western juniper-big sagebrush-bluebunch wheatgrass
108	Alpine Idaho fescue
109	Ponderosa pine – shrubland
110	Ponderosa pine – grassland
207	Scrub oak mixed chaparral
208	Ceanothus mixed chaparral
209	Montane shrubland
210	Bitterbrush
211	Creosote bush scrub
212	Blackbush
213	Alpine grassland
217	Wetlands
301	Bluebunch wheatgrass – blue grama
302	Bluebunch wheatgrass–Sandberg bluegrass
303	Bluebunch wheatgrass – western wheatgrass
304	Idaho fescue-bluebunch wheatgrass
305	Idaho fescue-Richardson needlegrass
306	Idaho fescue-slender wheatgrass
307	Idaho fescue-threadleaf sedge
308	Idaho fescue-tufted hairgrass
309	Idaho fescue-western wheatgrass

Code	Description
310	Needle-and-thread – blue grama
313	Tufted hairgrass – sedge
314	Big sagebrush-bluebunch wheatgrass
315	Big sagebrush-Idaho fescue
317	Bitterbrush – bluebunch wheatgrass
318	Bitterbrush-Idaho fescue
320	Black sagebrush – bluebunch wheatgrass
321	Black sagebrush-Idaho fescue
322	Curleaf mountain mahogany – bluebunch wheatgrass
324	Threetip sagebrush-Idaho fescue
401	Basin big sagebrush
402	Mountain big sagebrush
403	Wyoming big sagebrush
404	Threetip sagebrush
405	Black sagebrush
406	Low sagebrush
407	Stiff sagebrush
408	Other sagebrush types
409	Tall forb
410	Alpine rangeland
411	Aspen woodland
412	Juniper – pinyon woodland
413	Gambel oak
414	Salt desert shrub
415	Curleaf mountain–mahogany

Code	Description
416	True mountain-mahogany
417	Littleleaf mountain-mahogany
418	Bigtooth maple
419	Bittercherry
420	Snowbrush
421	Chokecherry - serviceberry - rose
422	Riparian
501	Saltbush – greasewood
504	Juniper – pinyon pine woodland
614	Crested wheatgrass

APPENDIX F: POTENTIAL VEGETATION REFERENCES

Table 12: Region 4 references

Code	Name	
401	Forest Habitat Types of Central Idaho. USDA/FS, Gen. Tech. Rep. INT-144.	R. Steele, R.D. Pfister, R.A. Ryker, and J.A. Kittams (1981)
402	Forest Habitat Types of Eastern Idaho-Western Wyoming. USDA/FS Gen. Tech. Rep. INT-144.	R. Steele, S.V. Cooper, D.M. Ondov, D.W. Roberts, and R.D. Pfister (1983)
403	Coniferous Forest Habitat Types of Northern Utah. USDA/FS Gen. Tech. Rep. INT-170.	R.I. Mauk and J.A. Henderson (1984)
404	Coniferous Forest Habitat Types of Central and Southern Utah. USDA/FS Gen. Tech. Rep. INT-187.	A.P. Youngblood and R.L. Mauk (1985)
405	Aspen Community Types of the Intermountain Region. USDA/FS Gen. Tech. Rep. INT-250	W.F. Mueggler (1988)
406	Riparian Community Type Classification of Eastern Idaho-Western Wyoming. USDA/FS Report R4-ECOL-85-01.	A.P. Youngblood, W.G. Padgett, and A.H. Winward (1985)

Code	Name	
407	Riparian Community Type Classification of Utah and Southeastern Idaho. USDA/FS Report R4-ECOL-89-01	W.G. Padgett, A.P. Youngblood, and A.H. Winward (1989)
408	Sagebrush-Grass Habitat Types of Southern Idaho; Forest, Wildlife, and Range Experiment Station Bulletin No. 35, Univ. of Idaho, Moscow, Idaho.	M. Hironaka, M.A. Fosberg, and A.H. Winward (1983)
409	Steppe Vegetation of Washington; Washington Agriculture Experiment Station Tech. Bulletin No. 62.	R.F. Daubenmire (1970)
410	Canyon Grasslands and Associated Shrublands of West-Central Idaho and Adjacent Areas; Forest, Wildlife, and Range Experiment Station Bulletin No. 40	E.W. Tisdale (1985)
412	Some combination of references 406 and 407.	USDA Forest Service
413	Some combination of references 401, 403, and 404.	USDA Forest Service
418	Curlleaf Mountain-Mahogany Habitat Types for Interior West Inventories; from Ecology of Curlleaf Mountain-Mahogany in Oregon and adjacent areas	USDA Forest Service

APPENDIX G: POTENTIAL VEGETATION CODES

Table 13: Reference Code 401

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
001010	White fir/Rocky Mountain maple	ABCO/ACGL
41010	Limber pine series	PIFL2
41050	Limber pine/Idaho fescue	PIFL2/FEID
41060	Limber pine/curl-leaf mountain mahogany	PIFL2/CELE3
41070	Limber pine/common juniper	PIFL2/JUCO6
41080	Limber pine/spike fescue	PIFL2/LEK12
41100	Ponderosa pine series	PIPO
41120	Ponderosa pine/western needlegrass	PIPO/ACOCO
41130	Ponderosa pine/bluebunch wheatgrass	PIPO/PSSPS

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41140	Ponderosa pine/Idaho fescue	PIPO/FEID
41160	Ponderosa pine/antelope bitterbrush	PIPO/PUTR2
41161	Ponderosa pine/antelope bitterbrush/bluebunch wheatgrass	PIPO/PUTR2/PSSPS
41162	Ponderosa pine/antelope bitterbrush/Idaho fescue	PIPO/PUTR2/FEID
41170	Ponderosa pine/common snowberry	PIPO/SYAL
41190	Ponderosa pine/mallow ninebark	PIPO/PHMA5
41195	Ponderosa pine/mountain snowberry	PIPO/SYOR2
41200	Douglas-fir	PSME
41210	Douglas-fir/bluebunch wheatgrass	PSME/PSSPS
41220	Douglas-fir/Idaho fescue	PSME/FEID
41221	Douglas-fir/Idaho fescue-Idaho fescue	PSME/FEID-FEID
41222	Douglas-fir/Idaho fescue/ponderosa pine	PSME/FEID/PIPO
41250	Douglas-fir/dwarf bilberry	PSME/VACA13
41260	Douglas-fir/mallow ninebark	PSME/PHMA5
41262	Douglas-fir/mallow ninebark/pinegrass	PSME/PHMA5/CARU
41263	Douglas-fir/mallow ninebark/ponderosa pine	PSME/PHMA5/PIPO
41264	Douglas-fir/mallow ninebark/Douglas-fir	PSME/PHMA5/PSME
41280	Douglas-fir/thinleaf huckleberry	PSME/VAME
41290	Douglas-fir/twinflower	PSME/LIBO3
41310	Douglas-fir/common snowberry	PSME/SYAL
41313	Douglas-fir/common snowberry-common snowberry	PSME/SYAL-SYAL
41315	Douglas-fir/common snowberry/ponderosa pine	PSME/SYAL/PIPO
41320	Douglas-fir/pinegrass	PSME/CARU
41323	Douglas-fir/pinegrass-pinegrass	PSME/CARU-CARU

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41324	Douglas-fir/pinegrass/ponderosa pine	PSME/CARU/PIPO
41325	Douglas-fir/pinegrass-Idaho fescue	PSME/CARU-FEID
41330	Douglas-fir/Geyer's sedge	PSME/CAGE2
41331	Douglas-fir/Geyer's sedge-Geyer's sedge	PSME/CAGE2-CAGE2
41332	Douglas-fir/Geyer's sedge/mountain snowberry	PSME/CAGE2/SYOR2
41334	Douglas-fir/Geyer's sedge/ponderosa pine	PSME/CAGE2/PIPO
41340	Douglas-fir/white spirea	PSME/SPBE2
41341	Douglas-fir/white spirea-white spirea	PSME/SPBE2-SPBE2
41343	Douglas-fir/white spirea-pinegrass	PSME/SPBE2-CARU
41344	Douglas-fir/white spirea/ponderosa pine	PSME/SPBE2/PIPO
41360	Douglas-fir/common juniper	PSME/JUCO6
41370	Douglas-fir/heartleaf arnica	PSME/ARCO9
41371	Douglas-fir/heartleaf arnica-heartleaf arnica	PSME/ARCO9-ARCO9
41372	Douglas-fir/heartleaf arnica/timber milkvetch	PSME/ARCO9/ASMI9
41375	Douglas-fir/sweetcicely	OSBE
41380	Douglas-fir/mountain snowberry	PSME/SYOR2
41385	Douglas-fir/curl-leaf mountain mahogany	PSME/CELE3
41390	Douglas-fir/Rocky Mountain maple	PSME/ACGL
41392	Douglas-fir/Rocky Mountain maple-mountain maple	PSME/ACGL-SYOR2
41393	Douglas-fir/Rocky Mountain maple-Rocky Mountain maple	PSME/ACGL-ACGL
41395	Douglas-fir/creeping barberry	PSME/MARE11
41396	Douglas-fir/creeping barberry-creeping barberry	PSME/MARE11-MARE11
41397	Douglas-fir/creeping barberry-mountain snowberry	PSME/MARE11-SYOR2

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41398	Douglas-fir/creeping barberry-Geyer's sedge	PSME/MARE11-CAGE2
41400	Engelmann spruce series	PIEN
41410	Engelmann spruce/field horsetail	PIEN/EQAR
41440	Engelmann spruce/fragrant bedstraw	PIEN/GATR3
41490	Engelmann spruce/softleaf sedge	PIEN/CADI6
41493	Engelmann spruce/revolute hypnum moss	PIEN/HYRE70
41500	Grand fir series	ABGR
41505	Grand fir/white spirea	ABGR/SPBE2
41510	Grand fir/common beargrass	ABGR/XETE
41511	Grand fir/Idaho goldthread	ABGR/COOC
41515	Grand fir/thinleaf huckleberry	ABGR/VAME
41520	Grand fir/bride's bonnet	ABGR/CLUN2
41525	Grand fir/Rocky Mountain maple	ABGR/ACGL
41526	Grand fir/Rocky Mountain maple-Rocky Mountain maple	ABGR/ACGL-ACGL
41527	Grand fir/Rocky Mountain maple-mallow ninebark	ABGR/ACGL-PHMA5
41580	Grand fir/dwarf bilberry	ABGR/VACA13
41585	Grand fir/pinegrass	ABGR/CARU
41590	Grand fir/twinflower	ABGR/LIBO3
41591	Grand fir/twinflower-twinflower	ABGR/LIBO3-LIBO3
41592	Grand fir/twinflower-common beargrass	ABGR/LIBO3-XETE
41593	Grand fir/twinflower/thinleaf huckleberry	ABGR/LIBO3/VAME
41600	Subalpine fir series	ABLA
41605	Subalpine fir/Howell's marsh marigold	ABLA/CALEH2
41620	Subalpine fir/bride's bonnet	ABLA/CLUN2

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41621	Subalpine fir/bride's bonnet-bride's bonnet	ABLA/CLUN2-CLUN2
41625	Subalpine fir/bride's bonnet/rusty menziesia	ABLA/CLUN2/MEFE
41635	Subalpine fir/claspleaf twistedstalk	ABLA/STAM2
41636	Subalpine fir/claspleaf twistedstalk-claspleaf twistedstalk	ABLA/STAM2-STAM2
41637	Subalpine fir/claspleaf twistedstalk-Canby's licorice-root	ABLA/STAM2-LICA2
41638	Subalpine fir/Idaho goldthread	ABLA/COOC
41640	Subalpine fir/dwarf bilberry	ABLA/VACA13
41645	Subalpine fir/Rocky Mountain maple	ABLA/ACGL
41650	Subalpine fir/bluejoint	ABLA/CACA4
41651	Subalpine fir/bluejoint-bluejoint	ABLA/CACA4-CACA4
41652	Subalpine fir/bluejoint/Canby's licorice-root	ABLA/CACA4/LICA2
41654	Subalpine fir/bluejoint/dwarf bilberry	ABLA/CACA4/VACA13
41655	Subalpine fir/bluejoint/western Labrador tea	ABLA/CACA4/LEGL
41660	Subalpine fir/twinflower	ABLA/LIBO3
41661	Subalpine fir/twinflower-twinflower	ABLA/LIBO3-LIBO3
41662	Subalpine fir/twinflower-common beargrass	ABLA/LIBO3-XETE
41663	Subalpine fir/twinflower/grouse whortleberry	ABLA/LIBO3/VASC
41670	Subalpine fir/rusty menziesia	ABLA/MEFE
41671	Subalpine fir/rusty-menziesia-rusty menziesia	ALBA/MEFE-MEFE
41672	Subalpine fir/rusty menziesia/Hitchcock's smooth woodrush	ALBA/MEFE/LUGLH
41690	Subalpine fir/common beargrass	ALBA/XETE
41691	Subalpine fir/common beargrass/thinleaf huckleberry	ALBA/XETE/VAME
41692	Subalpine fir/common beargrass/grouse whortleberry	ALBA/XETE/VASC

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41694	Subalpine fir/common beargrass/Hitchcock's smooth woodrush	ALBA/XETE/LUGLH
41705	Subalpine fir/white spirea	ABLA/SPBE2
41720	Subalpine fir/thinleaf huckleberry	ABLA/VAME
41721	Subalpine fir/thinleaf huckleberry-thinleaf huckleberry	ABLA/VAME-VAME
41730	Subalpine fir/grouse whortleberry	ABLA/VASC
41731	Subalpine fir/grouse whortleberry/pinegrass	ABLA/VASC/CARU
41732	Subalpine fir/grouse whortleberry-grouse whortleberry	ABLA/VASC-VASC
41734	Subalpine fir/grouse whortleberry/whitebark pine	ABLA/VASC/PIAL
41740	Subalpine fir/Sitka alder	ABLA/ALVIS
41745	Subalpine fir/common juniper	ABLA/JUCO6
41750	Subalpine fir/pinegrass	ABLA/CARU
41780	Subalpine fir/heartleaf arnica	ABLA/ARCO9
41790	Subalpine fir/Geyer's sedge	ABLA/CAGE2
41791	Subalpine fir/Geyer's sedge-Geyer's sedge	ABLA/CAGE2-CAGE2
41793	Subalpine fir/Geyer's sedge/big sagebrush	ABLA/CAGE2/ARTR2
41810	Subalpine fir/gooseberry currant	ABLA/RIMO2
41830	Subalpine fir/Hitchcock's smooth woodrush	ABLA/LUGLH
41831	Subalpine fir/Hitchcock's smooth woodrush/grouse whortleberry	ABLA/LUGLH/VASC
41833	Subalpine fir/Hitchcock's smooth woodrush-Hitchcock's smooth woodrush	ABLA/LUGLH-LUGLH
41850	Whitebark pine-subalpine fir	PIAL-ABLA
41870	Whitebark pine series	PIAL
41900	Lodgepole pine series	PICO

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41905	Lodgepole pine/Idaho fescue	PICO/FEID
41920	Lodgepole pine/dwarf bilberry	PICO/VACA13
41940	Lodgepole pine/grouse whortleberry	PICO/VASC
41955	Lodgepole pine/Geyer's sedge	PICO/CAGE2

Table 14: Reference Code 402

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
010	Limber pine series	PIFL2
050	Limber pine/Idaho fescue	PIFL2/FEID
051	Limber pine/Idaho fescue-Idaho fescue	PIFL2/FEID-FEID
060	Limber pine/curl-leaf mountain mahogany	PIFL2/CELE3
070	Limber pine/common juniper	PIFL2/JUCO6
080	Limber pine/spike fescue	PIFL2/LEK12
200	Douglas-fir series	PSME
220	Douglas-fir/Idaho fescue	PSME/FEID
221	Douglas-fir/Idaho fescue-Idaho fescue	PSME/FEID-FEID
260	Douglas-fir/mallow ninebark	PSME/PHMA5
265	Douglas-fir/mallow ninebark-Douglas-fir	PSME/PHMA5-PSME
266	Douglas-fir/mallow ninebark-Oregon boxleaf	PSME/PHMA5-PAMY
270	Douglas-fir/mountain ninebark	PSME/PHMO4
280	Douglas-fir/thinleaf huckleberry	PSME/VAME
281	Douglas-fir/thinleaf huckleberry-thinleaf huckleberry	PSME/VAME-VAME
310	Douglas-fir/common snowberry	PSME/SYAL
313	Douglas-fir/common snowberry-common snowberry	PSME/SYAL-SYAL
320	Douglas-fir/pinegrass	PSME/CARU

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
323	Douglas-fir/pinegrass-pinegrass	PSME/CARU-CARU
325	Douglas-fir/pinegrass-Idaho fescue	PSME/CARU-FEID
340	Douglas-fir/white spirea	PSME/SPBE2
341	Douglas-fir/white spirea-white spirea	PSME/SPBE2-SPBE2
343	Douglas-fir/white spirea-pinegrass	PSME/SPBE2-CARU
360	Douglas-fir/common juniper	PSME/JUCO6
370	Douglas-fir/heartleaf arnica	PSME/ARCO9
371	Douglas-fir/heartleaf arnica-heartleaf arnica	PSME/ARCO9-ARCO9
372	Douglas-fir/heartleaf arnica/timber milkvetch	PSME/ARCO9/ASMI9
375	Douglas-fir/sweetcicely	PSME/OSBE
380	Douglas-fir/mountain snowberry	PSME/SYOR2
385	Douglas-fir/curl-leaf mountain mahogany	PSME/CELE3
390	Douglas-fir/Rocky Mountain maple	PSME/ACGL
391	Douglas-fir/Rocky Mountain maple-Oregon boxleaf	PSME/ACGL-PAMY
395	Douglas-fir/creeping barberry	PSME/MARE11
396	Douglas-fir/creeping barberry-creeping barberry	PSME/MARE11-MARE11
397	Douglas-fir/creeping barberry-mountain snowberry	PSME/MARE11-SYOR2
398	Douglas-fir/creeping barberry-Geyer's sedge	PSME/MARE11-CAGE2
399	Douglas-fir/creeping barberry-common juniper	PSME/MARE11-JUCO6
400	Engelmann spruce series	PIEN
410	Engelmann spruce/field horsetail	PIEN/EQAR
415	Engelmann spruce/white marsh marigold	PIEN/CALE4
430	Engelmann spruce/mallow ninebark	PIEN/PHMA5
440	Engelmann spruce/fragrant bedstraw	PIEN/GATR3

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
470	Engelmann spruce/twinflower	PIEN/LIBO3
475	Engelmann spruce/common juniper	PIEN/JUCO6
485	Engelmann spruce/grouse whortleberry	PIEN/VASC
490	Engelmann spruce/softleaf sedge	PIEN/CADI6
493	Engelmann spruce/revolute hypnum moss	PIEN/HYRE70
495	Engelmann spruce/heartleaf arnica	PIEN/ARCO9
497	Engelmann spruce/gooseberry currant	PIEN/RIMO2
600	Subalpine fir series	ABLA
601	Subalpine fir/red baneberry	ABLA/ACRU2
603	Subalpine fir/mallow ninebark	ABLA/PHMA5
607	Subalpine fir/common snowberry	ABLA/SYAL
609	Subalpine fir/western meadow-rue	ABLA/THOC
635	Subalpine fir/claspleaf twistedstalk	ABLA/STAM2
636	Subalpine fir/claspleaf twistedstalk-claspleaf twistedstalk	ABLA/STAM2-STAM2
645	Subalpine fir/Rocky Mountain maple	ABLA/ACGL
647	Subalpine fir/Rocky Mountain maple-Oregon boxleaf	ABLA/ACGL-PAMY
650	Subalpine fir/bluejoint	ABLA/CACA4
651	Subalpine fir/bluejoint-bluejoint	ABLA/CACA4-CACA4
654	Subalpine fir/bluejoint/dwarf bilberry	ABLA/CACA4/VACA13
655	Subalpine fir/bluejoint/western Labrador tea	ABLA/CACA4/LEGL
660	Subalpine fir/twinflower	ABLA/LIBO3
661	Subalpine fir/twinflower-twinflower	ABLA/LIBO3-LIBO3
663	Subalpine fir/twinflower/grouse whortleberry	ABLA/LIBO3/VASC
670	Subalpine fir/rusty menziesia	ABLA/MEFE

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
671	Subalpine fir/rusty menziesia-rusty menziesia	ABLA/MEFE-MEFE
690	Subalpine fir/common beargrass	ABLA/XETE
691	Subalpine fir/common beargrass/thinleaf huckleberry	ABLA/XETE/VAME
692	Subalpine fir/common beargrass/grouse whortleberry	ABLA/XETE/VASC
701	Subalpine fir/broadleaf arnica	ABLA/ARLA8
702	Subalpine fir/creeping barberry-creeping barberry	ABLA/MARE11-MARE11
703	Subalpine fir/creeping barberry	ABLA/MARE11
704	Subalpine fir/creeping barberry-Geyer's sedge	ABLA/MARE11-CAGE2
705	Subalpine fir/white spirea	ABLA/SPBE2
707	Subalpine fir/sickletop lousewort	ABLA/PERA
720	Subalpine fir/thinleaf huckleberry	ABLA/VAME
721	Subalpine fir/thinleaf huckleberry/grouse whortleberry	ABLA/VAME/VASC
722	Subalpine fir/thinleaf huckleberry/Oregon boxleaf	ABLA/VAME/PAMY
723	Subalpine fir/thinleaf huckleberry-thinleaf huckleberry	ABLA/VAME-VAME
730	Subalpine fir/grouse whortleberry	ABLA/VASC
731	Subalpine fir/grouse whortleberry/pinegrass	ABLA/VASC/CARU
732	Subalpine fir/grouse whortleberry-grouse whortleberry	ABLA/VASC-VASC
734	Subalpine fir/grouse whortleberry/whitebark pine	ABLA/VASC/PIAL
745	Subalpine fir/common juniper	ABLA/JUCO6
750	Subalpine fir/pinegrass	ABLA/CARU
751	Subalpine fir/pinegrass-pinegrass	ABLA/CARU-CARU

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
752	Subalpine fir/pinegrass-Oregon boxleaf	ABLA/CARU-PAMY
760	Subalpine fir/sweetcicely	ABLA/OSBE
761	Subalpine fir/sweetcicely-Oregon boxleaf	ABLA/OSBE-PAMY
762	Subalpine fir/sweetcicely-sweetcicely	ABLA/OSBE-OSBE
780	Subalpine fir/heartleaf arnica	ABLA/ARCO9
781	Subalpine fir/heartleaf arnica-heartleaf arnica	ABLA/ARCO9-ARCO9
782	Subalpine fir/heartleaf arnica-timber milkvetch	ABLA/ARCO9-ASMI9
783	Subalpine fir/heartleaf arnica-russet buffaloberry	ABLA/ARCO9-SHCA
784	Subalpine fir/heartleaf arnica-Engelmann spruce	ABLA/ARCO9-PIEN
790	Subalpine fir/Geyer's sedge	ABLA/CAGE2
791	Subalpine fir/Geyer's sedge-Geyer's sedge	ABLA/CAGE2-CAGE2
795	Subalpine fir/Ross' sedge	ABLA/CARO5
810	Subalpine fir/gooseberry currant	ABLA/RIMO2
811	Subalpine fir/gooseberry currant-gooseberry currant	ABLA/RIMO2-RIMO2
812	Subalpine fir/gooseberry currant-whitebark pine	ABLA/RIMO2-PIAL
830	Subalpine fir/Hitchcock's smooth woodrush	ABLA/LUGLH
831	Subalpine fir/Hitchcock's smooth woodrush/grouse whortleberry	ABLA/LUGLH/VASC
870	Whitebark pine series	PIAL
875	Whitebark pine/grouse whortleberry	PIAL/VASC
880	Whitebark pine/Geyer's sedge	PIAL/CAGE2
885	Whitebark pine/common juniper	PIAL/JUOC
886	Whitebark pine/common juniper-russet buffaloberry	PIAL/JUOC-SHCA

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
887	Whitebark pine/common juniper-common juniper	PIAL/JUOC-JUOC
891	Whitebark pine/Idaho fescue	PIAL/FIED
895	Whitebark pine/Ross' sedge	PIAL/CARO5
896	Whitebark pine/Ross' sedge-lodgepole pine	PIAL/CARO5-PICO
897	Whitebark pine/Ross' sedge-Ross' sedge	PIAL/CARO5-CARO5
90	Quaking aspen	POTR5
900	Lodgepole pine series	PICO
930	Lodgepole pine/twinflower	PICO/LIBO3
935	Lodgepole pine/thinleaf huckleberry	PICO/VAME
940	Lodgepole pine/grouse whortleberry	PICO/VASC
945	Lodgepole pine/white spirea	PICO/SPBE2
950	Lodgepole pine/pinegrass	PICO/CARU
955	Lodgepole pine/Geyer's sedge	PICO/CAGE2
960	Lodgepole pine/common juniper	PICO/JUCO6
965	Lodgepole pine/heartleaf arnica	PICO/ARCO9
970	Lodgepole pine/Ross' sedge	PICO/CARO5
975	Lodgepole pine/russet buffaloberry	PICO/SHCA
990	Quaking aspen	POTR5

Table 15: Reference Code 403

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41010	Limber pine series	PIFL2
41045	Limber pine/creeping barberry	PIFL2/MARE11
41060	Limber pine/curl-leaf mountain mahogany	PIFL2/CELE3
41100	Ponderosa pine series	PIPO

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41115	Ponderosa pine/Geyer's sedge	PIPO/CAGE2
41140	Ponderosa pine/Idaho fescue	PIPO/FEID
41141	Ponderosa pine/Idaho fescue-Idaho fescue	PIPO/FEID-FEID
41143	Ponderosa pine/Idaho fescue-greenleaf manzanita	PIPO/FEID-ARPA6
41144	Ponderosa pine/Idaho fescue/big sagebrush	PIPO/FEID/ARTR2
41200	Douglas-fir series	PSME
41260	Douglas-fir/mallow ninebark	PSME/PHMA5
41266	Douglas-fir/mallow ninebark-Oregon boxleaf	PSME/PHMA5-PAMY
41305	Blue spruce series	PIPU
41320	Douglas-fir/pinegrass	PSME/CARU
41375	Douglas-fir/sweetcicely	PSME/OSBE
41376	Douglas-fir/sweetcicely/Oregon boxleaf	PSME/OSBE/PAMY
41380	Douglas-fir/mountain snowberry	PSME/SYOR2
41385	Douglas-fir/curl-leaf mountain mahogany	PSME/CELE3
41390	Douglas-fir/Rocky Mountain maple	PSME/ACGL
41395	Douglas-fir/creeping barberry	PSME/MARE11
41396	Douglas-fir/creeping barberry-creeping barberry	PSME/MARE11-MARE11
41397	Douglas-fir/creeping barberry-mountain snowberry	PSME/MARE11-SYOR2
41398	Douglas-fir/creeping barberry-Geyer's sedge	PSME/MARE11-CAGE2
41399	Douglas-fir/creeping barberry-common juniper	PSME/MARE11-JUCO6
41400	Engelmann spruce series	PIEN
41406	Blue spruce/bluebunch wheatgrass	PIPU/PSSPS
41407	Blue spruce/creeping barberry	PIPU/MARE11
41410	Engelmann spruce/field horsetail	PIEN/EQAR

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41415	Engelmann spruce/white marsh marigold	PIEN/CALE4
41416	Engelmann spruce/dwarf bilberry	PIEN/VACA13
41485	Engelmann spruce/grouse whortleberry	PIEN/VASC
41600	Subalpine fir series	ABLA
41601	Subalpine fir/red baneberry	ABLA/ACRU2
41603	Subalpine fir/mallow ninebark	ABLA/PHMA5
41635	Subalpine fir/claspleaf twistedstalk	ABLA/STAM2
41640	Subalpine fir/dwarf bilberry	ABLA/VACA13
41645	Subalpine fir/Rocky Mountain maple	ABLA/ACGL
41650	Subalpine fir/bluejoint	ABLA/CACA4
41702	Subalpine fir/creeping barberry-creeping barberry	ABLA/MARE11-MARE11
41703	Subalpine fir/creeping barberry	ABLA/MARE11
41704	Subalpine fir/creeping barberry-Geyer's sedge	ABLA/MARE11-CAGE2
41707	Subalpine fir/sickletop lousewort	ABLA/PERA
41708	Subalpine fir/sickletop lousewort/Douglas-fir	ABLA/PERA/PSME
41709	Subalpine fir/sickletop lousewort-sickletop lousewort	ABLA/PERA-PERA
41714	Subalpine fir/creeping barberry-limber pine	ABLA/MARE11-PIFL2
41715	Subalpine fir/creeping barberry-gooseberry currant	ABLA/MARE11-RIMO2
41716	Subalpine fir/creeping barberry-common juniper	ABLA/MARE11-JUCO6
41717	Subalpine fir/creeping barberry/Douglas-fir	ABLA/MARE11/PSME
41720	Subalpine fir/thinleaf huckleberry	ABLA/VAME
41725	Subalpine fir/grouse whortleberry/broadleaf arnica	ABLA/VASC/ARLA8

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41726	Subalpine fir/grouse whortleberry/Geyer's sedge	ABLA/VASC/CAGE2
41730	Subalpine fir/grouse whortleberry	ABLA/VASC
41732	Subalpine fir/grouse whortleberry-grouse whortleberry	ABLA/VASC-VASC
41745	Subalpine fir/common juniper	ABLA/JUCO6
41750	Subalpine fir/pinegrass	ABLA/CARU
41760	Subalpine fir/sweetcicely	ABLA/OSBE
41800	White fir series	ABCO
41810	Subalpine fir/gooseberry currant	ABLA/RIMO2
41811	Subalpine fir/gooseberry currant-gooseberry currant	ABLA/RIMO2-RIMO2
41813	Subalpine fir/gooseberry currant/Fendler's meadow-rue	ABLA/RIMO2/THFE
41814	Subalpine fir/gooseberry currant/lodgepole pine	ABLA/RIMO2/PICO
41815	Subalpine fir/gooseberry currant/spike trisetum	ABLA/RIMO2/TRSP2
41861	White fir/mallow ninebark	ABLA/PHMA5
41862	White fir/sweetcicely	ABCO/OSBE
41863	White fir/creeping barberry	ABCO/MARE11
41864	White fir/creeping barberry/mountain snowberry	ABCO/MARE11/SYOR2
41865	White fir/creeping barberry-creeping barberry	ABCO/MARE11-MARE11
41900	Lodgepole pine series	PICO
41915	Lodgepole pine/bluejoint	PICO/CACA4
41920	Lodgepole pine/dwarf bilberry	PICO/VACA13
41940	Lodgepole pine/grouse whortleberry	PICO/VASC
41956	Lodgepole pine/kinnikinnick	PICO/ARUV

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41957	Lodgepole pine/creeping barberry	PICO/MARE11
41960	Lodgepole pine/common juniper	PICO/JUCO6
41970	Lodgepole pine/Ross' sedge	PICO/CARO5

Table 16: Reference Code 404

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41010	Limber pine series	PIFL2
41100	Ponderosa pine series	PIPO
41107	Ponderosa pine/Greenleaf manzanita	PIPO/ARPA6
41108	Ponderosa pine/curl-leaf mountain mahogany	PIPO/CELE3
41109	Ponderosa pine/black sagebrush	PIPO/ARNO4
41111	Ponderosa pine/Gambel oak	PIPO/QUGA
41112	Ponderosa pine/Gambel oak-mountain snowberry	PIPO/QUGA-SYOR2
41113	Ponderosa pine/Gambel oak-Gambel oak	PIPO/QUGA-QUGA
41114	Ponderosa pine/mountain muhly	PIPO/MUMO
41160	Ponderosa pine/antelope bitterbrush	PIPO/PUTR2
41195	Ponderosa pine/mountain snowberry	PIPO/SYOR2
41200	Douglas-fir series	PSME
41260	Douglas-fir/mallow ninebark	PSME/PHMA5
41305	Blue spruce series	PIPU
41365	Douglas-fir/Greenleaf manzanita	PSME/ARPA6
41366	Douglas-fir/alderleaf mountain mahogany	PSME/CEMO2
41367	Douglas-fir/Gambel oak	PSME/QUGA
41380	Douglas-fir/mountain snowberry	PSME/SYOR2
41382	Douglas-fir/creeping barberry/ponderosa pine	PSME/MARE11/PIPO

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41385	Douglas-fir/curl-leaf mountain mahogany	PSME/CELE3
41395	Douglas-fir/creeping barberry	PSME/MARE11
41396	Douglas-fir/creeping barberry-creeping barberry	PSME/MARE11-MARE11
41400	Engelmann spruce series	PIEN
41407	Blue spruce/creeping barberry	PIPU/MARE11
41408	Blue spruce/field horsetail	PIPU/EQAR
41409	Blue spruce/common juniper	PIPU/JUCO6
41497	Engelmann spruce/gooseberry currant	PIEN/RIMO2
41600	Subalpine fir series	ABLA
41603	Subalpine fir/mallow ninebark	ABLA/PHMA5
41640	Subalpine fir/dwarf bilberry	ABLA/VACA13
41645	Subalpine fir/Rocky Mountain maple	ABLA/ACGL
41702	Subalpine fir/creeping barberry-creeping barberry	ABLA/MARE11-MARE11
41703	Subalpine fir/creeping barberry	ABLA/MARE11
41714	Subalpine fir/creeping barberry/limber pine	ABLA/MARE11/PIFL2
41718	Subalpine fir/creeping barberry/Engelmann spruce	ABLA/MARE11/PIEN
41720	Subalpine fir/thinleaf huckleberry	ABLA/VAME
41745	Subalpine fir/common juniper	ABLA/JUCO6
41746	Subalpine fir/Columbian monkshood	ABLA/ACCO4
41747	Subalpine fir/whortleberry	ABLA./CAMY2
41790	Subalpine fir/Geyer's sedge	ABLA/CAGE2
41795	Subalpine fir/Ross' sedge	ABLA/CARO5
41800	White fir series	ABCO
41810	Subalpine fir/gooseberry currant	ABLA/RIMO2

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41811	Subalpine fir/gooseberry currant-gooseberry currant	ABLA/RIMO2-RIMO2
41816	Subalpine fir/gooseberry currant/aspen bluebells	ABLA/RIMO2/MEAR6
41861	White fir/mallow ninebark	ABCO/PHMA5
41863	White fir/creeping barberry	ABCO/MARE11
41865	White fir/creeping barberry-creeping barberry	ABCO/MARE11-MARE11
41866	White fir/creeping barberry-common juniper	ABCO/MARE11-JUCO6
41867	White fir/mountain snowberry	ABCO/SYOR2
41868	White fir/common juniper	ABCO/JUCO6
41869	White fir/Gambel oak	ABCO/QUGA
41871	White fir/greenleaf manzanita	ABCO.ARPA6
41872	White fir/curl-leaf mountain mahogany	ABCO/CELE3
41873	White fir/Rocky Mountain maple	ABCO/ACGL

Table 17: Reference Code 405

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
42000	Quaking aspen series	POTR5
42001	Quaking aspen/California false hellebore	POTR5/VECA2
42002	Quaking aspen/western brackenfern	POTR5/PTAQ
42003	Quaking aspen/mule-ears	POTR5/WYAM
42004	Quaking aspen/Thurber's fescue	POTR5/FETH
42005	Quaking aspen/tall forb	POTR5/2FORB
42006	Quaking aspen/pinegrass	POTR5/CARU
42007	Quaking aspen/Fendler's meadow-rue	POTR5/THFE
42008	Quaking aspen/California brome	POTR5/BRCA5
42009	Quaking aspen/Ross' sedge	POTR5/CARO5

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
42010	Quaking aspen/needle and thread	POTR5/HECOC8
42011	Quaking aspen/timber milkvetch	POTR5/ASMI9
42012	Quaking aspen/Kentucky bluegrass	POTR5/POPR
42040	Quaking aspen/thimbleberry	POTR5/RUPA
42041	Quaking aspen/red elderberry	POTR5/SARA2
42042	Quaking aspen/russet buffaloberry	POTR5/SHCA
42043	Quaking aspen/mountain snowberry	POTR5/SYOR2
42044	Quaking aspen/mountain snowberry/tall forb phase	POTR5/SYOR2/2FORB
42045	Quaking aspen/mountain snowberry/pinegrass	POTR5/SYOR2/CARU
42046	Quaking aspen/mountain snowberry/Fendler's meadow-rue	POTR5/SYOR2/THFE
42047	Quaking aspen/mountain snowberry/Thurber's fescue	POTR5/SYOR2/FETH
42048	Quaking aspen/mountain snowberry/Ross' sedge	POTR5/SYOR2/CARO5
42049	Quaking aspen/mountain snowberry/mule-ears	POTR5/SYOR2/WYAM
42050	Quaking aspen/mountain snowberry/California brome	POTR5/SYOR2/BRCA5
42051	Quaking aspen/mountain snowberry/Kentucky bluegrass	POTR5/SYOR2/POPR
42052	Quaking aspen/common juniper	POTR5/JUCO6
42053	Quaking aspen/common juniper/Geyer's sedge	POTR5/JUCO6/CAGE2
42054	Quaking aspen/common juniper/silvery lupine	POTR5/JUCO6/LUAR3
42055	Quaking aspen/common juniper/timber milkvetch	POTR5/JUCO6/ASMI9
42056	Quaking aspen/big sagebrush	POTR5/ARTR2
42080	Quaking aspen/Scouler's willow	POTR5/SASC

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
42081	Quaking aspen/Saskatoon serviceberry-mountain snowberry	POTR5/AMAL2-SYOR2
42082	Quaking aspen/Saskatoon serviceberry-mountain snowberry/tall form	POTR5/AMAL2-SYOR2/2FORB
42083	Quaking aspen/Saskatoon serviceberry-mountain snowberry/Fendler's meadow-rue	POTR5/AMAL2-SYOR2/THFE
42084	Quaking aspen/Saskatoon serviceberry-mountain snowberry/pinegrass	POTR5/AMAL2-SYOR2/CARU
42085	Quaking aspen/Saskatoon serviceberry-mountain snowberry/California brome	POTR5/AMAL2-SYOR2-BRCA5
42086	Quaking aspen/Saskatoon serviceberry	POTR5/AMAL2
42087	Quaking aspen/Saskatoon serviceberry/western brackenfern	POTR5/AMAL2/PTAQ
42088	Quaking aspen/Saskatoon serviceberry/tall forb	POTR5/AMAL2/2FORB
42089	Quaking aspen/Saskatoon serviceberry/Fendler's meadow-rue	POTR5/AMAL2/THFE
42100	Quaking aspen-subalpine fir series	POTR5-ABLA
42101	Quaking aspen-subalpine fir/tall forb	POTR5-ABLA/2FORB
42102	Quaking aspen-subalpine fir/Fendler's meadow-rue	POTR5-ABLA/THFE
42103	Quaking aspen-subalpine fir/Geyer's sedge	POTR5-ABLA/CAGE2
42104	Quaking aspen-subalpine fir/Ross' sedge	POTR5-ABLA/CARO5
42105	Quaking aspen-subalpine fir/russet buffaloberry	POTR5-ABLA/SHCA
42106	Quaking aspen-subalpine fir/mountain snowberry	POTR5-ABLA/SYOR2
42107	Quaking aspen-subalpine fir/mountain snowberry/tall forb	POTR5-ABLA/SYOR2/2FORB
42108	Quaking aspen-subalpine fir/mountain snowberry/Fendler's meadow-rue	POTR5-ABLA/SYOR2/THFE
42109	Quaking aspen-subalpine fir/mountain snowberry/California brome	POTR5-ABLA/SYOR2/BRCA5

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
42110	Quaking aspen-subalpine fir/common juniper	POTR5-ABLA/JUCO6
42111	Quaking aspen-subalpine fir/Saskatoon serviceberry	POTR5-ABLA/AMAL2
42200	Quaking aspen-lodgepole pine series	POTR5-PICO
42201	Quaking aspen-lodgepole pine/Fendler's meadow-rue	POTR5-PICO/THFE
42202	Quaking aspen-lodgepole pine/Geyer's sedge	POTR5-PICO/CAGE2
42203	Quaking aspen-lodgepole pine/mountain snowberry	POTR5-PICO/SYOR2
42204	Quaking aspen-lodgepole pine/common juniper	POTR5-PICO/JUCO6
42300	Quaking aspen-Douglas-fir series	POTR5-PSME
42301	Quaking aspen-Douglas-fir/pinegrass	POTR5-PSME/CARU
42302	Quaking aspen-Douglas-fir/mountain snowberry	POTR5-PSME/SYOR2
42303	Quaking aspen-Douglas-fir/common juniper	POTR5-PSME/JUCO6
42304	Quaking aspen-Douglas-fir/Saskatoon serviceberry	POTR5-PSME/AMAL2
42400	Quaking aspen-white fir series	POTR5-ABCO
42401	Quaking aspen-white fir/Kentucky bluegrass	POTR5-ABCO/POPR
42402	Quaking aspen-white fir/mountain snowberry	POTR5-ABCO/SYOR2
42403	Quaking aspen-white fir/Greenleaf manzanita	POTR5-ABCO/ARPA6
42500	Quaking aspen-blue spruce series	POTR5-PIPU
42600	Quaking aspen-limber pine series	POTR5/PIFL2
42700	Quaking aspen-ponderosa pine series	POTR5/PIPO

Table 18: Reference Code 406

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43000	Riparian series	N/A
43002	Spruce/redosier dogwood	PICEA/COSES
43004	Spruce/field horsetail	PICEA/EQAR
43006	Spruce/bluejoint	PICEA/CACA4
43012	Spruce/fragrant bedstraw	PICEA/GATR3
43043	Narrowleaf cottonwood/redosier dogwood	POAN3/COSES
43046	Narrowleaf cottonwood/Kentucky bluegrass	POAN3/POPR
43105	Gray alder/northern black currant	ALIN2/RIHU
43202	Booth's willow/beaked sedge	SABO2/CARO6
43203	Booth's willow/Nebraska sedge	SABO2/CANE2
43204	Booth's willow/bluejoint	SABO2/CACA4
43205	Booth's willow/field horsetail	SABO2/EQAR
43206	Booth's willow/fowl bluegrass	SABO2/POPA2
43207	Booth's willow/Kentucky bluegrass	SABO2/POPR
43208	Booth's willow/starry false lily of the valley	SABO2/MAST4
43222	Geyer's willow/beaked sedge	SAGE2/CARO6
43223	Geyer's willow/bluejoint	SAGE2/CACA4
43224	Geyer's willow/fowl bluegrass	SAGE2/POPA2
43225	Geyer's willow/Kentucky bluegrass	SAGE2/POPR
43227	Geyer's willow/forb (mesic)	SAGE2/2FORB
43241	Narrowleaf willow/field horsetail	SAEX/EQAR
43242	Narrowleaf willow/Kentucky bluegrass	SAEX/POPR
43271	Yellow willow	SALU2
43283	Mountain willow	SAEA

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43301	Wolf's willow/water sedge	SAWO/CAAQ
43302	Wolf's willow/beaked sedge	SAWO/CARO6
43303	Wolf's willow/Nebraska sedge	SAWO/CANE2
43305	Wolf's willow/bluejoint	SAWO/CACA4
43306	Wolf's willow/tufted hairgrass	SAWO/DECA18
43307	Wolf's willow/fowl bluegrass	SAWO/POPA2
43308	Wolf's willow/mesic forb	SAWO/2FORB
43321	Diamondleaf willow	SAPL2
43353	Redosier dogwood/common cowparsnip	COSES/HEMA80
43354	Redosier dogwood/fragrant bedstraw	COSES/GATR3
43400	Alderleaf buckthorn	RHAL
43551	Shrubby cinquefoil/tufted hairgrass	DAFL3/DECA18
43552	Shrubby cinquefoil/Idaho fescue	DAFL3/FEID
43553	Shrubby cinquefoil/Kentucky bluegrass	DAFL3/POPR
43602	Silver sagebrush/Idaho fescue	ARCA13/FEID
43604	Silver sagebrush/Kentucky bluegrass	ARCA13/POPR
43801	Water sedge	CAAQ
43807	Smallwing sedge	CAMI7
43808	Nebraska sedge	CANE
43809	Beaked sedge	CARO6
43812	Analogue sedge	CASI2
43813	Sedge	CAREX
43831	Baltic rush	JUBA
43871	Tufted hairgrass	DECA18
43881	Fowl bluegrass	POPA2

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43882	Kentucky bluegrass	POPR
43921	Tall fringed bluebells	MECI3
43931	California false hellebore	VECA2
43941	Forb (mesic, meadow)	2FORB

Table 19: Reference Code 407

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43001	Conifer/redosier dogwood	2TE/COSE16
43003	Conifer/field horsetail	2TE/EQAR
43005	Conifer/bluejoint	2TE/CACA4
43007	Conifer/blue wildrye	2TE/ELGL
43008	Conifer/shrubby cinquefoil	2TE/DAFL3
43009	Conifer/tufted hairgrass	2TE/DECA18
43010	Conifer/Kentucky bluegrass	2TE/POPR
43011	Conifer/Columbian monkshood	2TE/ACCO4
43041	Narrowleaf cottonwood/water birch	POAN3/BEOC2
43042	Narrowleaf cottonwood/bigtooth maple	POAN3/ACGR3
43043	Narrowleaf cottonwood/redosier dogwood	POAN3/COSE16
43044	Narrowleaf cottonwood/Woods' rose	POAN3/ROWO
43045	Narrowleaf cottonwood/fragrant sumac	POAN3/RHAR4
43046	Narrowleaf cottonwood/Kentucky bluegrass	POAN3/POPR
43081	Boxelder/redosier dogwood	ACNE2/COSE16
43082	Boxelder/field horsetail	ACNE2/EQAR
43101	Gray alder/redosier dogwood	ALIN2/COSE16
43102	Gray alder/field horsetail	ALIN2/EQAR
43103	Gray alder/mesic forb	ALIN2/2FORB

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43104	Gray alder/mesic graminoid	ALIN2/2GRAM
43151	Water birch/redosier dogwood	BEOC2/COSE16
43152	Water birch/mesic forb	BEOC2/2FORB
43155	Water birch/Kentucky bluegrass	BEOC2/POPR
43201	Booth's willow/water sedge	SABO2/CAAQ
43202	Booth's willow/beaked sedge	SABO2/CARO6
43203	Booth's willow/Nebraska sedge	SABO2/CANE2
43204	Booth's willow/bluejoint	SABO2/CACA4
43205	Booth's willow/field horsetail	SABO2/EQAR
43206	Booth's willow/fowl bluegrass	SABO2/POPA2
43207	Booth's willow/Kentucky bluegrass	SABO2/POPR
43209	Booth's willow/mesic forb	SABO2/2FORB
43210	Booth's willow/mesic graminoid	SABO2/2GRAM
43221	Geyer's willow/water sedge	SAGE2/CAAQ
43222	Geyer's willow/beaked sedge	SAGE2/CARO6
43223	Geyer's willow/bluejoint	SAGE2/CACA4
43224	Geyer's willow/fowl bluegrass	SAGE2/POPA2
43226	Geyer's willow/tufted hairgrass	SAGE2/DECA18
43228	Geyer's willow/mesic graminoid	SAGE2/2GRAM
43242	Narrowleaf willow/Kentucky bluegrass	SAEX/POPR
43243	Narrowleaf willow/mesic forb	SAEX/2FORB
43244	Narrowleaf willow/mesic graminoid	SAEX/2GRAM
43245	Narrowleaf willow (barren)	SAEX
43281	Bebb willow/mesic graminoid	SABE2/2GRAM
43286	Arroyo willow (barren)	SALA6

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43301	Wolf's willow/water sedge	SAWO/CAAQ
43302	Wolf's willow/beaked sedge	SAWO/CARO6
43306	Wolf's willow/tufted hairgrass	SAWO/DECA18
43308	Wolf's willow/mesic forb	SAWO/2FORB
43322	Diamondleaf willow/water sedge	SAPL2/CAAQ
43323	Diamondleaf willow/bluejoint	SAPL2/CACA4
43324	Diamond leaf willow/tufted hairgrass	SAPL2/DECA18
43326	Grayleaf willow/tufted hairgrass	SAGL/DECA18
43353	Redosier dogwood/common cowparsnip	COSE16/HEMA80
43601	Silver sagebrush/tufted hairgrass	ARCA13/DECA18
43603	Silver sagebrush/sheep fescue	ARCA13/FEOV
43604	Silver sagebrush/Kentucky bluegrass	ARCA13/POPR
43801	Water sedge	CAAQ
43802	Buxbaum's sedge	CABU6
43804	Woollyfruit sedge	CALA11
43805	Wooly sedge	CAPE42
43806	Mud sedge	CALI7
43808	Nebraska sedge	CANE2
43809	Beaked sedge	CARO6
43810	Rock sedge	CASA10
43812	Analogue sedge	CASI2
43821	Common spikerush	ELPA3
43831	Baltic rush	JUBA
43851	Bluejoint	CACA4
43861	Timber oatgrass	DAIN

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43871	Tufted hairgrass	DECA18
43882	Kentucky bluegrass	POPR
43901	White marsh marigold	CALE4
43907	Smallwing sedge	CAMI7
43925	Broadleaf cattail type	TYLA
43931	Tall fringed bluebells	MECI3
43932	California false hellebore	BECA2

Table 20: Reference Code 408

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
4600	Little sagebrush series	ARAR8
46001	Little sagebrush/bluebunch wheatgrass	ARAR8/PSSPS
46002	Little sagebrush/Idaho fescue	ARAR8/FEID
46003	Little sagebrush/Sandberg bluegrass	ARAR8/POSE
46011	Silver sagebrush/mat muhly	ARCAB3/MUR1
46021	Silver sagebrush/Idaho fescue	ARCAV2/FEID
46031	Little sagebrush/Idaho fescue	ARARL/FEID
46041	Black sagebrush/bluebunch wheatgrass	ARNO4/PSSPS
46042	Black sagebrush/Idaho fescue	ARNO4/FEID
46043	Black sagebrush/needle and thread	ARNO4/HECOC8
46051	Scabland sagebrush/Sandberg bluegrass	ARRI2/POSE
46061	Little sagebrush/Idaho fescue	ARART/FEID
46100	Big sagebrush series	ARTRS2
46101	Big sagebrush/California brome (subalpine)	ARTRS2/BRCA5
46111	Big sagebrush/bluebunch wheatgrass	ARTR2/PSSPS
46112	Big sagebrush/basin wildrye	ARTR2/LECI4

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
46113	Big sagebrush/Idaho fescue	ARTR2/FEID
46114	Big sagebrush/needle and thread	ARTR2/HECOC8
46131	Threetip sagebrush/bluebunch wheatgrass	ARTR4/PSSPS
46132	Threetip sagebrush/Idaho fescue	ARTR4/FEID
46133	Threetip sagebrush/needle and thread	ARTR4/HECOC8
46151	Mountain big sagebrush/bluebunch wheatgrass	ARTRV/PSSPS
46152	Mountain big sagebrush/basin wildrye	ARTRV/LECI4
46153	Mountain big sagebrush/Idaho fescue	ARTRV/FEID
46154	Mountain big sagebrush/needle and thread	ARTRV/HECOC8
46155	Mountain big sagebrush/Thurber's needlegrass	ARTRV/ACTH7
46156	Big sagebrush/Geyer's sedge	ARTRS2/CAGE2
46157	Mountain big sagebrush/mountain snowberry/bluebunch wheatgrass	ARTRV/SYOR2/PSSPS
46158	Mountain big sagebrush/mountain snowberry/Idaho fescue	ARTRV/SYOR2/FEID
46159	Mountain big sagebrush/mountain snowberry/Geyer's sedge	ARTRV/SYOR2/CAGE2
46171	Wyoming big sagebrush/bluebunch wheatgrass	ARTRW8/PSSPS
46172	Wyoming big sagebrush/Sandberg bluegrass	ARTRW8/POSE
46173	Wyoming big sagebrush/squirretail	ARTRW8/ELELE
46191	Big sagebrush/bluebunch wheatgrass	ARTRX/PSSPS
46192	Big sagebrush/Idaho fescue	ARTRX/FEID
46200	Other shrub series	2SHRUB
46201	Antelope bitterbrush/bluebunch wheatgrass	PUTR2/PSSPS
46202	Antelope bitterbrush/needle and thread	PUTR2/HECOC8
46301	Curl-leaf mountain mahogany/bluebunch wheatgrass	CELE3/PSSPS

Table 21: Reference Code 409

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
35	Antelope bitterbrush-needle and thread	PUTR2-HECOC8
42	Snow buckwheat-Sandberg bluegrass	ERNI2-POSE
42020	Idaho fescue-common snowberry	FEID-SYAL
42021	Idaho fescue-Nootka rose	FEID-RONU
42022	Idaho fescue-houndstongue hawkweed	FEID-HICY
42023	Idaho fescue-parsnipflower buckwheat	FEID-ERHE2
43	Rock buckwheat-Sandberg bluegrass	ERSP7-POSE
43115	Needle and thread-Sandberg bluegrass	HECOC8-POSE
431151	Needle and thread-Sandberg bluegrass-snow buckwheat	HECOC8-POSE-ERNI2
43652	Basin big sagebrush-bluebunch wheatgrass	ARTRT-PSSPS
43653	Basin big sagebrush-Idaho fescue	ARTRT-FEID
44	Douglas' buckwheat-Sandberg bluegrass	ERDO-POSE
451	Arrowleaf buckwheat-Sandberg bluegrass	ERCO12-POSE
452	Thymeleaf buckwheat-Sandberg bluegrass	ERTH4-POSE
453	Slender buckwheat-Oregon twinpod	ERMI4-PHOR2
46051	Scabland sagebrush-Sandberg bluegrass	ARRI2-POSE
46113	Big sagebrush-Idaho fescue	ARTR2-FEID
46114	Big sagebrush-needle and thread	ARTR2-HECOC8
46131	Threetip sagebrush/bluebunch wheatgrass	ARTR4/PSSPS
46133	Threetip sagebrush-needle and thread	ARTR4-HECOC8
46201	Antelope bitterbrush/bluebunch wheatgrass	PUTR2/PSSPS
46632	Antelope bitterbrush-Idaho fescue	PUTR2-FEID
47000	Grass	2GRAM
47001	Idaho fescue-bluebunch wheatgrass	FEID-PSSPS

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
47011	Bluebunch wheatgrass-Sandberg bluegrass	PSSPS-POSE
47012	Bluebunch wheatgrass-Idaho fescue	PSSPS-FEID
47021	Sand dropseed-Sandberg bluegrass	SPCR-POSE
47025	Fendler threeawn-Sandberg bluegrass	ARPUL-POSE
47145	Bluebunch wheatgrass-Sandberg bluegrass (lithosolic phase)	PSSPS-POSE
501	Inland saltgrass	DISP
502	Basin wildrye-inland saltgrass	LECI4-DISP
51	Greasewood-inland saltgrass	SAVE4-DISP
54	Black hawthorn/common snowberry	CRDO2/SYAL
55	Black hawthorn/common snowberry-quaking aspen	CRDO2/SYAL-POTR5
56	Black hawthorn/common cowparsnip	CRDO2/HEMA80
59	Black hawthorn/common cowparsnip-quaking aspen	CRDO2/HEMA80-POTR5
601	Black cottonwood/western water hemlock (wetlands)	POBAT/CIDO
602	White alder	ALRH2
62	Big sagebrush/Sandberg bluegrass	ARTR2/POSE
64	Spiny hopsage/Sandberg bluegrass	GRSP/POSE
65	Winterfat/Sandberg bluegrass	KRLA2/POSE
721	Smooth sumac/bluebunch wheatgrass	RHGL/PSSPS
722	Smooth sumac/bluebunch wheatgrass	RHGL/PSSPS
723	Smooth sumac/sand dropseed	RHGL/SPCR
73	Netleaf hackberry/cheatgrass	CELAR/BRTE
77	Mountain big sagebrush	ARTRV
78	Camassia marshes	CAMAS

Table 22: Reference Code 410

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
31	Common snowberry series	SYAL
402	Bluebunch wheatgrass	PSSPS
402041	Bluebunch wheatgrass/plains pricklypear	PSSPS/OPPO
40215	Bluebunch wheatgrass/Sandberg bluegrass/arrowleaf balsamroot	PSSPS/POSE/BASA3
43813	Sedge series	CAREX
43815	Hood's sedge/Idaho fescue	CAHO5/FEID
4605	Scabland sagebrush series	ARR12
46051	Scabland sagebrush/Sandberg bluegrass	ARR12/POSE
46300	Curl-leaf mountain mahogany series	CELE3
46301	Curl-leaf mountain mahogany/bluebunch wheatgrass	CELE3/PSSPS
47002	Idaho fescue/prairie Junegrass	FEID/KOMA
47021	Sand dropseed-Sandberg bluegrass	SPCR-POSE
47025	Fendler threeawn-Sandberg bluegrass	ARPUL-POSE
47120	Idaho fescue	FEID
47126	Idaho fescue/bluebunch wheatgrass	FEID/PSSPS
5600	Netleaf hackberry series	CELAR
60	Smooth sumac series	RHGL

Table 23: Reference Code 412

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43001	Conifer/redosier dogwood	2TE/COSE16
43010	Conifer/Kentucky bluegrass	2TE/POPR
43043	Narrowleaf cottonwood/redosier dogwood	POAN3/COSES

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43046	Narrowleaf cottonwood/Kentucky bluegrass	POAN3/POPR
43101	Gray alder/redosier dogwood	ALIN2/COSE16
43103	Gray alder/mesic forb	ALIN2/2FORB
43104	Gray alder/mesic graminoid	ALIN2/2GRAM
43151	Water birch/redosier dogwood	BEOC2/COSE16
43152	Water birch/mesic forb	BEOC2/2FORB
43155	Water birch/Kentucky bluegrass	BEOC2/POPR
43203	Booth's willow/Nebraska sedge	SABO2/CANE2
43204	Booth's willow/bluejoint	SABO2/CACA4
43205	Booth's willow/field horsetail	SABO2/EQAR
43206	Booth's willow/fowl bluegrass	SABO2/POPA2
43207	Booth's willow/Kentucky bluegrass	SABO2/POPR
43222	Geyer's willow/beaked sedge	SAGE2/CARO6
43223	Geyer's willow/bluejoint	SAGE2/CACA4
43224	Geyer's willow/fowl bluegrass	SAGE2/POPA2
43228	Geyer's willow/mesic graminoid	SAGE2/2GRAM
43242	Narrowleaf willow/Kentucky bluegrass	SAEX/POPR
43243	Narrowleaf willow/mesic forb	SAEX/2FORB
43301	Wolf's willow/field horsetail	SAWO/EQAR
43302	Wolf's willow/beaked sedge	SAWO/CARO6
43306	Wolf's willow/tufted hairgrass	SAWO/DECA18
43308	Wolf's willow/mesic forb	SAWO/2FORB
43353	Redosier dogwood/common cowparsnip	COSES/HEMA80
43551	Shrubby cinquefoil/tufted hairgrass	DAFL3/DECA18
43553	Shrubby cinquefoil/Kentucky bluegrass	DAFL3/POPR

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
43604	Silver sagebrush/Kentucky bluegrass	ARCA13/POPR
43801	Water sedge	CAAQ
43805	Woolly sedge	CAPE42
43807	Smallwing sedge	CAMI7
43808	Nebraska sedge	CANE2
43809	Beaked sedge	CARO6
43812	Analogue sedge	CASI2
43821	Common spikerush	ELPA3
43831	Baltic rush	JUBA
43871	Tufted hairgrass	DECA18
43882	Kentucky bluegrass	POPR
43921	Tall fringed bluebells	MECI3
43931	California false hellebore	VECA2

Table 24: Reference Code 413

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41050	Limber pine/Idaho fescue	PIFL2/FEID
41060	Limber pine/curl-leaf mountain mahogany	PIFL2/CELE3
41070	Limber pine/common juniper	PIFL2/JUCO6
41080	Limber pine/spike fescue	PIFL2/LEKI2
41140	Ponderosa pine/Idaho fescue	PIPO/FEID
41160	Ponderosa pine/antelope bitterbrush	PIPO/PUTR2
41195	Ponderosa pine/mountain snowberry	PIPO/SYOR2
41210	Douglas-fir/bluebunch wheatgrass	PSME/PSSPS
41220	Douglas-fir/Idaho fescue	PSME/FEID
41221	Douglas-fir/Idaho fescue-Idaho fescue	PSME/FEID-FEID

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41260	Douglas-fir/mallow ninebark	PSME/PHMA5
41265	Douglas-fir/mallow ninebark/Douglas-fir	PSME/PHMA5/PSME
41266	Douglas-fir/mallow ninebark-Oregon boxleaf	PSME/PHMA5-PAMY
41280	Douglas-fir/thinleaf huckleberry	PSME/VAME
41290	Douglas-fir/twinflower	PSME/LIBO3
41310	Douglas-fir/common snowberry	PSME/SYAL
41313	Douglas-fir/common snowberry-common snowberry	PSME/SYAL-SYAL
41320	Douglas-fir/pinegrass	PSME/CARU
41323	Douglas-fir/pinegrass-pinegrass	PSME/CARU-CARU
41330	Douglas-fir/Geyer's sedge	PSME/CAGE2
41334	Douglas-fir/Geyer's sedge/ponderosa pine	PSME/CAGE2/PIPO
41340	Douglas-fir/white spirea	PSME/SPBE2
41341	Douglas-fir/white spirea-white spirea	PSME/SPBE2-SPBE2
41343	Douglas-fir/white spirea/pinegrass	PSME/SPBE2/CARU
41360	Douglas-fir/common juniper	PSME/JUCO6
41370	Douglas-fir/heartleaf arnica	PSME/ARCO9
41371	Douglas-fir/heartleaf arnica-heartleaf arnica	PSME/ARCO9-ARCO9
41372	Douglas-fir/heartleaf arnica/timber milkvetch	PSME/ARCO9/ASMI9
41375	Douglas-fir/sweetcicely	PSME/OSBE
41380	Douglas-fir/mountain snowberry	PSME/SYOR2
41385	Douglas-fir/curl-leaf mountain mahogany	PSME/CELE3
41390	Douglas-fir/Rocky Mountain maple	PSME/ACGL
41395	Douglas-fir/creeping barberry	PSME/MARE11
41396	Douglas-fir/creeping barberry-creeping barberry	PSME/MARE11-MARE11

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41397	Douglas-fir/creeping barberry-mountain snowberry	PSME/MARE11-SYOR2
41397	Douglas-fir/creeping barberry/Geyer's sedge	PSME/MARE11/CAGE2
41398	Douglas-fir/creeping barberry/common juniper	PSME/MARE11/JUCO6
41407	Blue spruce/creeping barberry	PIPU/MARE11
41410	Engelmann spruce/field horsetail	PIEN/EQAR
41415	Engelmann spruce/white marsh marigold	PIEN/CALE4
41440	Engelmann spruce/fragrant bedstraw	PIEN/GATR3
41485	Engelmann spruce/grouse whortleberry	PIEN/CASC
41490	Engelmann spruce/softleaf sedge	PIEN/CADI6
41493	Engelmann spruce/revolute hypnum moss	PIEN/HYRE70
41497	Engelmann spruce/gooseberry currant	PIEN/RIMO2
41601	Subalpine fir/red baneberry	ABLA/ACRU2
41603	Subalpine fir/mallow ninebark	ABLA/PHMA5
41635	Subalpine fir/claspleaf twistedstalk	ABLA/STAM2
41636	Subalpine fir/claspleaf twistedstalk-claspleaf twistedstalk	ABLA/STAM2-STAM2
41640	Subalpine fir/dwarf bilberry	ABLA/VACA13
41645	Subalpine fir/Rocky Mountain maple	ABLA/ACGL
41650	Subalpine fir/bluejoint	ABLA/CACA4
41651	Subalpine fir/bluejoint-bluejoint	ABLA/CACA4-CACA4
41654	Subalpine fir/bluejoint/dwarf bilberry	ABLA/CACA4/VACA13
41655	Subalpine fir/bluejoint/western Labrador tea	ABLA/CACA4/LEGL
41660	Subalpine fir/twinflower	ABLA/LIBO3
41661	Subalpine fir/twinflower-twinflower	ABLA/LIBO3-LIBO3
41663	Subalpine fir/twinflower/grouse whortleberry	ABLA/LIBO3/VASC

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41670	Subalpine fir/rusty menziesia	ABLA/MEFE
41671	Subalpine fir/rusty menziesia-rusty menziesia	ABLA/MEFE-MEFE
41690	Subalpine fir/common beargrass	ABLA/XETE
41691	Subalpine fir/common beargrass/thinleaf huckleberry	ABLA/XETE/VAME
41692	Subalpine fir/common beargrass/grouse whortleberry	ABLA/XETE/VASC
41702	Subalpine fir/creeping barberry-creeping barberry	ABLA/MARE11-MARE11
41703	Subalpine fir/creeping barberry	ABLA/MARE11
41705	Subalpine fir/white spirea	ABLA/SPBE2
41707	Subalpine fir/sickletop lousewort	ABLA/PERA
41714	Subalpine fir/creeping barberry/limber pine	ABLA/MARE11/PIFL2
41718	Subalpine fir/creeping barberry/Engelmann spruce	ABLA/MARE11/PIEN
41720	Subalpine fir/thinleaf huckleberry	ABLA/VAME
41721	Subalpine fir/thinleaf huckleberry/grouse whortleberry	ABLA/VAME/VASC
41723	Subalpine fir/thinleaf huckleberry-thinleaf huckleberry	ABLA/VAME-VAME
41730	Subalpine fir/grouse whortleberry	ABLA/VASC
41731	Subalpine fir/grouse whortleberry/pinegrass	ABLA/VASC/CARU
41732	Subalpine fir/grouse whortleberry-grouse whortleberry	ABLA/VASC-VASC
41734	Subalpine fir/grouse whortleberry/whitebark pine	ABLA/VASC/PIAL
41745	Subalpine fir/common juniper	ABLA/JUCO6
41750	Subalpine fir/pinegrass	ABLA/CARU
41760	Subalpine fir/sweetcicely	ABLA/OSBE

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41780	Subalpine fir/heartleaf arnica	ABLA/ARCO9
41790	Subalpine fir/Geyer's sedge	ABLA/CAGE2
41791	Subalpine fir/Geyer's sedge-Geyer's sedge	ABLA/CAGE2-CAGE2
41795	Subalpine fir/Ross' sedge	ABLA/CARO5
41810	Subalpine fir/gooseberry currant	ABLA/RIMO2
41811	Subalpine fir/gooseberry currant-gooseberry currant	ABLA/RIMO2-RIMO2
41830	Subalpine fir/Hitchcock's smooth woodrush	ABLA/LUGHL
41831	Subalpine fir/Hitchcock's smooth woodrush/grouse whortleberry	ABLA/LUGHL/VASC
41861	White fir/mallow ninebark	ABCO/PHMA5
41863	White fir/creeping barberry	ABCO/MARE11
41865	White fir/creeping barberry-creeping barberry	ABCO/MARE11-MARE11
41920	Lodgepole pine/dwarf bilberry	PICO/VACA13
41940	Lodgepole pine/grouse whortleberry	PICO/VASC
41955	Lodgepole pine/Geyer's sedge	PICO/CAGE2
41960	Lodgepole pine/common juniper	PICO/JUCO6

Table 25: Reference Code 414

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
41090	Great Basin bristlecone pine series	PILO
41091	Great Basin bristlecone-limber pine/common juniper	PILO/PIFL2/JUCO6
41858	White fir-Rocky Mountain juniper	ABCO-JUSC2
41859	White fir-ponderosa pine/curl-leaf mountain mahogany	ABCO-PIPO/CELE3
42400	Quaking aspen-white fir series	POTR5-ABCO
43157	Water birch/starry false lily of the valley	BEOC2/MAST4

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
44010	Utah juniper-singleleaf pinyon/blackbrush	JUOS-PIMO/CORA
44106	Singleleaf pinyon-Utah juniper/big sagebrush	PIMO-JUOS/ARTR2
44121	Singleleaf pinyon-curl-leaf mountain mahogany/big sagebrush	PIMO-CELE3/ARTR2
44132	Singleleaf pinyon/big sagebrush	PIMO/ARTR2
44250	Rocky Mountain juniper series	JUSC2

Table 26: Reference Code 415

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
51090	Washoe pine series	PIWA

Table 27: Reference Code 416

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
44100	Singleleaf pinyon-Utah juniper series	PIMO-JUOS
44101	Singleleaf pinyon-Utah juniper/little sagebrush	PIMO-JUOS/ARAR8
44102	Singleleaf pinyon-Utah juniper/black sagebrush/bluebunch wheatgrass	PIMO-JUOS/ARNO4/PSSPS
44103	Singleleaf pinyon-Utah juniper/black sagebrush/Indian ricegrass	PIMO-JUOS/ARNO4/ACHY
44104	Singleleaf pinyon-Utah juniper/black sagebrush/Sandberg bluegrass	PIMO-JUOS/ARNO4/POSE
44105	Singleleaf pinyon-Utah juniper/black sagebrush/squirreltail	PIMO-JUOS/ARNO4/ELEL5
44107	Singleleaf pinyon-Utah juniper/basin big sagebrush/western wheatgrass	PIMO-JUOS/ARTRT/PASM
44108	Singleleaf pinyon-Utah juniper/basin big sagebrush/Indian ricegrass	PIMO-JUOS/ARTRT/ACHY
44109	Singleleaf pinyon-Utah juniper/basin big sagebrush/Sandberg bluegrass	PIMO-JUOS/ARTRT/POSE

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
44110	Singleleaf pinyon-Utah juniper/mountain big sagebrush/bluebunch wheatgrass	PIMO-JUOS/ARTRV/PSSPS
44111	Singleleaf pinyon-Utah juniper/mountain big sagebrush/Indian ricegrass	PIMO-JUOS/ARTRV/ACHY
44112	Singleleaf pinyon-Utah juniper/mountain big sagebrush/Sandberg bluegrass	PIMO-JUOS/ARTRV/POSE
44113	Singleleaf pinyon-Utah juniper/Wyoming big sagebrush/James' galleta	PIMO-JUOS/ARTRW8/PLJA
44114	Singleleaf pinyon-Utah juniper/Wyoming big sagebrush/Sandberg bluegrass	PIMO-JUOS/ARTRW8/POSE
44115	Singleleaf pinyon-Utah juniper/Wyoming big sagebrush/squirreltail	PIMO-JUOS/ARTRW8/ELELS
44131	Singleleaf pinyon/mountain big sagebrush/Idaho fescue	PIMO-JUOS/ARTRV/FEID
44201	Utah juniper/basin big sagebrush/bluebunch wheatgrass	JUOS/ARTRT/PSSPS
44292	Utah juniper/basin big sagebrush/James' galleta	JUOS/ARTRT/PLJA
44203	Utah juniper/Wyoming big sagebrush/bluebunch wheatgrass	JUOS/ARTRW8/PSSPS

Table 28: Reference Code 417

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
100999	Cottonwood series	POPUL
11999	Ponderosa pine series	PIPO
12999	Douglas-fir series	PSME
1999	White fir series	ABCO
201999	Oneseed juniper series	JUMO
202999	Utah juniper series	JUOS
204999	Twoneedle pinyon series	PIED
210999	Mesquite series	PROSO

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
220999	Mountain mahogany series	CERCO
230999	Redberry juniper series	JUCO11
231999	Alligator juniper series	JUDE2
232999	Border pinyon series	PIDI3
233999	Singleleaf pinyon series	PIMOF
238999	Bristlecone pine series	PIAR
240999	Limber pine series	PIFL2
250999	Desert ironwood series	OLTE
31999	Arizona cypress series	CUAR
32999	Apache pine series	PIEN2
33999	Chihuahuan pine series	PILE
3999	Subalpine fir series	ABLA
43020	Utah juniper series	JUOS
43021	Rocky Mountain juniper series	JUSC2
43022	Bigtooth maple series	ACGR3
43023	Floodplain communities	FLOODPLAIN
4999	Engelmann spruce series	PIEN
610999	Mexican blue oak series	QUOB
620999	Emory oak series	QUEM
631999	Gray oak series	QUGR3
632999	Arizona white oak series	QUAR
640999	Gambel oak series	QUGA
650999	Silverleaf oak series	QUHY
6999	Blue spruce series	PIPU
9000042	Old High Site Woodland	PIED

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
9000043	Old Low Site Woodland	JUMO
9999999	Type undefined	UNDEFINED

Table 29: Reference Code 418

PV_CODE	COMMON_NAME	SCIENTIFIC_NAME
45101	Curl-leaf mountain mahogany/big sagebrush/Idaho fescue	CELE3/ARTR2/FEID
45104	Curl-leaf mountain mahogany/big sagebrush/bearded wheatgrass	CELE3/ARTR2/ELCA11
45107	Curl-leaf mountain mahogany/big sagebrush/Sandberg bluegrass	CELE3/ARTR2/POSE
45110	Curl-leaf mountain mahogany/Idaho fescue	CELE3/FEID
45115	Curl-leaf mountain mahogany/Idaho fescue/bluebunch wheatgrass	CELE3/FEID/PSSPS
45120	Curl-leaf mountain mahogany/basin wildrye	CELE3/LECI4
45130	Curl-leaf mountain mahogany/common snowberry/Idaho fescue	CELE3/SYAL/FEID
45140	Curl-leaf mountain mahogany/mountain snowberry/Sandberg bluegrass	CELE3/SYOR2/POSE
45141	Curl-leaf mountain mahogany/mountain snowberry/Sandberg bluegrass/heartleaf arnica	CELE3/SYOR2/POSE/ARCO9
45145	Curl-leaf mountain mahogany/mountain snowberry	CELE3/SYOR2
45146	Curl-leaf mountain mahogany/mountain snowberry/arrowleaf balsamroot	CELE3/SYOR2/BASA3
45148	Curl-leaf mountain mahogany/mountain snowberry/Idaho fescue	CELE3/SYOR2/FEID
45160	Curl-leaf mountain mahogany/pinegrass	CELE3/CARU
45165	Curl-leaf mountain mahogany/pinegrass/Idaho fescue	CELE3/CARU/FEID

APPENDIX H: FUEL PHOTO REFERENCES & CODES

Table 30: Fuel Photo References

Code	Reference
1	Fischer, William C. 1981. Photo Guide for Appraising Downed Woody Fuels in Montana Forests: Grand fir – Larch – Douglas-fir – Western Redcedar Cover Types. USDA Forest Service, Gen. Tech. Rep. Int-96, 53 p. Intermt. For. And Range Exp. Stn., Ogden, UT 84401.
2	Fischer, William C. 1981. Photo Guide for Appraising Downed Woody Fuels in Montana Forests: Ponderosa Pine, Ponderosa Pine – Larch – Douglas-fir, Larch – Douglas-fir, and Interior Douglas-fir Cover Types. USDA Forest Service, Gen. Tech. Rep. INT-97, 133 p. Intermt. For. And Range Exp. Stn., Ogden, UT 84401.
3	Fischer, William C. 1981. Photo Guide for Appraising Downed Woody Fuels in Montana Forests: Lodgepole Pine and Englemann Spruce-Subapline fir Cover Types. USDA Forest Service, Gen. Tech. Rep. INT-98. 143 p. Intermt. For. and Range Exp. Stn., Ogden, UT 84401.
4	Fischer, William C. 1981. Photo Guides for Appraising Downed Woody Fuels in Montana Forests: How They Were Made. USDA Forest Service, Res. Note INT-299, 12 p. Intermt. For. And Range Exp. Stn., Ogden, UT 84401.
5	Koski, Wayne H. and William C. Fischer. 1979. Photo Series for Appraising Thinning Slash in North Idaho: Western Hemlock, Grand fir, and Western Redcedar Timber Types. USDA Forest Service, Gen. Tech. Rep. INT-46, 50 p. Intermt. For. And Range Exp. Stn., Ogden, UT 84401
6	Maxwell, Wayne G. and Franklin R. Ward. 1976. Photo Series for Quantifying Forest Residues in the: Ponderosa Pine Type, Ponderosa Pine and Associated Species Types, Lodgepole Pine Type. USDA Forest Service Gen. Tech. Rep. PNW-52, 74 p. Pacific Northwest Range Exp. Stn., Portland, OR 97208.
10	Mackay, Douglas H. and Everett M. Stiger, Delman Goss, Byron Bonney. Photo Series for Quantifying Forest Residues in: Douglas-fir, Englemann Spruce Type, Limber Pine Type, Lodgepole Pine Type, Ponderosa Pine Type, Subalpine Fir Type for Eastern Montana. USDA Forest Service Northern Region. 162 p.
11	Maxwell, Wayne G. 1982. Photo Series for Quantifying Forest Residues in the Black Hills. Ponderosa Pine Type and Spruce Type. USDA Forest Service, Rocky Mountain Region. Report Number A-89-6-82. 80 p.

Code	Reference
13	Wayne G. Maxwell, Franklin R. Ward. 1976. Photo Series for Quantifying Forest Residues in the Coastal Douglas-fir-Hemlock type, Coastal Douglas-fir-Hardwood Type. USDA Forest Service, Gen. Tech. Rep. PNW-51. Northwest Forest and Range Experiment Station, Portland, OR.
17	Ottmar, Roger D., R.E. Vihnanek, and S.C. Wright. 2000. Stereo Photo Series for Quantifying Natural Fuels in Lodgepole Pine, Quaking Aspen, and Gambel Oak Types in the Rocky Mountains.

FUEL PHOTO CODES

Table 31: Fuel Photo Codes for Reference 1

Code
3A
4A
5A
6A
7A
8A
9A
10A
11A
13A
15
15A
16
16A
17A
18A

Code
19A
25
63
65
66
67

Table 32: Fuel Photo Codes for Reference 2

Code
5
7
8
9
12A
13
14
14A
17
18
23
24
27A
28
28A
29
29A

Code
30
30A
31
31A
32
40A
41A
42
42A
43
43A
48
49
56
64
68
69
70
71
72
73
74
75
76
77

Code
78
79
80
84
86
88
89
91
95

Table 33: Fuel Photo Codes for Reference 3

Code
1
1A
2
2A
3
4
6
10
11
12
19
20
20A
21

Code
21A
22
22A
23A
24A
25A
26
26A
27
34A
35
35A
36
37
38
39
40
41
44
44A
45
45A
53
54
55

Code
57
58
59
60
61
62
81
82
83
85
87
90
92
93
94
96
97
98

Table 34: Fuel Photo Codes for Reference 5

Code
1WH1TH
2WH1TH
3WH1TH
4WH1TH
5WH1TH

Code
6WH1TH
1GF1TH
2GF1TH
3GF1TH
4GF1TH
1WC1TH
2WC1TH
3WC1TH
4WC1TH
5WC1TH
6WC1TH
7WC1TH

Table 35: Fuel Photo Codes for Reference 6

Code
1PP4CC
2PP4CC
1PP4PC
2PP4PC
3PP4PC
4PP4PC
5PP4PC
1PP1TH
2PP1TH
3PP1TH
4PP1TH

Code
5PP1TH
6PP1TH
1PP&ASSOC4PC
2PP&ASSOC4PC
3PP&ASSOC4PC
4PP&ASSOC4PC
5PP&ASSOC4PC
6PP&ASSOC4PC
7PP&ASSOC4PC
8PP&ASSOC4PC
1LP3PC
2LP3PC
3LP3PC
4LP3PC
5LP3P

Table 36: Fuel Photo Codes for Reference 11

Code
1PP1
1PP1PPC
1PP1TH
1PP2
1PP3
1PP3CC
1PP3PC
1PPSP3PC

Code
1SP3PC
2PP1TH
2PP2
2PP2PC
2PP3PC
2PPSP3PC
2SP3PC
3PP1TH
3PP2PC
3PP3PC
3PPSP3PC
4PP1TH
4PP2PC
5PP1TH
5PP2PC
6PP1TH
7PP1TH

Table 37: Fuel Photo Codes for Reference 13

Code
10DF4CC
1DF1TH
1DF3PC
1DF4CC
1DF4PC
1DFHD4CC

Code
1DFHD4PC
2DF1TH
2DF3PC
2DF4CC
2DF4PC
2DFHD4CC
2DFHD4PC
3DF1TH
3DF3PC
3DF4CC
3DF4PC
3DFHD4CC
3DFHD4PC
4DF1TH
4DF3PC
4DF4CC
4DF4PC
4DFHD4CC
4DFHD4PC
5DF3PC
5DF4CC
5DF4PC
5DFHD4CC
5DFHD4PC
6DF3PC

Code
6DF4CC
6DF4PC
6DFHD4CC
6DFHD4PC
7DF4CC
7DF4PC
7DFHD4CC
8DF4CC
8DF4PC
9DF4CC
9DF4PC

Table 38: Fuel Photo Codes for Reference 17

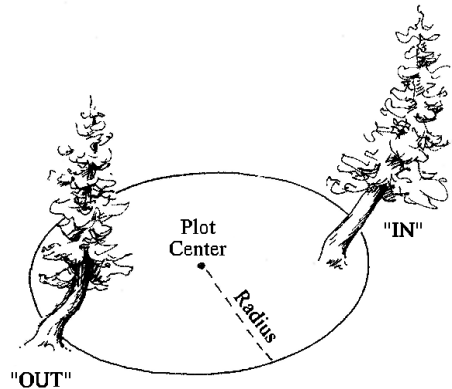
Code
GO01
GO02
GO03
GO04
GO05
GO06
GO07
GO08
GO09
LP01
LP02
LP03

Code
LP03
LP04
LP05
LP06
LP07
LP08
LP09
LP10
LP11
LP12
LP13
QA01
QA02
QA03
QA04
QA05
QA06
QA07
QA08
QA09
QA10
QA11
QA12
QA13

APPENDIX I: FIXED RADIUS PLOT

A fixed radius plot is used to sample trees that are less than the specified breakpoint diameter. These sample trees are determined to be “in” or “out” at ground line. If the measured distance from plot center to the central axis of the tree at ground line is equal to or less than the fixed plot radius the tree is tallied as a sample tree. If this distance is greater than the fixed plot radius, the tree is not tallied.

Figure 1: Trees “in” and “out” of fixed radius plot



On level ground, the fixed plot radius is determined by holding the measuring tape or pole in a horizontal position from plot center to the central axis of the sample tree. On slopes greater than 9 percent, if a measuring tape or pole cannot be horizontally from plot center to the central axis of the sample tree, the fixed plot radius is corrected for the slope percent by using one of the following methods.

METHOD 1

Correct the fixed plot radius for slope percent using the “Circular Plot Radii Corrected for Slope” table and then measuring distances parallel to the ground line. This method always results in a circular plot on the slope. Example – 1/300 acre fixed plot on 50 percent slope. Corrected fixed plot radius is 7.2 feet.

Figure 2: Correcting the fixed plot radius for slope percent

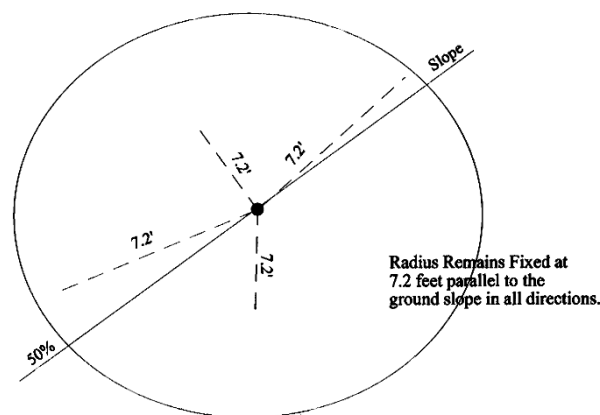


Table 39: Circular Plot Radii Corrected for Slope; plot size in acres

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
0-9	6.8	11.8	16.7	26.3	37.2	52.7
10-17	6.8	11.8	16.7	26.5	37.4	52.9
18-22	6.9	11.9	16.8	26.6	37.6	53.2
23-26	6.9	12.0	16.9	26.7	37.8	53.4
27-30	6.9	12.0	17.0	26.9	38.0	53.7
31-33	7.0	12.1	17.1	27.0	38.2	54.0
34-36	7.0	12.1	17.1	27.1	38.3	54.2
37-39	7.0	12.2	17.2	27.2	38.5	54.5
40-42	7.1	12.2	17.3	27.4	38.7	54.7
43-44	7.1	12.3	17.4	27.5	38.9	55.0
45-47	7.1	12.3	17.5	27.6	39.1	55.2
48-49	7.2	12.4	17.5	27.7	39.2	55.5
50-51	7.2	12.5	17.6	27.9	39.4	55.7
52-53	7.2	12.5	17.7	28.0	39.6	56.0
54-55	7.3	12.6	17.8	28.1	39.8	56.2
56-57	7.3	12.6	17.9	28.2	39.9	56.5
58-59	7.3	12.7	17.9	28.4	40.1	56.7
60-61	7.4	12.7	18.0	28.5	40.3	57.0
62-63	7.4	12.8	18.1	28.6	40.4	57.2
64-65	7.4	12.8	18.2	28.7	40.6	57.4
66-67	7.4	12.9	18.2	28.8	40.8	57.7
68-69	7.5	13.0	18.3	29.0	41.0	57.9
70	7.5	13.0	18.4	29.1	41.1	58.2
71-72	7.5	13.1	18.5	29.2	41.3	58.4

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
73-74	7.6	13.1	18.5	29.3	41.5	58.6
75	7.6	13.2	18.6	29.4	41.6	58.7
76-77	7.6	13.2	18.7	29.6	41.8	59.1
78-79	7.7	13.3	18.8	29.7	42.0	59.3
80	7.7	13.3	18.8	29.8	42.1	59.6
81-82	7.7	13.4	18.9	29.9	42.3	59.8
83	7.8	13.4	19.0	30.0	42.5	60.0
84-85	7.8	13.5	19.1	30.1	42.6	60.3
86	7.8	13.5	19.1	30.3	42.8	60.5
87-88	7.8	13.6	19.2	30.4	42.9	60.7
89	7.9	13.6	19.3	30.5	43.1	61.0
90-91	7.9	13.7	19.3	30.6	43.3	61.2
92	7.9	13.7	19.4	30.7	43.4	61.4
93-94	8.0	13.8	19.5	30.8	43.6	61.6
95	8.0	13.8	19.6	30.9	43.7	61.9
96-97	8.0	13.9	19.6	31.0	43.9	62.1
98	8.0	13.9	19.7	31.2	44.1	62.3
99-100	8.1	14.0	19.8	31.3	44.2	62.5
101	8.1	14.0	19.8	31.4	44.4	62.8
102	8.1	14.1	19.9	31.5	44.5	63.0
103-104	8.2	14.1	20.0	31.6	44.7	63.2
105	8.2	14.2	20.1	31.7	44.8	63.4
106-107	8.2	14.2	20.1	31.8	45.0	63.6
108	8.2	14.3	20.2	31.9	45.1	63.8
109	8.3	14.3	20.3	32.0	45.3	64.1

Slope %	1 / 300	1 / 100	1 / 50	1 / 20	1 / 10	1 / 5
110-111	8.3	14.4	20.3	32.1	45.5	64.3
112	8.3	14.4	20.4	32.2	45.6	64.5
113	8.4	14.5	20.5	32.4	45.8	64.7
114-115	8.4	14.5	20.5	32.5	45.9	64.9
116	8.4	14.6	20.6	32.6	46.1	65.1
117	8.4	14.6	20.7	32.7	46.2	65.3
118-119	8.5	14.7	20.7	32.8	46.4	65.6
120	8.5	14.7	20.8	32.9	46.5	65.8
121	8.5	14.8	20.9	33.0	46.7	66.0
122	8.5	14.8	20.9	33.1	46.8	66.2
123-124	8.6	14.8	21.0	33.2	47.0	66.4
125	8.6	14.9	21.1	33.3	47.1	66.6
130	8.7	15.1	21.3	33.7	47.7	67.4
135	8.8	15.3	21.6	34.1	48.3	68.3
140	8.9	15.4	21.8	34.5	48.8	69.1
145	9.0	15.6	22.1	34.9	49.4	69.9
150	9.1	15.8	22.3	35.3	50.0	70.0

METHOD 2

Determine the slope limiting distance to borderline trees by using the “Slope Correction Table” (the slope being corrected is the slope from plot center to the tree, not the overall plot slope). Measure the distance parallel to the ground line to the borderline tree. This method always results in an oval on the slope. Following is a list of fixed plot sizes and the specific radius for each.

Table 40: Method 2 plot size/radius slope

Plot Size	Plot Radius
1/1000	3.7 feet
1/500	5.3 feet
1/400	5.9 feet
1/300	6.8 feet
1/250	7.4 feet
1/200	8.3 feet
1/150	9.6 feet
1/100	11.8 feet
1/50	16.7 feet
1/20	26.3 feet
1/10	37.2 feet
1/5	52.7 feet
1/4	58.9 feet
1/3	68.0 feet
1/2	83.3 feet
1	117.8 feet

To determine the slope limiting distance, multiply the plot radius for the appropriate plot size by the appropriate slope correction factor.

Example 1

1/300 acre fixed plot with a borderline tree on a 45 percent slope. A 1/300-acre plot equals a 6.8-foot radius and the slope correction factor for a 45 percent slope is 1.10. $6.8 \times 1.10 = 7.48$; thus, a tree on a 1/300 acre fixed plot at a 45 percent slope can be 7.5 feet from plot center.

Example 2

The same plot has another borderline tree on a 25 percent slope. The slope correction factor for a 25 percent slope is 1.03. $6.8 \times 1.03 = 7.0$; thus, a tree on a 1/300 acre fixed plot at a 25 percent slope can be 7.0 feet from plot center.

Figure 3: Plot size radius slope

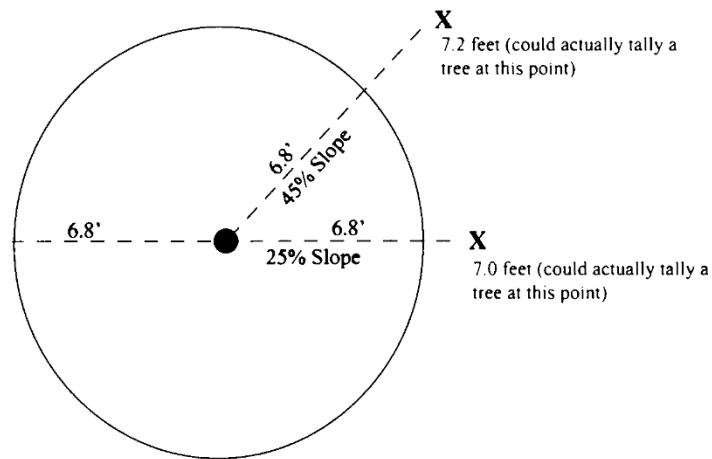


Table 41: Slope Correction Table

Percent of Slope	Degree of Slope	Correction Factor
0 to 9	0-6	1.00
10 to 17	7-10	1.01
18 to 22	11-12	1.02
23 to 26	13-14	1.03
27 to 30	15-17	1.04
31 to 33	18	1.05
34 to 36	19-20	1.06
37 to 39	21	1.07
40 to 42	22	1.08
43 to 44	23	1.09
45 to 47	24	1.10
48 to 49	25-26	1.11
50 to 51	27	1.12
52 to 53	28	1.13
54 to 55	29	1.14

Percent of Slope	Degree of Slope	Correction Factor
56 to 57	29	1.15
58 to 59	30	1.16
60 to 61	31	1.17
62 to 63	32	1.18
64 to 65	33	1.19
66 to 67	34	1.20
68 to 69	34	1.21
70	35	1.22
71 to 72	36	1.23
73 to 74	37	1.24
75	37	1.25
76 to 77	38	1.26
78 to 79	38	1.27
80	39	1.28
81 to 82	39	1.29
83	40	1.30
84 to 85	40	1.31
86	41	1.32
87 to 88	41	1.33
89	42	1.34
90 to 91	42	1.35
92	43	1.36
93 to 94	43	1.37
95	44	1.38
96 to 97	44	1.39

Percent of Slope	Degree of Slope	Correction Factor
98	44	1.40
99 to 100	45	1.41
101	45	1.42
102	46	1.43
103 to 104	46	1.44
105	46	1.45
106 to 107	47	1.46
108	47	1.47
109	47	1.48
110 to 111	48	1.49
112	48	1.50
113	48	1.51
114 to 115	49	1.52
116	49	1.53
117	49	1.54
118 to 119	50	1.55
120	50	1.56
121	50	1.57
122	51	1.58
123 to 124	51	1.59
125	51	1.60
126	52	1.61
127 to 128	52	1.62
129	52	1.63
130	52	1.64

Percent of Slope	Degree of Slope	Correction Factor
131	53	1.65
132 to 133	53	1.66
134	53	1.67
135	53	1.68
136	54	1.69
137 to 138	54	1.70
139	54	1.71
140	54	1.72
141	55	1.73
142 to 143	55	1.74
144	55	1.75
145	55	1.76
146	56	1.77
147	56	1.78
148 to 149	56	1.79
150	56	1.80

APPENDIX J: VARIABLE RADIUS PLOT

INTRODUCTION

In our determination is made at the DBH or DRC of each tree. For information on the theory and mathematics of variable plot cruising, and formulas for determining the plot radius factor for any given BAF, the reader is referred to **Log Scaling and Timber Cruising**, 1973, J.R. Dilworth. OSU Book Stores, Inc., Corvallis, Oregon.

The experienced field person using a wedge prism, angle gauge, or relaskop can quickly tell in which case trees are “in” or “out” on the variable plot. However, there are certain trees that are questionable (borderline) for tally because they are located at the outer limits of the variable plot radius. This narrative deals with the procedures needed to ascertain if these borderline trees should be tallied: the mechanics of using plot radius tables in the field, the associated measurements, and corrections of variable plot radii for slope.

MEASUREMENT OF BORDERLINE TREES TO DETERMINE “IN OR OUT” STATUS

In variable plot sampling, the plot radius varies according to the DBH or DRC of each tree. To determine whether a tree is to be sampled requires measurement of its DBH or DRC and its distance from plot center. [Table 42](#), _____

[Table 43](#), [Table 44](#), [Table 45](#), [Table 46](#), [Table 47](#), and [Table 48](#) display limiting distances (the maximum horizontal distance from plot center to the face of the tree at breast height for a tree to be considered “in”) for various tree diameters and commonly used basal area factors (BAF).

Once the DBH or DRC of the borderline tree is taken, the limiting distance is found by entering the table appropriate for the specified BAF. This limiting distance is then compared to the horizontal distance between plot center and the nearest **face of the tree** at breast height. If the measured horizontal distance from plot center is *less than or equal to* the limiting distance from the table, the tree in question is “in” and is tallied as a sample tree. However, if measured horizontal distance from plot center is greater than the limiting distance, then the tree in question is “out” and is not tallied.

1. Measure the diameter to the nearest tenth of an inch
2. Measure the percent slope from the face of the tree at DBH or DRC to plot center

If the slope is less than ten percent look up limiting distance in Tables 1 through 5 or use the BAF correction factors listed in Table 48 below.

Table 42: BAF correction factors

Type	Correction Factors								
BAF	10	15	20	25	30	35	40	50	60
Plot Radius Factor*	27.08	2.203	1.902	1.697	1.546	1.428	1.333	1.188	1.081

** This is a corrected plot radius factor, corrected for determining the limiting distance to the face of the tree. A standard plot radius factor was used to determine limiting distance to the center of a tree, and is computed by $8.696/\text{SQR}(\text{BAF})$. A corrected PRF subtracts $1/24$ (0.041666) from the standard plot radius factor.*

Example:

BAF = 40; DBH = 20.9 inches; Slope = 5%

Limiting Distance = Plot Radius Factor * DBH, $1.333 * 20.9 = 27.9$ feet

3. **If the slope is greater than ten percent**, first determine the slope correction factor. The slope correction factor and the slope corrected plot radius factor can be obtained by using the formula below or by referring to [Table 47](#). Then, multiply the slope correction factor by the plot radius factor identified in step #3 above to obtain the slope corrected plot radius factor. Finally, multiply the slope corrected plot radius factor by the diameter to obtain the limiting distance.

Example:

BAF = 40; DBH = 20.9 inches; Slope = 20%

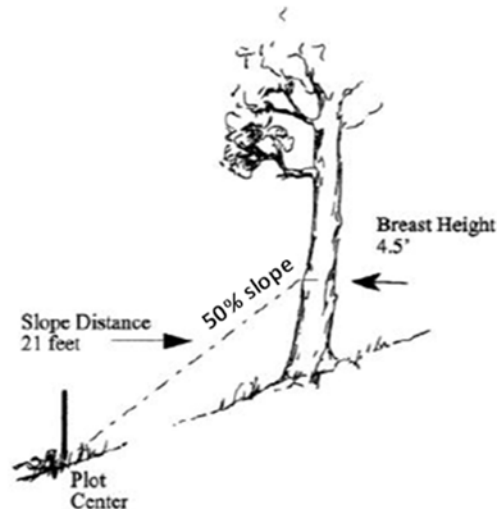
Slope Correction Factor = $\text{SQR}(1 + (\text{slope}/100)^2) = \text{SQR}(1 + (20/100)^2) = 1.0198$

Slope Corrected Plot Radius Factor = Slope Correction Factor * Plot Radius Factor = $1.0198 * 1.333 = 1.359$

Limiting Distance = Slope Corrected Plot Radius Factor * DBH = 1.359 * 20.9 = 28.4 feet

4. Measure the distance from plot center to the face of the tree, nearest plot center, at DBH or DRC. Both the slope measurement and distance measurement must be taken at plot center. If the measured distance is less than the limiting distance, the tree is "in."

Figure 4: Determining limiting distance on a slope



Example:

BAF = 40; DBH = 15.0; Slope = 50%; Slope Distance = 21.0 feet

Referring to [Table 47](#), the Combined Factor for a slope of 50% with a 4- BAF is 1.490.

Limiting Distance = DBH * Combined Factor = 15.0 * 1.490 = 22.35

Since 21.0 is less than or equal to the limiting distance of 22.35 feet, the tree is "in" and is tallied as a sample tree.

Measuring "In" or "Out" Down Trees

Down trees are "in" or "out" of the variable plot radius based on where the DBH or DRC now lies, not on where the tree once stood. The distance measurement is taken from plot center to the nearest face of the tree at breast height.

Table 43: BAF 10 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	13.5	13.8	14.1	14.4	14.6	14.9	15.2	15.4	15.7	16.0
6	16.2	16.5	16.8	17.1	17.3	17.6	17.9	18.1	18.4	18.7
7	19.0	19.2	19.5	19.8	20.0	20.3	20.6	20.9	21.1	21.4
8	21.7	21.9	22.2	22.5	22.7	23.0	23.3	23.6	23.8	24.1
9	24.4	24.6	24.9	25.2	25.5	25.7	26.0	26.3	26.5	26.8
10	27.1	27.4	27.6	27.9	28.2	28.4	28.7	29.0	29.2	29.5
11	29.8	30.1	30.3	30.6	30.9	31.1	31.4	31.7	32.0	32.2
12	32.5	32.8	38.5	38.7	39.0	39.3	39.5	39.8	40.1	40.3
13	35.2	35.5	35.7	36.0	36.3	36.6	36.8	37.1	37.4	37.6
14	37.9	38.2	38.5	38.7	39.0	39.3	39.5	39.8	40.1	40.3
15	40.6	40.9	41.2	41.4	41.7	42.0	42.2	42.5	42.8	43.1
16	43.3	43.6	43.9	44.1	44.4	44.7	45.0	45.2	45.5	45.8
17	46.0	46.3	46.6	46.8	47.1	47.4	47.7	47.9	48.2	48.5
18	48.7	49.0	49.3	49.6	49.8	50.1	50.4	50.6	50.9	51.2
19	51.5	51.7	52.0	52.3	52.5	52.8	53.1	53.3	53.6	53.9
20	54.2	54.4	54.7	55.0	55.2	55.5	55.8	56.1	56.3	56.6
21	56.9	57.1	57.4	57.7	58.0	58.2	58.5	58.8	59.0	59.3
22	59.6	57.1	57.4	57.7	58.0	58.2	58.5	58.8	59.0	59.3
23	62.3	62.6	62.8	63.1	63.4	63.6	63.9	64.2	64.5	64.7
24	65.0	65.3	65.5	65.8	66.1	66.3	66.6	66.9	67.2	67.4
25	67.7	68.0	68.2	63.1	63.4	63.6	63.9	64.2	64.5	64.7
26	70.4	70.7	70.9	71.2	71.5	71.8	72.0	72.3	72.6	72.8
27	73.1	73.4	73.7	73.9	74.2	74.5	74.7	75.0	75.3	75.6
28	75.8	76.1	76.4	76.6	76.9	77.2	77.4	77.7	78.00	78.3

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	78.5	78.8	79.1	79.3	79.6	79.9	80.2	80.4	80.7	81.0
30	81.2	81.5	81.8	82.1	82.3	82.6	82.9	83.1	83.4	83.7
31	83.9	84.2	84.5	84.8	85.0	85.3	85.6	85.8	86.1	86.4
32	86.7	86.9	87.2	87.5	87.7	88.0	88.3	88.6	88.8	89.1
33	89.4	89.6	89.9	90.2	90.4	90.7	91.0	91.3	91.5	91.8
34	92.1	92.3	92.6	92.9	93.2	93.4	93.7	94.0	94.2	94.5
35	94.8	95.1	95.3	95.6	95.9	96.1	96.4	96.7	96.9	97.2
36	97.5	97.8	98.0	98.3	98.6	98.8	99.1	99.4	99.7	99.9
37	100.2	100.5	100.7	101.0	101.3	101.6	101.8	102.1	102.4	102.6
38	102.9	103.2	103.4	103.7	104.0	104.3	104.5	104.8	105.1	105.3
39	105.6	105.9	106.2	106.4	106.7	107.0	107.2	107.5	107.8	108.0
40	108.3	108.6	108.9	109.1	109.4	109.7	109.9	110.2	110.5	110.8
41	111.0	111.3	111.6	111.8	112.1	112.4	112.7	112.9	113.2	113.5
42	113.7	114.0	114.3	114.5	114.8	115.1	115.4	115.6	115.9	116.2
43	116.4	116.7	117.0	117.3	117.5	117.8	118.1	118.3	118.6	118.9
44	119.2	119.4	119.7	120.0	120.2	120.5	120.8	121.0	121.3	121.6
45	121.9	122.1	122.4	122.7	122.9	120.2	123.5	123.8	124.0	124.3
46	124.6	124.8	125.1	125.4	125.7	125.9	126.2	126.5	126.7	127.0
47	127.3	127.5	127.8	128.1	128.4	128.6	128.9	129.2	129.4	129.7
48	130.0	130.3	130.5	130.8	131.1	131.3	131.6	131.9	132.2	132.4
49	132.7	133.0	133.2	133.5	133.8	134.0	134.3	134.6	134.9	135.1
50	135.4	135.7	135.9	136.2	136.5	136.8	137.0	137.3	137.6	137.8

Prepared by multiplying the BAF 10 Plot Radius Factor 2.708 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 2.708 = 38$.

Table 44: BAF 20 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	9.5	9.7	9.9	10.1	10.3	10.5	10.7	10.8	11.0	11.2
6	11.4	11.6	11.8	12.0	12.2	12.4	12.6	12.8	12.9	13.1
7	13.3	13.5	13.7	13.9	14.1	14.3	14.5	14.7	14.8	15.0
8	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.6	16.8	16.9
9	17.1	17.3	17.5	17.7	17.9	18.1	18.3	18.5	18.6	18.8
10	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.7
11	20.9	21.1	21.3	21.5	21.7	21.9	22.1	22.3	22.5	22.6
12	22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.5
13	24.7	24.9	25.1	25.3	25.5	25.7	25.9	26.1	26.3	26.5
14	26.6	26.8	27.0	27.2	27.4	27.6	27.8	28.0	28.2	28.4
15	28.5	28.7	28.9	29.1	29.3	29.5	29.7	29.9	30.1	30.3
16	30.4	30.6	30.8	31.0	31.2	31.4	31.6	31.8	32.0	32.2
17	32.4	32.5	32.7	32.9	33.1	33.3	33.5	33.7	33.9	34.1
18	34.3	34.4	34.6	34.8	35.0	35.2	35.4	35.6	35.8	36.0
19	36.2	36.3	36.5	36.7	36.9	37.1	37.3	37.5	37.7	37.9
20	38.1	38.3	38.4	38.6	38.8	39.0	39.2	39.4	39.6	39.8
21	40.0	40.2	40.3	40.5	40.7	40.9	41.1	41.3	41.5	41.7
22	41.9	42.1	42.2	42.4	42.6	42.8	43.0	43.2	43.4	43.6
23	43.8	44.0	44.1	44.3	44.5	44.7	44.9	45.1	45.3	45.5
24	45.7	45.9	46.1	46.2	46.4	46.6	46.8	47.0	47.2	47.4
25	47.6	47.8	48.0	48.1	48.3	48.5	48.7	48.9	49.1	49.3
26	49.5	49.7	49.9	50.0	50.2	50.4	50.6	50.8	51.0	51.2
27	51.4	51.6	51.8	52.0	52.1	52.3	52.5	52.7	52.9	53.1
28	53.3	53.5	53.7	53.9	54.0	54.2	54.4	54.6	54.8	55.0

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	55.2	55.4	55.6	55.8	55.9	56.1	56.3	56.5	56.7	56.9
30	57.1	57.3	57.5	57.7	57.9	58.0	58.2	58.4	58.6	58.8
31	59.0	59.2	59.4	59.6	59.8	59.9	60.1	60.3	60.5	60.7
32	60.9	61.1	61.3	61.5	61.7	61.8	62.0	62.2	62.4	62.6
33	62.8	63.0	63.2	63.4	63.6	63.8	63.9	64.1	64.3	64.5
34	64.7	64.9	65.1	65.3	65.5	65.7	65.8	6.0	66.2	66.4
35	66.6	66.8	67.0	67.2	67.4	67.6	67.7	67.9	68.1	68.3
36	68.5	68.7	68.9	69.1	69.3	69.5	69.6	69.8	70.0	70.2
37	70.4	70.6	70.8	71.0	71.2	71.4	71.6	71.7	71.9	72.1
38	72.3	72.5	72.7	72.9	73.1	73.3	73.5	73.6	73.8	74.0
39	74.2	74.4	74.6	74.8	75.0	75.2	75.4	75.5	75.7	75.9
40	76.1	76.3	76.5	76.7	76.9	77.1	77.3	77.5	77.6	77.8
41	78.0	78.2	78.4	78.6	78.8	79.0	79.2	79.4	79.5	79.7
42	79.9	80.1	80.3	80.5	80.7	80.9	81.1	81.3	81.4	81.6
43	81.8	82.0	82.2	82.4	82.6	82.8	83.0	83.2	83.4	83.5
44	83.7	83.9	84.1	84.3	84.5	84.7	84.9	85.1	85.3	85.4
45	85.6	85.8	86.0	86.2	86.4	86.6	86.8	87.0	87.2	87.3
46	87.5	87.7	87.9	88.1	88.3	88.5	88.7	88.9	89.1	89.3
47	89.4	89.6	89.8	90.0	90.2	90.4	90.6	90.8	91.0	91.2
48	91.3	91.5	91.7	91.9	92.1	92.3	92.5	92.7	92.9	93.1
49	93.2	93.4	93.6	93.8	94.0	94.2	94.4	94.6	94.8	95.0
50	95.2	95.3	95.5	95.7	95.9	96.1	96.3	96.5	96.7	96.9

Prepared by multiplying the BAF 20 Plot Radius Factor 1.902 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 1.903 = 27$.

Table 45: BAF 30 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	7.7	7.9	8.0	8.2	8.3	8.5	8.7	8.8	9.0	9.1
6	9.3	9.4	9.6	9.7	9.9	10.0	10.2	10.4	10.5	10.7
7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	12.1	12.2
8	12.4	12.5	12.7	12.8	13.0	13.1	13.3	13.5	13.6	13.8
9	13.9	14.1	14.2	14.4	14.5	14.7	14.8	15.0	15.2	15.3
10	15.5	15.6	15.8	15.9	16.1	16.2	16.4	16.5	16.7	16.9
11	17.0	17.2	17.3	17.5	17.6	17.8	17.9	18.1	18.2	18.4
12	18.6	18.7	18.9	19.0	19.2	19.3	19.5	19.6	19.8	19.9
13	20.1	20.3	20.4	20.6	20.7	20.9	21.0	21.2	21.3	21.5
14	21.6	21.8	22.0	22.1	22.3	22.4	22.6	22.7	22.9	23.0
15	23.2	23.3	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6
16	24.7	24.9	25.0	25.2	25.4	25.5	25.7	25.8	26.0	26.1
17	26.3	26.4	26.6	26.7	26.9	27.1	27.2	27.4	27.5	27.7
18	27.8	28.0	28.1	28.3	28.4	28.6	28.8	28.9	29.1	29.2
19	29.4	29.5	29.7	29.8	30.0	30.1	30.3	30.5	30.6	30.8
20	30.9	31.1	31.2	31.4	31.5	31.7	31.8	32.0	32.2	32.3
21	32.5	32.6	32.8	32.9	33.1	33.2	33.4	33.5	33.7	33.9
22	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4
23	35.6	35.7	35.9	36.0	36.2	36.3	36.5	36.6	36.8	36.9
24	37.1	37.3	37.4	37.6	37.7	37.9	38.0	38.2	38.3	38.5
25	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	40.00
26	40.2	40.4	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6
27	41.7	41.9	42.1	42.2	42.4	42.5	42.7	42.8	43.0	43.1
28	43.3	43.4	43.6	43.8	43.9	44.1	44.2	44.4	44.5	44.7

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	44.8	45.0	45.1	45.3	45.5	45.6	45.8	45.9	46.1	46.2
30	46.4	46.5	46.7	46.8	47.0	47.2	47.3	47.5	47.6	47.8
31	47.9	48.1	48.2	48.4	48.5	48.7	48.9	49.0	49.2	49.3
32	49.5	49.6	49.8	49.9	50.1	50.2	50.4	50.6	50.7	50.9
33	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.3	52.4
34	52.6	52.7	52.9	53.0	53.2	53.3	53.5	53.6	53.8	54.0
35	54.1	54.3	54.4	54.6	54.7	54.9	55.0	55.2	55.3	55.5
36	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	57.0
37	57.2	57.4	57.5	57.7	57.8	58.0	58.1	58.3	58.4	58.6
38	58.7	58.9	59.1	59.2	59.4	59.5	59.7	59.8	60.0	60.1
39	60.3	60.4	60.6	60.8	60.9	61.1	61.2	61.4	61.5	61.7
40	61.8	62.0	62.1	62.3	62.5	62.6	62.8	62.9	63.1	63.2
41	63.4	63.5	63.7	63.8	64.0	64.2	64.3	64.5	64.3	64.8
42	64.9	65.1	65.2	65.4	65.6	65.7	65.9	66.0	66.2	66.3
43	66.5	66.6	66.8	66.9	67.1	67.3	67.4	67.6	67.7	67.9
44	68.0	68.2	68.3	68.5	68.6	68.8	69.0	69.1	69.3	69.4
45	69.6	69.7	69.9	70.0	70.2	70.3	70.5	70.7	70.8	71.0
46	71.1	71.3	71.4	71.6	71.7	71.9	72.0	72.2	72.4	72.5
47	72.7	72.8	73.0	73.1	73.3	73.4	73.6	73.7	73.9	74.1
48	74.2	74.4	74.5	74.7	74.8	75.0	75.1	75.3	75.4	75.6
49	75.8	75.9	76.1	76.2	76.4	76.5	76.7	76.8	77.0	77.1
50	77.3	77.5	77.6	77.8	77.9	78.1	78.2	78.4	78.5	78.7

Prepared by multiplying the BAF 30 Plot Radius Factor 1.546 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 1.546 = 22$.

Table 46: BAF 40 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	6.7	6.8	6.9	7.1	7.2	7.3	7.5	7.6	7.7	7.9
6	8.0	8.1	8.3	8.4	8.5	8.7	8.8	8.9	9.1	9.2
7	9.3	9.5	9.6	9.7	9.9	10.0	10.1	10.3	10.4	10.5
8	10.7	10.8	10.9	11.1	11.2	11.3	11.5	11.6	11.7	11.9
9	12.0	12.1	12.3	12.4	12.5	12.7	12.8	12.9	13.1	13.2
10	13.3	13.5	13.6	13.7	13.9	14.0	14.1	14.3	14.4	14.5
11	14.7	14.8	14.9	15.1	15.2	15.3	15.5	15.6	15.7	15.9
12	16.0	16.1	16.3	16.4	16.5	16.7	16.8	16.9	17.1	17.2
13	17.3	17.5	17.6	17.7	17.9	18.0	18.1	18.3	18.4	18.5
14	18.7	18.8	18.9	19.1	19.2	19.3	19.5	19.6	19.7	19.9
15	20.0	20.1	20.3	20.4	20.5	20.7	20.8	20.9	21.1	21.2
16	21.3	21.5	21.6	21.7	21.9	22.0	22.1	22.3	22.4	22.5
17	22.7	22.8	22.9	23.1	23.2	23.3	23.5	23.6	23.7	23.9
18	24.0	24.1	24.3	24.4	24.5	24.7	24.8	24.9	25.1	25.2
19	25.3	25.5	25.6	25.7	25.9	26.0	26.1	26.3	26.4	26.5
20	26.7	26.8	26.9	27.1	27.2	27.3	27.5	27.6	27.7	27.9
21	28.0	28.1	28.3	28.4	28.5	28.7	28.8	28.9	29.1	29.2
22	29.3	29.5	29.6	29.7	29.9	30.0	30.1	30.3	30.4	30.5
23	30.7	30.8	30.9	31.1	31.2	31.3	31.5	31.6	31.7	31.9
24	32.0	32.1	32.3	32.4	32.5	32.7	32.8	32.9	33.1	33.2
25	33.3	33.5	33.6	33.7	33.9	34.0	34.1	34.3	34.4	34.5
26	34.7	34.8	34.9	35.1	35.2	35.3	35.5	35.6	35.7	35.9
27	36.0	36.1	36.3	36.4	36.5	36.7	36.8	36.9	37.1	37.2
28	37.3	37.5	37.6	37.7	37.9	38.0	38.1	38.3	38.4	38.5

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	38.7	34.8	34.9	35.1	35.2	35.3	35.5	35.6	35.7	35.9
30	40.0	40.1	40.3	40.4	40.5	40.7	40.8	40.9	41.1	41.2
31	41.3	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4	42.5
32	42.7	42.8	42.9	43.1	43.2	43.3	43.5	43.6	43.7	43.9
33	44.0	44.1	44.3	44.4	44.5	44.7	44.8	44.9	45.1	45.2
34	45.3	45.5	45.6	45.7	45.9	46.0	46.1	46.3	46.4	46.5
35	46.7	46.8	46.9	47.1	47.2	47.3	47.5	47.6	47.7	47.9
36	48.0	48.1	48.2	48.4	48.5	48.7	48.	48.9	49.1	49.2
37	49.3	49.5	49.6	49.7	49.9	50.0	50.1	50.3	50.4	50.5
38	50.7	50.8	50.9	51.1	51.2	51.3	51.5	51.6	51.7	51.9
39	52.0	52.1	52.2	52.4	52.5	52.7	52.8	52.9	53.1	53.2
40	53.3	53.5	53.6	53.7	53.9	54.0	54.1	54.3	54.4	54.5
41	54.7	54.8	54.9	55.1	55.2	55.3	55.5	55.6	55.7	55.9
42	56.0	56.1	56.2	56.4	56.5	56.7	56.8	56.9	57.1	57.2
43	57.3	57.5	57.6	57.7	57.9	58.0	58.1	58.3	58.4	58.5
44	58.7	58.8	58.9	59.1	59.2	59.3	59.5	59.6	59.7	59.9
45	60.0	60.1	60.2	60.4	60.5	60.7	60.8	60.9	61.1	61.2
46	61.3	61.5	61.6	61.7	61.9	62.0	62.1	62.3	62.4	62.5
47	62.7	62.8	62.9	63.1	63.2	63.3	63.5	63.6	63.7	63.9
48	64.0	64.1	64.2	64.4	64.5	64.7	64.8	64.9	65.1	65.2
49	65.3	65.5	65.6	65.7	65.9	66.0	66.1	66.3	66.4	66.5
50	66.7	66.8	66.9	67.0	67.2	67.3	67.4	67.6	67.7	67.8

Prepared by multiplying the BAF 40 Plot Radius Factor 1.333 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 1.333 = 19.1$ feet.

Table 47: BAF 60 Plot Radii in Feet and Tenths of Feet from Plot Center to Face of Tree at DBH for 0% Slope

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
5	5.4	5.5	5.6	5.7	5.8	5.9	6.1	6.2	6.3	6.4
6	6.5	6.6	6.7	6.8	6.9	7.0	7.1	7.2	7.4	7.5
7	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4	8.5
8	8.6	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6
9	9.7	9.8	9.9	10.1	10.2	10.3	10.4	10.5	10.6	10.7
10	10.8	10.9	11.0	11.1	11.2	11.4	11.5	11.6	11.7	11.8
11	11.9	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.8	12.9
12	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
13	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	15.0
14	15.1	15.2	15.4	15.5	15.6	15.7	15.8	15.9	16.0	16.1
15	16.2	16.3	16.4	16.5	16.6	16.7	16.9	17.0	17.1	17.2
16	17.3	17.4	17.5	17.6	17.7	17.8	17.9	18.1	18.2	18.3
17	18.4	18.5	18.6	18.7	18.8	18.9	19.0	19.1	19.2	19.3
18	19.5	19.6	19.7	19.8	19.9	20.0	20.1	20.2	20.3	20.4
19	20.5	20.6	20.8	20.9	21.0	21.1	21.2	21.3	21.4	21.5
20	21.6	21.7	21.8	21.9	22.1	22.2	22.3	22.4	22.5	22.6
21	22.7	22.8	22.9	23.0	23.1	23.2	23.3	23.5	23.6	23.7
22	23.8	23.9	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.8
23	24.9	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8
24	25.9	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
25	27.0	27.1	27.2	27.3	27.5	27.6	27.7	27.8	27.9	28.0
26	28.1	28.2	28.3	28.4	28.5	28.6	28.8	28.9	29.0	29.1
27	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	30.1	30.2
28	30.3	30.4	30.5	30.6	30.7	30.8	30.9	31.0	31.1	31.2

Inches	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
29	31.3	31.5	31.6	31.7	31.8	31.9	32.0	32.1	32.2	32.3
30	32.4	32.5	32.6	32.8	32.9	33.0	33.1	33.2	33.3	33.4
31	33.5	33.6	33.7	33.8	33.9	34.1	34.2	34.3	34.4	34.5
32	35.7	35.8	35.9	36.0	36.1	36.2	36.3	36.4	36.5	36.6
33	35.7	35.8	35.9	36.0	36.1	36.2	36.3	36.4	36.5	36.6
34	36.8	36.9	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7
35	37.8	37.9	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8
36	38.9	39.0	39.1	39.2	39.3	39.5	39.6	39.7	39.8	39.9
37	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.8	40.9	41.0
38	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	42.1
39	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	43.0	43.1
40	43.2	43.3	43.5	43.6	43.7	43.8	43.9	44.0	44.1	44.2
41	44.3	44.4	44.5	44.6	44.8	44.9	45.0	45.1	45.2	45.3
42	45.4	45.5	45.6	45.7	45.8	45.9	46.1	46.2	46.3	46.4
43	46.5	46.6	46.7	46.8	46.9	47.0	47.1	47.2	47.3	47.5
44	47.6	47.7	47.8	47.9	48.0	48.1	48.2	48.3	48.4	48.5
45	48.6	48.8	48.9	49.0	49.1	49.2	49.3	49.4	49.5	49.6
46	49.7	49.8	49.9	50.1	50.2	50.3	50.4	50.5	50.6	50.7
47	50.8	50.9	51.0	51.1	51.2	51.3	51.5	51.6	51.7	51.8
48	51.9	52.0	52.1	52.2	52.3	52.4	52.5	52.6	52.8	52.9
49	53.0	53.1	53.2	53.3	53.4	53.5	53.6	53.7	53.8	53.9
50	54.1	54.2	54.3	54.4	54.5	54.6	54.7	54.8	54.9	55.0

Prepared by multiplying the BAF 60 Plot Radius Factor 1.081 * DBH. For example, if DBH = 14.3 inches, then $14.3 * 10.81 = 15.5$ feet.

Table 48: Limiting Distances to Face of Tree and Slope Correction Factors for Various Basal Area Factors

This table provides an expanded list of slope correction factors to the face of the tree for use with various basal area factors. To use the table, measure the slope and distance from plot-center to the face of the tree at DBH. To obtain the corrected limiting distance to a tree, multiply the tree's DBH by the "combined factor" shown under the appropriate BAF heading.

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
1	1.00000	3.847	2.708	2.203	1.902	1.546	1.333
2	1.00020	3.848	2.709	2.203	1.902	1.546	1.333
3	1.00045	3.489	2.709	2.204	1.903	1.547	1.334
4	1.00080	3.850	2.710	2.205	1.904	1.547	1.334
5	1.00125	3.852	2.711	2.206	1.904	1.548	1.335
6	1.00180	3.854	2.713	2.207	1.905	1.549	1.335
7	1.00245	2.856	2.715	2.208	1.907	1.550	1.336
8	1.00319	3.859	2.717	2.210	1.908	1.551	1.337
9	1.00404	3.863	2.719	2.212	1.910	1.552	1.338
10	1.00499	3.866	2.722	2.214	1.911	1.554	1.340
11	1.00603	3.870	2.724	2.216	1.912	1.555	1.341
12	1.00717	3.875	2.727	2.219	1.916	1.557	1.341
13	1.00841	3.879	2.731	2.222	1.918	1.559	1.344
14	1.00975	3.884	2.734	2.224	1.921	1.567	1.346
15	1.01119	3.890	2.738	2.228	1.923	1.563	1/348
16	1.01272	3.896	2.742	2.231	1.926	1.566	1.350
17	1.01435	3.902	2.747	2.235	1.921	1.568	1.352
18	1.01607	3.909	2.752	2.238	1.933	1.571	1.354
19	1.01789	3.916	2.756	2.245	1.936	1.574	1.357
20	1.01980	3.923	2.762	2.245	1.940	1.577	1.359
21	1.02181	3.931	2.767	2.251	1.943	1.580	1.362

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
22	1.02391	3.939	2.773	2.256	1.947	1.583	1.365
23	1.02611	3.947	2.779	2.261	1.952	1.586	1.368
24	1.02840	3.956	2.785	2.266	1.956	1.590	1.371
25	1.03078	3.965	2.791	2.271	1.967	1.594	1.374
26	1.03325	3.975	2.798	2.276	1.965	1.597	1.377
27	1.03581	3.985	2.805	2.282	1.970	1.601	1.381
28	1.03846	3.995	2.812	2.288	1.975	1.605	1.384
29	1.04120	4.005	2.820	2.294	1.980	1.610	1.388
30	1.04403	4.016	2.827	2.300	1.986	1.614	1.392
31	1.04695	4.028	2.835	2.306	1.991	1.619	1.396
32	1.04995	4.039	2.843	2.313	1.997	1.623	1.400
33	1.05304	4.051	2.852	2.320	2.003	1.628	1.404
34	1.05622	4.063	2.960	2.327	2.009	1.633	1.408
35	1.05948	4.076	2.869	2.334	2.015	1.638	1.412
36	1.06283	4.089	2.878	2.341	2.022	1.643	1.417
37	1.06626	4.102	2.887	2.349	2.028	1.648	4.421
38	1.06977	4.115	2.897	2.357	2.035	1.654	1.426
39	1.07336	4.129	2.907	2.365	2.042	1.659	1.431
40	1.07703	4.143	2.917	2.373	2.049	1.665	1.436
41	1.08079	4.158	2.927	2.381	2.056	1.671	1.441
42	1.08462	4.173	2.937	2.389	2.063	1.677	1.446
43	1.08853	4.188	2.948	2.398	2.070	1.683	1.451
44	1.09252	4.203	2.959	2.407	2.078	1.689	1.456
45	1.09659	4.219	2.970	2.416	2.086	1.695	1.462
46	1.10073	4.235	2.981	2.425	2.094	1.702	1.467

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
47	1.10494	4.251	2.992	2.434	2.102	1.708	1.473
48	1.10923	4.267	3.004	2.444	2.110	1.715	1.479
49	1.11360	4.284	3.016	2.453	2.118	1.723	1.484
50	1.11803	4.301	3.028	2.463	2.126	1.728	1.490
51	1.12254	4.318	3.040	2.473	2.135	1.735	1.496
52	1.12712	4.336	3.052	2.483	2.144	1.743	1.502
53	1.13177	4.354	3.065	2.493	2.153	1.750	1.509
54	1.13649	4.372	3.078	2.504	2.162	1.757	1.515
55	1.14127	4.390	3.091	2.514	2.171	1.764	1.521
56	1.14612	4.409	3.104	2.525	2.180	1.772	1.528
57	1.15104	4.428	3.117	2.536	2.189	1.780	1.534
58	1.15603	4.447	3.131	2.547	2.199	1.788	1.541
59	1.16108	4.467	3.144	2.558	2.208	1.795	1.548
60	1.16619	4.486	3.158	2.569	2.218	1.803	1.555
61	1.17137	4.506	3.172	2.581	2.228	1.811	1.561
62	1.17661	4.526	3.186	2.592	2.238	1.819	1.568
63	1.18191	4.547	3.201	2.604	2.248	1.827	1.575
64	1.18727	4.567	3.215	2.616	2.258	1.836	1.583
65	1.19269	4.588	3.230	2.627	2.268	1.844	1.590
66	1.19817	4.609	3.245	2.640	2.279	1.852	1.597
67	1.20370	4.631	3.260	2.652	2.289	1.861	1.605
68	1.20930	4.652	3.275	2.664	2.300	1.870	1.612
69	1.21499	4.691	3.302	2.687	2.319	1.885	1.626
70	1.22066	4.696	3.306	2.689	2.322	1.887	1.627
71	1.22642	4.718	3.321	2.702	2.333	1.896	1.635

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
72	1.23223	4.740	3.337	2.715	2.344	1.905	1.643
73	1.23810	4.763	3.353	2.728	2.355	1.914	1.650
74	1.24403	4.786	3.369	2.741	2.366	1.923	1.658
75	1.25000	4.809	3.385	2.754	2.378	1.933	1.666
76	1.25603	4.832	3.401	2.767	2.389	1.942	1.674
77	1.26210	4.855	3.418	2.780	2.401	1.951	1.682
78	1.26823	4.879	3.434	2.794	2.412	1.961	1.691
79	1.27440	4.903	3.451	2.808	2.424	1.970	1.699
80	1.28062	4.927	3.468	2.821	2.436	1.980	1.707
81	1.28690	4.951	3.485	2.835	2.448	1.990	1.715
82	1.29321	4.975	3.502	2.849	2.460	1.999	1.724
83	1.29958	4.999	3.519	2.863	2.472	2.009	1.732
84	1.30599	5.024	3.537	2.877	2.484	2.019	1.741
85	1.31244	5.049	3.554	2.891	2.496	2.029	1.749
86	1.31894	5.074	3.572	2.906	2.509	2.039	1.758
87	1.32548	5.099	3.589	2.920	2.521	2.049	1.767
88	1.33207	5.124	3.607	2.935	2.534	2.059	1.776
89	1.33870	5.150	3.625	2.949	2.546	2.070	1.784
90	1.34536	5.176	3.643	2.964	2.559	2.080	1.793
91	1.35207	5.201	3.661	2.979	2.572	2.090	1.802
92	1.35882	5.227	3.680	2.993	2.584	2.101	1.811
93	1.36561	5.254	3.698	3.008	2.597	2.111	1.820
94	1.37244	5.280	3.717	3.023	2.610	2.122	1.829
95	1.37931	5.306	3.735	3.039	2.623	2.132	1.839
96	1.38622	5.333	3.754	3.054	2.637	2.143	1.848

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
97	1.39316	5.359	3.773	3.069	2.650	2.154	1.875
98	1.40014	5.386	3.792	3.085	2.663	2.165	1.866
99	1.40716	5.413	3.811	3.100	2.676	2.175	1.876
100	1.41421	5.440	3.830	3.116	2.690	2.186	1.885
102	1.42843	5.495	3.868	3.147	2.717	2.208	1.904
103	1.43558	5.523	3.888	3.163	5.730	2.219	1.914
104	1.44278	5.550	3.907	3.178	2.744	2.231	1.923
105	1.45000	5.578	3.927	3.194	2.758	2.242	1.933
106	1.45726	5.606	3.946	3.210	2.772	2.253	1.943
107	1.46455	5.634	3.966	3.226	2.876	2.264	1.952
108	1.47187	5.662	3.986	3.243	2.799	2.276	1.962
109	1.47922	5.691	4.006	3.259	2.813	2.287	1.972
110	1.48661	5.719	4.026	3.275	2.828	2.298	1.982
111	1.49402	5.747	4.046	3.291	2.842	2.310	1.992
112	1.50147	5.776	4.066	3.308	2.856	2.321	2.001
113	1.50894	5.805	4.086	3.324	2.870	2.333	2.011
114	1.51644	5.834	4.107	3.341	2.884	2.344	2.021
115	1.52498	5.863	4.127	3.357	2.899	2.356	2.031
116	1.53154	5.892	4.147	3.374	2.913	2.368	2.042
117	1.53912	5.921	4.168	3.391	2.927	2.379	2.052
118	1.54674	5.950	4.189	3.407	2.942	2.391	2.062
119	1.55438	5.980	4.209	3.424	2.956	2.403	2.072
120	1.56205	6.000	4.230	3.441	2.971	2.415	2.082
121	1.56975	6.039	4.251	3.458	2.985	2.427	2.092
122	1.57747	6.069	4.272	3.475	3.000	2.439	2.103

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
123	1.58521	6.098	4.293	3.492	3.015	2.451	2.113
124	1.59298	6.128	4.314	3.509	3.030	2.463	2.123
125	1.60078	6.158	4.335	3.527	3.045	2.475	2.134
126	1.60860	6.188	4.356	3.544	3.060	2.487	2.144
127	1.61645	6.218	4.377	3.561	3.074	2.499	2.155
128	1.62432	6.249	4.399	3.578	3.089	2.511	2.165
129	1.63221	6.279	4.420	3.595	3.104	2.523	2.176
130	1.64012	6.310	4.441	3.613	3.120	2.536	2/186
131	1.64806	6.340	4.463	3.631	3.135	2.546	2.197
132	1.65602	6.370	4.485	3.648	3.150	2.560	2.207
133	1.66400	6.401	4.506	3.666	3.165	2.573	2.218
134	1.67200	6.432	4.528	3.683	3.180	2.585	2.229
135	1.68003	6.463	4.550	3.701	3.195	2.597	2.239
136	1.68808	6.494	4.571	3.719	3.211	2.261	2.250
137	1.69614	6.525	4.593	3.737	3.226	2.622	2.261
138	1.70423	6.556	4.615	3.754	3.241	2.635	2.272
139	1.71234	6.587	4.637	3.772	3.257	2.647	2.283
140	1.72047	6.619	4.659	3.790	3.272	2.660	2.293
141	1.72861	6.650	4.681	3.808	3.288	2.672	2.304
142	1.73678	6.681	4.703	3.826	3.303	2.685	2.315
143	1.74497	6.713	4.725	3.844	3.319	2.698	2.326
144	1.75317	6.744	4.748	3.862	3.335	2.710	2.337
145	1.76139	6.776	4.770	3.880	3.350	2.723	2.348
146	1.76963	6.808	4.792	3.898	3.366	2.736	2.359
147	1.77789	6.840	4.815	3.917	3.382	2.749	2.370

Slope	Factor	5 BAF	10 BAF	15 BAF	20 BAF	30 BF	40 BAF
148	1.78617	6.871	4.837	3.935	3.397	2.761	2.381
149	1.79446	6.903	4.859	3.953	3.413	2.774	2.392

APPENDIX K: DAMAGE CATEGORIES, AGENTS, SEVERITY RATINGS, AND TREE PARTS

DAMAGE CATEGORIES

Detailed descriptions and examples of the content in these tables is available using the Insect & Disease Codes links on the [FSVeg Documentation web page](#).

Table 49: Damage category codes

Code	Description
10	General Insects
11	Bark Beetles
12	Defoliators
13	Chewing Insects
14	Sucking Insects
15	Boring Insects
16	Seed/Cone/Flower/Fruit Insects
17	Gallmaker Insects
18	Insect Predators
19	General Diseases
20	Biotic Damage
21	Root/Butt Diseases
22	Stem Decays/Cankers
23	Parasitic/Epiphytic Plants
24	Decline Complexes/Dieback/Wilts

Code	Description
25	Foliage Diseases
26	Stem Rusts
27	Broom Rusts
30	Fire
40	Animal Damage, Source Unknown
41	Wild Animals
42	Domestic Animals
50	Abiotic Damage
60	Competition
70	Human Activities
71	Harvest
80	Multi-Damage (Insect-Disease)
90	Unknown
99	Physical Effects

DAMAGE AGENTS

Detailed descriptions and examples of the content in these tables is available using the Insect & Disease Codes links on the [FSVeg Documentation web page](#).

Table 50: Damage agent codes

Category	Importance*	Agent	Common Name	Scientific Name
10	n/a	000	General insects	n/a
10	I	001	Thrips	<i>n/a</i>
10	I	002	Tip moth	<i>n/a</i>
10	P	003	Wasp	<i>n/a</i>
10	I	007	Clerid beetle	<i>Cleridae</i>

Category	Importance*	Agent	Common Name	Scientific Name
10	I	008	Weevil	<i>Curculionidae</i>
10	I	011	Ant	<i>Formicidae</i>
10	P	017	Bagworm moth	<i>Psychidae</i>
10	P	019	Scarab	<i>Scarabaeidae</i>
10	I	023	Wood wasps	<i>Siricidae spp.</i>
11	n/a	000	Bark beetles	n/a
11	I	001	Roundheaded pine beetle	<i>Dendroctonus adjunctus</i>
11	I	002	Western pine beetle	<i>Dendroctonus brevicornis</i>
11	I	004	Jeffrey pine beetle	<i>Dendroctonus jeffreyi</i>
11	I	005	Lodgepole pine beetle	<i>Dendroctonus murrayanae</i>
11	I	006	Mountain pine beetle	<i>Dendroctonus ponderosae</i>
11	I	007	Douglas-fir beetle	<i>Dendroctonus pseudotsugae</i>
11	I	009	Spruce beetle	<i>Dendroctonus rufipennis</i>
11	I	012	Red turpentine beetle	<i>Dendroctonus valens</i>
11	I	015	Western balsam bark beetle	<i>Dryocoetes confuses</i>
11	P	016	Unknown	<i>Dryocoetes sechelti</i>
11	I	019	Pinon ips	<i>Ips confuses</i>
11	P	021	Sixspined ips	<i>Ips calligraphus</i>
11	P	022	Emarginated ips	<i>Ips emarginatus</i>
11	P	025	Arizona five-spined ips	<i>Ips lecontei</i>
11	I	029	Pine engraver	<i>Ips pini</i>
11	I	030	Ips engraver beetles	<i>Ips spp/</i>
11	P	031	Unknown	<i>Ips tridens</i>
11	P	032	Western ash bark beetle	<i>Leperisinus californicus</i>
11	I	035	Cedar bark beetle	<i>Phloeosinus spp.</i>

Category	Importance*	Agent	Common Name	Scientific Name
11	I	036	Western cedar bark beetle	<i>Phloeosinus punctatus</i>
11	P	037	Tip beetles	<i>Pityogenes spp.</i>
11	P	038	Douglas-fir twig beetle	<i>Pityophthorus pseudotsugae</i>
11	P	039	Twig beetles	<i>Pityophthorus spp.</i>
11	P	040	Four-eyed spruce beetle	<i>Polygraphus rufipennis</i>
11	P	041	Fir root bark beetle	<i>Pseudohylesinum granulates</i>
11	P	043	Douglas-fir pole beetle	<i>Pseudohylesinus nebulosus</i>
11	I	045	Small European elm bark beetle	<i>Scolytus multistriatus</i>
11	P	046	Spruce engraver	<i>Scolytus piceae</i>
11	P	048	True fir bark beetle	<i>Scolytus spp.</i>
11	P	049	Douglas-fir engraver	<i>Scolytus unispinosus</i>
11	I	050	Fir engraver	<i>Scolytus ventralis</i>
11	n/a	055	Spruce ips	<i>Ips pilifrons</i>
11	n/a	056	Mexican pine beetle	<i>Dendroctonus mexicanus</i>
12	n / a	000	Defoliators	n / a
12	P	001	Casebearer	<i>n/a</i>
12	P	002	Leaftier	<i>n/a</i>
12	P	003	Looper	<i>n/a</i>
12	I	004	Needleminer	<i>n/a</i>
12	I	005	Sawfly	<i>n/a</i>
12	P	006	Skeletonizer	<i>n/a</i>
12	P	009	Webworm	<i>n/a</i>
12	P	011	Western blackheaded budworm	<i>Acleris gloverana</i>
12	P	013	Whitefly	<i>Aleyrodoidae</i>
12	I	014	Fall cankerworm	<i>Alsophila pometaria</i>

Category	Importance*	Agent	Common Name	Scientific Name
12	P	016	Mountain mahogany looper	<i>Anacamptodes clivinaria profanata</i>
12	P	020	Western larch sawfly	<i>Anoplonyx occidentis</i>
12	I	023	Boxelder defoliator	<i>Archips negundanus</i>
12	P	024	Oak leafroller	<i>Archips semiferana</i>
12	P	025	Birch sawfly	<i>Arge pectoralis</i>
12	I	033	Boxelder leafroller	<i>Caloptilia negundella</i>
12	I	037	Large aspen tortrix	<i>Choristoneura conflictana</i>
12	P	039	Sugar pine tortrix	<i>Choristoneura lambertiana</i>
12	I	040	Western spruce budworm	<i>Choristoneura occidentalis</i>
12	P	043	Aspen leaf beetle	<i>Chrysomela crotchii</i>
12	P	044	Cottonwood leaf beetle	<i>Chrysomela scripta</i>
12	P	045	Leafhopper	<i>Cicadellidae</i>
12	I	047	Larch casebearer	<i>Coleophora laricella</i>
12	I	049	Lodgepole needleminer	<i>Coleotechnites milleri</i>
12	I	050	Ponderosa needleminer	<i>Coleotechnites spp.</i>
12	I	052	Pandora moth	<i>Coloradia Pandora</i>
12	P	056	Dusky birch sawfly	<i>Croesus latitarus</i>
12	P	060	Spruce coneworm	<i>Dioryctria reniculelloides</i>
12	I	066	White fir needleminer	<i>Epinotia meritana</i>
12	I	069	Pine needleminer	<i>Exoteleia pinifoliella</i>
12	P	072	Geometrid moth	<i>Geometridae</i>
12	P	073	Leafblotch miner	<i>Gracillariidae</i>
12	P	074	Spotted tussock moth	<i>Halisidota maculate</i>
12	P	077	Brown day moth	<i>Hemileuca eglanterina</i>

Category	Importance*	Agent	Common Name	Scientific Name
12	P	082	Fall webworm	<i>Hyphantria cunea</i>
12	P	084	Unknown	<i>Lambdina punctate</i>
12	P	087	Willow leafblotch miner	<i>Lithocolletis spp.</i>
12	I	089	Gypsy moth	<i>Lymantria dispar</i>
12	I	094	Western tent caterpillar	<i>Malacosoma californicum</i>
12	I	096	Forest tent caterpillar	<i>Malacosoma disstria</i>
12	P	099	Blister beetle	<i>Meloidae</i>
12	I	116	Pine butterfly	<i>Neophasia menapia</i>
12	P	121	Rusty tussock moth	<i>Orgyia antiqua</i>
12	I	123	Douglas-fir tussock moth	<i>Orgyia pseudotsugata</i>
12	P	124	Western tussock moth	<i>Orgyia vetusta</i>
12	I	125	Spring cankerworm	<i>Paleacrita vernata</i>
12	P	128	Pine tussock moth	<i>Parorygia grisefacta</i>
12	P	135	Aspen leafminer	<i>Phyllocnistis populiella</i>
12	P	139	Larch sawfly	<i>Pristiphora erichsonii</i>
12	P	140	Mountain-ash sawfly	<i>Pristiphora geniculate</i>
12	P	141	Elm leaf beetle	<i>Prorhiza luetola</i>
12	P	143	Giant silkworm moth	<i>Saturniidae</i>
12	P	144	Redhumped caterpillar	<i>Schizura concinna</i>
12	I	150	Spruce needleminer (west)	<i>Taniva albolineana</i>
12	P	155	Leafroller/seed moth	<i>Tortricidae</i>
12	P	156	Willow defoliation	<i>Tortricidae</i>
12	I	160	Pine needle sheathminer	<i>Zelleria haimbachi</i>
12	I	178	Western oak looper	<i>Lambdina discellaria somniaria</i>
12	I	181	Tent Caterpillar	<i>Malacosoma spp.</i>

Category	Importance*	Agent	Common Name	Scientific Name
12	n/a	190	Hickory tussock moth	<i>Halisidota caryae</i>
12	n/a	191	Pin oak sawfly	<i>Caliroa lineata</i>
12	n/a	192	Palmerworm	<i>Dichomeris ligulella</i>
12	n/a	193	Pitch pine looper	<i>Lambdina athasaria pellucidaria</i>
12	n/a	194	Red pine sawfly	<i>Neodiprion annulus annulus</i>
12	n/a	195	Pine tip moth	<i>Argyrotaenia pinatubana</i>
12	n/a	196	Baldcypress leafroller	<i>Archips goyerana</i>
12	n/a	197	Winter moth	<i>Operophtera</i>
12	n/a	198	Basswood thrip	<i>Neohydatothrips</i>
12	n/a	199	Noctuid moth	<i>Xylomyges simplex (walker)</i>
12	n/a	200	Pyralid moth	<i>Palpita magniferalis</i>
13	n/a	000	Chewing insects	n/a
13	P	001	Grasshopper	<i>n/a</i>
13	P	006	Cicadas	<i>Cicadidae</i>
13	P	008	Cutworms	<i>Euxoa excellens</i>
13	P	021	Ponderosa pine tip moth	<i>Rhyacionia zozana</i>
13	P	022	Pine needle weevil	<i>Scythropus spp.</i>
13	n/a	030	Adana tip moth	<i>Rhyacionia adana</i>
14	n/a	000	Sucking insects	n/a
14	P	001	Scale insect	<i>n/a</i>
14	P	002	Western larch wooly aphid	<i>Adelges oregonensis</i>
14	P	003	Balsam woolly adelgid	<i>Adelges piceae</i>
14	I	006	Aphid	<i>Aphididae</i>
14	P	008	Western pine spittlebug	<i>Aphrophora permutata</i>
14	I	012	Pine needle scale	<i>Chionaspis pinifoliae</i>

Category	Importance*	Agent	Common Name	Scientific Name
14	P	014	Giant conifer aphid	<i>Cinara spp.</i>
14	P	017	Spruce aphid	<i>Elatobium anatinum</i>
14	P	018	Woolly apple aphid	<i>Eriosoma lanigerum</i>
14	P	024	Honeysuckle aphid	<i>Hyadaphis tataricae</i>
14	P	026	Lecanium scale	<i>Lecanium spp.</i>
14	I	028	Oystershell scale	<i>Lepidosaphes ulmi</i>
14	I	029	Pinyon needle scale	<i>Matsucoccus acalyptus</i>
14	P	035	Treehoppers	<i>Membracidae</i>
14	I	039	Black pineleaf scale	<i>Nuculaspis California</i>
14	I	040	Spruce spider mite	<i>Oligonychus ununquis</i>
14	P	043	Maple aphid	<i>Periphyllus spp.</i>
14	P	050	Mealybug	<i>Pseudococcidae</i>
14	P	054	Spruce mealybug	<i>Puto sandini</i>
14	n/a	069	Elm scurfy scale	<i>Chionaspis Americana</i>
15	n / a	000	Boring insects	n / a
15	P	001	Shoot borer	<i>n/a</i>
15	P	002	Termite	<i>n/a</i>
15	P	003	Ponderosa pine bark borer	<i>Acanthocinus princeps</i>
15	I	004	Bronze birch borer	<i>Agrilus anxius</i>
15	P	006	Bronze poplar borer	<i>Agrilus liragus</i>
15	P	007	Carpenter bees	<i>Apidae</i>
15	I	008	Flatheaded borer	<i>Buprestidae</i>
15	I	009	Golden buprestid	<i>Buprestis aurulenta</i>
15	P	010	Carpenter ants	<i>Camponotus spp.</i>
15	P	011	Gouty pitch midge	<i>Cecidomyia piniinopsis</i>

Category	Importance*	Agent	Common Name	Scientific Name
15	I	013	Roundheaded borer	<i>Cermbycidae</i>
15	P	018	Carpenterworm moth	<i>Cossidae</i>
15	I	019	Poplar and willow borer	<i>Cryptorhynchus lapathi</i>
15	P	021	Douglas-fir twig weevil	<i>Cylindrocopturus furnissi</i>
15	P	027	Ponderous borer	<i>Ergates spiculatus</i>
15	I	029	Western pine shoot borer	<i>Eucosma sonomana</i>
15	I	030	Eucosma species	<i>Eucosma spp.</i>
15	P	035	Powderpost beetle	<i>Lyctidae</i>
15	I	039	Locust borer	<i>Megacyclene robiniae</i>
15	I	041	Flatheaded fir borer	<i>Melanophila drummondi</i>
15	I	042	Whitespotted sawyer	<i>Monochamus scutellatus</i>
15	P	044	Western ash borer	<i>Neoclytus conjunctus</i>
15	P	050	White pine weevil	<i>Pissodes radiatae</i>
15	I	051	Lodgepole terminal weevil	<i>Pissodes terminalis</i>
15	P	052	Ambrosia beetles	<i>Platypus spp.</i>
15	P	057	Lilac borer	<i>Podosesia syringae</i>
15	P	060	Western subterranean termite	<i>Reticulitermes Hesperus</i>
15	I	064	Western pine tip moth	<i>Rhyacionia bushnelli</i>
15	I	068	Poplar borer	<i>Saperda calcarata</i>
15	I	070	Saperda shoot borer	<i>Saperda spp.</i>
15	P	071	Clearwing moths	<i>Sesiidae</i>
15	I	073	Roundheaded fir borer	<i>Tetropium abietis</i>
15	P	076	Douglas-fir pitch moth	<i>Vespamima novaroensis</i>
15	I	077	Sequoia pitch moth	<i>Vespamima sequoia</i>
15	n/a	087	Emerald ash borer	<i>Agrilus planipennis</i>

Category	Importance*	Agent	Common Name	Scientific Name
16	n/a	000	Seed /Cone /Flower /Fruit Insects	n/a
16	I	001	Douglas-fir cone moth	<i>Barbara colfaxiana</i>
16	P	002	Lodgepole cone beetle	<i>Conophthorus contortae</i>
16	P	003	Limber pine cone beetle	<i>Conophthorus flexilis</i>
16	P	004	Mountain pine cone beetle	<i>Conophthorus monticolae</i>
16	P	005	Ponderosa pine cone beetle	<i>Conophthorus ponderosae</i>
16	P	010	Douglas-fir cone midge	<i>Contarinia oregonesis</i>
16	I	015	Fir coneworm	<i>Dioryctria abietivorella</i>
16	P	017	Pine cone worm	<i>Dioryctria merkeli</i>
16	P	019	Ponderosa twig moth	<i>Dioryctria ponderosae</i>
16	P	020	Unknown	<i>Dioryctria pseudotsugella</i>
16	P	021	Dioryctria moths	<i>Dioryctria spp.</i>
16	P	022	Lodgepole cone moth	<i>Eucosma rescissoriana</i>
16	P	023	Seed chalcid	<i>Eurytomidae</i>
16	P	025	Cone maggot	<i>Hylemya anthracina</i>
16	P	027	Ponderosa pine seed worm/moth	<i>Laspeyresia piperana</i>
16	I	028	Spruce seed moth	<i>Laspeyresia youngana</i>
16	P	029	Boxelder bug	<i>Leptocoris trivittatus</i>
16	P	031	Western conifer seed bug	<i>Leptoglossus occidentalis</i>
16	P	034	Spruce seed chalcid	<i>Magastigmus piceae</i>
16	P	035	Ponderosa pine seed chalcid	<i>Megastigmus albifrons</i>
16	P	036	Fir seed chalcid	<i>Megastigmus pinus</i>
16	P	037	Douglas-fir seed chalcid	<i>Megastigmus spermotrophs</i>
16	P	042	Coneworm	<i>Phycitidae</i>

Category	Importance*	Agent	Common Name	Scientific Name
16	P	043	Harvester ants	<i>Pogonomyrmex spp.</i>
16	n/a	049	Prairie tent caterpillar	<i>Malacosoma lutescens</i>
16	n/a	050	Jack pine tip beetle	<i>Conophthorus banksianae</i>
17	n/a	000	Gallmarker insects	n/a
17	I	003	Cooley spruce gall adelgid	<i>Adelges cooleyi</i>
17	P	007	Douglas-fir needle gall midge	<i>Contarinia pseudotsugae</i>
17	P	010	Hackberry nipplegall maker	<i>Pachypsylla celtidismamma</i>
17	P	013	Gall aphid	<i>Phylloxera</i>
17	P	018	Gouty pitch midge	<i>Cecidomyia piniinopsis</i>
17	I	019	Spider mites	<i>Oligonychus spp.</i>
18	n/a	000	Insect predators	n/a
18	P	001	Lacewing	<i>n/a</i>
18	P	002	Blackbellied clerid	<i>Enoclerus lecontei</i>
18	P	003	Redbellied clerid	<i>Enoclerus sphegeus</i>
18	P	004	Unknown	<i>Formica rufa</i>
18	P	005	Western yellowjacket	<i>Vespula pennsylvanica</i>
19	n/a	000	General diseases	n/a
20	n/a	000	Biotic damage	n/a
20	N	001	Damping off	<i>n/a</i>
20	N	002	Gray mold	<i>Botrytis cinerea</i>
21	n/a	000	Root/butt diseases	n/a
21	I	001	Armillaria root disease	<i>Armillaria spp.</i>
21	I	004	Brown crumbly rot	<i>Fomitopsis pinicola</i>
21	I	007	White mottled rot	<i>Ganoderma applanatum</i>
21	P	008	Ganoderma rot of hardwoods	<i>Ganoderma lucidum</i>

Category	Importance*	Agent	Common Name	Scientific Name
21	P	009	Ganoderma rot of conifers	<i>Ganoderma tsugae</i>
21	I	010	Annosus root disease	<i>Heterobasidion annosum</i>
21	I	012	Tomentosus root disease	<i>Inonotus tomentosus</i>
21	N	013	Charcoal root rot	<i>Macrophomina phaseolina</i>
21	I	014	Black stain root disease	<i>Ophiostoma wagneri</i>
21	I	015	Schweinitzii butt rot	<i>Phaeolus schweinitzii</i>
21	N	018	Phytophthora root rot	<i>Phytophthora cinnamomi</i>
21	N	022	Pythium root rot	<i>Pythium spp.</i>
21	P	024	Crown gall	<i>Agrobacterium tumefaciens</i>
21	P	027	Brown cubical rot	<i>Laetiporus sulphureus</i>
22	n/a	000	Stem decays/cankers	n/a
22	I	006	Black knot of cherry	<i>Apiosporina morbosa</i>
22	I	007	Atropellis canker	<i>Atropellis piniphila</i>
22	I	012	Black canker of aspen	<i>Ceratocystis fimbriata</i>
22	I	025	Cryptosphaeria canker of aspen	<i>Cryptosphaeria populina</i>
22	I	026	Cytospora canker of fir	<i>Cytospora abietis</i>
22	I	028	Rust-red stringy rot	<i>Echinodontium tinctorium</i>
22	I	029	Sooty-bark canker	<i>Encoelia pruinosa</i>
22	N	034	Scleroderris canker	<i>Gremmeniella abietina</i>
22	P	035	Amelanchier rust	<i>Gymnosporangium harknessianum</i>
22	P	036	Cedar apple rust	<i>Gymnosporangium juniper-virginianae</i>
22	I	038	Hypoxylon canker of aspen	<i>Hypoxylon mammatum</i>
22	I	047	Red ring rot	<i>Phellinus pini</i>
22	I	048	Aspen trunk rot	<i>Phellinus tremulae</i>

Category	Importance*	Agent	Common Name	Scientific Name
22	I	057	Cytospora canker of aspen	<i>Cytospora chrysosperma</i>
22	P	058	Dothichiza canker	<i>Dothichiza populae</i>
22	I	059	Red belt fungus	<i>Fomitopsis pinicola</i>
22	I	060	Leucocytospora canker of spruce	<i>Leucocytospora kunzei</i>
22	I	061	Sooty bark canker	<i>Phialis singular</i>
22	P	064	Tinder fungus	<i>Fomes formntarius</i>
22	I	066	Pinyon black stain	<i>Leptographium wagnerii</i>
22	P	068	False tinder fungus	<i>Phellinus igniarius</i>
22	P	071	Oyster mushroom	<i>Pleurotus ostreatus</i>
22	n/a	074	Cedar brown pocket rot	<i>Poria serceomollis</i>
22	n/a	075	Lachnellula canker	<i>Lachnellula flavovirens</i>
22	n/a	076	Strumella canker	<i>Strumella coryneoidea</i>
22	n/a	077	Phomopsis blight	<i>Phomopsis juniperovora</i>
22	n/a	078	Fusarium canker of yellow poplar	<i>Fusarium solani</i>
22	n/a	079	Sterile conk of maple and beech	<i>Inonotus glomeratus</i>
22	n/a	080	Canker of spruce	<i>Aleurodiscus spp.</i>
22	n/a	081	Birch conk	<i>Piptoporus betulinusai</i>
22	n/a	082	Canker	<i>Discocainia treleasei</i>
23	n/a	000	Parasitic	Epiphytic plants
23	I	005	White fir dwarf mistletoe	<i>Arceuthobium abietinum f. sp. Concoloris</i>
23	I	006	Lodgepole pine dwarf mistletoe	<i>Arceuthobium americanum</i>
23	I	008	Western dwarf mistletoe	<i>Arceuthobium compylopodum</i>
23	I	009	Limber pine dwarf mistletoe	<i>Arceuthobium cyanocarpum</i>
23	I	010	Pinyon dwarf mistletoe	<i>Arceuthobium divaricatum</i>

Category	Importance*	Agent	Common Name	Scientific Name
23	I	011	Douglas-fir dwarf mistletoe	<i>Arceuthobium douglasii</i>
23	I	013	Larch dwarf mistletoe	<i>Arceuthobium laricis</i>
23	I	017	Southwestern dwarf mistletoe	<i>Arceuthobium vaginatum</i> <i>subsp. Cryptopodum</i>
23	I	021	Red fir dwarf mistletoe	<i>Arceuthobium abietinum</i> f. sp. <i>Pauciflorum</i>
23	I	022	Juniper true mistletoe	<i>Phoradendron junipeum</i>
24	n / a	000	Decline complexes / dieback / wilts	n / a
24	P	004	Ash decline/yellows	<i>n/a</i>
24	P	011	Larch decline	<i>n/a</i>
24	I	017	True fir pest complex	<i>n/a</i>
24	P	018	Western X disease	<i>n/a</i>
24	P	019	Pinewood nematode	<i>Bursaphelenchus xylophilus</i>
24	n/a	030	Elm phloem necrosis	<i>Mycoplasma</i>
25	n / a	000	Foliage diseases	n / a
25	I	009	True fir needlecast	<i>n/a</i>
25	P	011	Cercospora blight of juniper	<i>Cercospora sequoia</i>
25	I	014	Ink spot of aspen	<i>Ciborinia whetzellii</i>
25	P	015	Pine needle rust	<i>Coleosporium</i> spp.
25	I	022	Elytroderma disease	<i>Elytroderma deformans</i>
25	P	027	Brown felt blight	<i>Herpotrichia juniper</i>
25	P	029	Hardwood anthracnose	<i>Kabatiella apocrypta</i>
25	P	031	Spruce needle cast	<i>Lirula macrospora</i>
25	P	033	White pine needle cast	<i>Lophodermella arcuata</i>
25	I	034	Lophodermella needle cast	<i>Lophodermella</i> spp.

Category	Importance*	Agent	Common Name	Scientific Name
25	I	035	Lophodermium needle cast	<i>Lophodermium spp.</i>
25	I	036	Marssonina blight	<i>Marssonina populi</i>
25	I	037	Melampsora rusts	<i>Melampsora medusa</i>
25	P	039	Larch needle cast	<i>Meria laricis</i>
25	P	040	Dothistroma needle blight	<i>Mycosphaerella pini</i>
25	P	041	Brown felt blight of pines	<i>Neopeckia coulteri</i>
25	P	042	Snow blight	<i>Phacidum abietis</i>
25	I	050	Douglas-fir needle cast	<i>Rhabdocline spp.</i>
25	P	055	Septoria leaf spot	<i>Septoria alnifolia</i>
25	I	056	Septoria leaf spot and canker	<i>Septoria musiva</i>
25	P	057	Sirococcus tip blight	<i>Sirococcus conigenus</i>
25	P	058	Diplodia blight	<i>Sphaeropsis sapinea</i>
25	P	059	Leaf blister of oak	<i>Taphrina caerulescens</i>
25	I	060	Venturia leaf blight of maple	<i>Venturia acerina</i>
25	I	061	Shepherd's crook	<i>Venturia tremulae</i>
25	P	062	Dothistroma needle blight	<i>Dothistroma septospora</i>
25	I	064	Broom rust	<i>Chrysomyxa arctostaphyli</i>
25	P	065	Spruce needle rust	<i>Lophodermium picea</i>
25	P	067	Spruce needle cast	<i>Lophodermium picea</i>
25	P	068	Hardwood leaf rust	<i>Rhizosphaera pini</i>
25	P	071	Spruce needle cast	<i>Rhizosphaera pini</i>
25	I	073	Shepards crook	<i>Ventirua populina</i>
25	n/a	074	Delphinella shoot blight	<i>Delphinella abietis</i>
25	n/a	075	Tar spot	<i>Rhytisma acerinum</i>
26	n/a	000	Stem rusts	n/a

Category	Importance*	Agent	Common Name	Scientific Name
26	I	001	White pine blister rust	<i>Cronartium ribicola</i>
26	I	002	Western gall rust	<i>Peridermium harknessii</i>
26	I	003	Stalactiform blister rust	<i>Cronartium coleosporioides</i>
26	I	004	Comandra blister rust	<i>Cronartium comandrae</i>
26	P	005	Pinyon blister rust	<i>Cronartium occidentale</i>
26	P	011	Bethuli rust	<i>Peridermium bethuli</i>
26	I	012	Limb rust	<i>Peridermium filamentosum</i>
26	n/a	013	Southern cone rust	<i>Cronartium strobilinum</i>
27	n/a	000	Broom rusts	n/a
27	I	001	Spruce broom rust	<i>Chrysomyxa arctostaphyll</i>
27	P	002	Incense cedar broom rust	<i>Gymnosporangium libocedri</i>
27	P	003	Juniper broom rust	<i>Gymnosporangium nidus-avis</i>
27	I	004	Fir broom rust	<i>Melampsorella caryophyllacearum</i>
30	n/a	000	Fire	n/a
30	n/a	031	Wild-fire	<i>n/a</i>
30	n/a	032	Human caused fire	<i>n/a</i>
30	n/a	033	Crown fire damage	<i>n/a</i>
30	n/a	034	Ground fire damage	<i>n/a</i>
40	n/a	000	Animal damage, source unknown	n/a
41	n/a	000	Wild animals	n/a
41	I	001	Bear	<i>n/a</i>
41	I	002	Beaver	<i>n/a</i>
41	I	003	Big game (deer)	<i>n/a</i>
41	I	004	Mice or voles	<i>n/a</i>

Category	Importance*	Agent	Common Name	Scientific Name
41	I	005	Pocket gophers	<i>n/a</i>
41	I	006	Porcupines	<i>n/a</i>
41	I	007	Rabbits or hares	<i>n/a</i>
41	I	008	Sapsucker	<i>n/a</i>
41	I	009	Squirrels	<i>n/a</i>
41	I	010	Woodpeckers	<i>n/a</i>
41	I	011	Moose	<i>n/a</i>
41	n/a	012	Elk	<i>n/a</i>
41	n/a	013	Deer	<i>n/a</i>
41	n/a	014	Feral pigs	<i>n/a</i>
41	n/a	015	Mountain beaver	<i>n/a</i>
41	n/a	016	Deer or elk	<i>n/a</i>
41	n/a	017	Earthworm	<i>Lumbricidae</i>
42	n/a	000	Domestic animals	n/a
42	I	001	Cattle	<i>n/a</i>
42	I	002	Goats	<i>n/a</i>
42	I	003	Horses	<i>n/a</i>
42	I	004	Sheep	<i>n/a</i>
50	n/a	000	Abiotic damage	n/a
50	I	001	Air pollutants	<i>n/a</i>
50	I	002	Chemical	<i>n/a</i>
50	I	003	Drought	<i>n/a</i>
50	I	004	Flooding/high water	<i>n/a</i>
50	I	005	Frost	<i>n/a</i>
50	I	006	Hail	<i>n/a</i>

Category	Importance*	Agent	Common Name	Scientific Name
50	I	007	Heat	<i>n/a</i>
50	I	008	Lightning	<i>n/a</i>
50	I	009	Nutrient imbalances	<i>n/a</i>
50	I	010	Radiation	<i>n/a</i>
50	I	011	Snow/ice	<i>n/a</i>
50	I	013	Wind-tornado	<i>n/a</i>
50	I	014	Winter injury	<i>n/a</i>
50	I	015	Avalanche	<i>n/a</i>
50	I	016	Mud-land slide	<i>n/a</i>
50	I	017	Volcano	<i>n/a</i>
50	<i>n/a</i>	018	Other geologic events	<i>n/a</i>
50	<i>n/a</i>	019	Mechanical (non-human caused)	<i>n/a</i>
60	<i>n/a</i>	000	Competition	<i>n/a</i>
70	<i>n/a</i>	000	Human activities	<i>n/a</i>
70	I	001	Herbicides	<i>n/a</i>
70	I	003	Imbedded objects	<i>n/a</i>
70	I	004	Improper planting technique	<i>n/a</i>
70	I	005	Land clearing	<i>n/a</i>
70	I	006	Land use conversion	<i>n/a</i>
70	I	007	Logging damage	<i>n/a</i>
70	I	008	Mechanical	<i>n/a</i>
70	I	009	Pesticides	<i>n/a</i>
70	I	010	Roads	<i>n/a</i>
70	I	011	Soil compaction	<i>n/a</i>
70	I	012	Suppression	<i>n/a</i>

Category	Importance*	Agent	Common Name	Scientific Name
70	I	013	Vehicle damage	<i>n/a</i>
70	I	014	Road salt	<i>n/a</i>
71	n/a	000	Harvest	n/a
80	n/a	000	Multi-damage (insect / disease)	n/a
80	I	001	Aspen defoliation	<i>n/a</i>
80	I	002	Subalpine fir mortality	<i>n/a</i>
80	n/a	004	Pinion pine decline	<i>n/a</i>
90	n/a	000	Unknown	n/a
99	n/a	000	Physical effects	n/a
99	n/a	001	Broken or top missing	<i>n/a</i>
99	n/a	002	Dead top	<i>n/a</i>
99	n/a	003	Limby (large limbs top to ground)	<i>n/a</i>
99	n/a	004	Forked top	<i>n/a</i>
99	n/a	005	Forked below merch top	<i>n/a</i>
99	n/a	006	Crook or sweep	<i>n/a</i>
99	n/a	007	Checks, bole cracks	<i>n/a</i>
99	n/a	008	Foliage discoloration	<i>n/a</i>
99	n/a	009	Mortality (for plantation surveys only)	<i>n/a</i>
99	n/a	010	Lack of seed source or dieback (for plantation surveys only)	<i>n/a</i>
99	n/a	011	Poor planting stock (for plantation surveys only)	<i>n/a</i>
99	n/a	012	Poor growth/fading/foliage is yellowing and loss of needles is occurring	<i>n/a</i>
99	n/a	013	Total board foot volume loss	<i>n/a</i>

Category	Importance*	Agent	Common Name	Scientific Name
99	n/a	014	Total cubic foot volume loss	<i>n/a</i>
99	n/a	015	Bark removal	<i>n/a</i>
99	n/a	016	Foliage loss	<i>n/a</i>
99	n/a	017	Sunscald	<i>n/a</i>
99	n/a	018	Uproot	<i>n/a</i>
99	n/a	019	Scorched foliage	<i>n/a</i>
99	n/a	020	Scorched bark	<i>n/a</i>
99	n/a	021	Dieback (for plantation surveys only)	<i>n/a</i>
99	n/a	022	Poor crown form	<i>n/a</i>
99	n/a	023	Severe forking	<i>n/a</i>
99	n/a	026	Open wound	<i>n/a</i>
99	n/a	031	Broken or dead branches	<i>n/a</i>
99	n/a	033	Damaged shoots, buds, or foliage (for plantation surveys only)	<i>n/a</i>
99	n/a	034	Excessively deformed sapling	<i>n/a</i>
99	n/a	036	Fire scar	<i>n/a</i>
99	n/a	037	Leaning tree	<i>>15% and self-supporting</i>
99	n/a	038	Charred bark	<i>Not recorded unless cambium is killed from heating</i>

* I – most important, P = present , N = nursery pest

DAMAGE SEVERITY RATINGS

Table 51: Damage severity rating codes

Category	Severity	Description
10	n / a	General insects
10	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected, OR <50% of bole with visible larval galleries
10	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead, OR 50% or more of bole with visible larval galleries
11	n / a	Bark beetles
11	1	Unsuccessful bole attack: pitchout and beetle brood absent
11	2	Strip attacks: galleries and brood present
11	3	Successful current bole attack
11	4	Topkill
11	5	Successful attack last year
11	6	Older dead
12	n / a	Defoliators
12	1	Light defoliation (1-25%), no topkill
12	2	Light defoliation (1-25%), topkill ≤10%
12	3	Light defoliation (1-25%), topkill >10%
12	4	Moderate defoliation (26-75%), no topkill
12	5	Moderate defoliation (26-75%), topkill ≤10%
12	6	Moderate defoliation (26-75%), topkill >10%
12	7	Heavy defoliation (76-100%), no topkill
12	8	Heavy defoliation (76-100%), topkill ≤10%

Category	Severity	Description
12	9	Heavy defoliation (76-100%), topkill >10%
13	n / a	Chewing insects
13	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
13	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
14	n / a	Sucking insects
14	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
14	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
15	n / a	Boring insects
15	1	Minor: bottlebrush or shortened leaders, 0-2 forks on stem, OR <20% of branches affected
15	2	Severe: 3 or more forks on bole, OR 20% or more branches affected, OR terminal leader dead
16	n / a	Seed / cone / flower / fruit insects
16	1	Minor
16	2	Severe
17	n / a	Gallmaker insects
17	1	Minor
17	2	Severe
18	n / a	Insect predators
18	1	Minor
18	2	Severe
19	n / a	General diseases
19	1	Minor

Category	Severity	Description
19	2	Severe
20	n / a	Biotic damage
20	1	Minor
20	2	Severe
21	n / a	Root / butt diseases
21	1	(for individual trees) Tree within 30 feet of tree with deteriorating crown, tree with diagnostic symptoms or signs, or tree killed by root disease
21	2	(for individual trees) Pathogen (sign) or diagnostic symptom detected – no crown deterioration
21	3	(for individual trees) Crown deterioration detected – no diagnostic symptom or signs
21	4	(for individual trees) Both crown deterioration and diagnostic signs symptoms detected
21	5	(for individual trees) Bleeding present on bole
21	6	(for individual trees) Bleeding present on bole and adjacent mortality present
21	7	(for individual trees) Laboratory confirmed Sudden Oak Death
21	G2	(for setting level) Minor evidence of RDS on plot
21	G3	(for setting level) RDS present, canopy reduction less than 20%
21	G4	(for setting level) RDS present, canopy reduction 20-30%
21	G5	(for setting level) RDS present, canopy reduction 30-50%
21	G6	(for setting level) RDS present, canopy reduction 50-75%, most ground area infested
21	G7	(for setting level) RDS present, 76+ % canopy reduction

Category	Severity	Description
21	G8	(for setting level) Entire area infested with RDS, one or very few susceptible overstory trees
21	G9	(for setting level) Entire area infested with RDA, no susceptible overstory trees present
22	n / a	Stem decay / canker
22	0	0-4% rotten
22	1	5-15% rotten
22	2	16-25% rotten
22	3	26-35% rotten
22	4	36-45% rotten
22	5	46-55% rotten
22	6	56-65% rotten
22	7	66-75% rotten
22	8	76-85% rotten
22	9	86-100% rotten
23	n / a	Parasitic / epiphytic plants
23	1	Hawksworth tree DMR rating = 1; light infection
23	2	Hawksworth tree DMR rating = 2; light infection
23	3	Hawksworth tree DMR rating = 3; medium infection
23	4	Hawksworth tree DMR rating = 4; medium infection
23	5	Hawksworth tree DMR rating = 5; heavy infection
23	6	Hawksworth tree DMR rating = 6; heavy infection
23	7	Vine damage: less than 50% of crown involved
23	8	Vine damage: 50% or more of crown involved
24	n / a	Decline complexes / diebacks / wilts

Category	Severity	Description
24	1	Minor: minor crown symptoms
24	2	Severe: severe crown symptoms
25	n / a	Foliage diseases
25	1	Minor: <20% of foliage affected or <20% of crown in brooms
25	2	Severe: >20% of foliage affected or >20% of crown in brooms
26	n / a	Rust Stems
26	1	Branch infections located greater than 2 feet from tree bole
26	2	Branch infections located between 6 inches and 2 feet from tree bole
26	3	Bole infections or branch infections located within 6 inches of bole
26	4	Topkill
27	n / a	Broom rusts
27	1	Minor: <20% of crown in brooms
27	2	Severe: >20% of crown in brooms
30	n / a	Fire
30	1	Minor: <20% of crown affected
30	2	Severe: >20% of crown affected or any damage to the bole
40	n / a	Animal damage, source unknown
40	1	Minor
40	2	Severe
41	n / a	Wild animals

Category	Severity	Description
41	1	Minor: <20% of crown affected, bole damage is <50% circumference
41	2	Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed
41	5	Earthworms are present
41	6	Earthworms are absent
50	n / a	Abiotic damage
50	1	Minor: <20% of crown affected, bole damage is <50% circumference
50	2	Severe: >20% of crown affected, bole damage is >50% circumference, upper 1/3 of crown is killed
60	n / a	Competition
60	1	Minor: tree slightly deformed and has some live, terminal growth
60	2	Severe: tree extremely deformed or has no live terminal, growth severely reduced relative to neighbors
70	n / a	Human activities
70	1	Minor
70	2	Severe
71	n / a	Harvest
71	1	Minor
71	2	Severe
80	n / a	Multi-damage (insect / disease)
80	1	Minor
80	2	Severe
90	n / a	Unknown

Category	Severity	Description
90	0	0 – 9% affected
90	1	10 – 19% affected
90	2	20 – 29% affected
90	3	30 – 39% affected
90	4	40 – 49% affected
90	5	50 – 59% affected
90	6	60 – 69% affected
90	7	70 – 79% affected
90	8	80 – 89% affected
90	9	90 – 100% affected
99	n / a	Physical effects
99	001	Broken top
99	002	Dead top

Table 52: Category 99 damage severity rating codes

Category	Severity	Description	Actual percent of tree affected
99	n / a	Physical effects	n / a
99	001	Broken top	% of original height that is missing; for example, if a tree was originally 100 feet high, but 15 feet of the top is broken or missing; enter “15” in the severity code
99	002	Dead top	% of total tree height that is dead
99	003	Limby (large limbs top to bottom)	% of total tree height with many limbs/knots
99	004	Forked top	% of total tree height above fork
99	005	Forked below merch top	% of the total length of the bole affected

Category	Severity	Description	Actual percent of tree affected
99	006	Crook or sweep	% of total tree height, which contains the crook or sweep
99	007	Checks, bole cracks	% of total tree height, which contains a crack or check
99	008	Foliage discoloration	% of foliage discolored
99	009	Mortality	1 = dead tree
99	010	Lack of seed source	If present, 100%
99	011	Poor planting stock source	If present, 100%
99	012	Poor growth	1 = minor (reduced growth); 2 = severe (affecting survival)
99	013	Total board foot volume loss	% of total board foot volume loss
99	014	Total cubic foot volume loss	% of total cubic foot volume loss
99	015	Bark removal	% of tree circumference missing bark
99	016	Foliage loss	1 = minor; 2 = severe
99	017	Sunscald	1 = minor; 2 = severe
99	018	Uproot	1 = uprooted
99	019	Scorched foliage	% of foliage scorched
99	020	Scorched bark	% of bark scorched
99	021	Dieback source	1 = minor; 2 = severe
99	022	Poor crown form	1 = minor; 2 = severe
99	023	Severe forking	% of bole with forks
99	026	Open wound	% of bole or trunk affected using the height and width of the wound; for example, if a tree is 100 feet tall and the wound covers 15 feet of the bole, enter a value of "15"
99	031	Broken or dead branches	% of branches broken or dead

Category	Severity	Description	Actual percent of tree affected
99	033	Damage shoots, buds, or foliage source	1 = minor; 2 = severe
99	034	Excessively deformed sapling	% of sapling deformed
99	036	Fire scar	% of bole covered by fire scar
99	037	Leaning tree	% lean from vertical
99	038	Charred bark	Not recorded unless cambium is killed from heating

TREE PARTS

Table 53: Tree part codes

Code	Description
UN	Unspecified
TO	Top
FO	Foliar (crown)
LI	Limb
BO	Bole, other than Top or Base
BA	Base
RO	Roots
WT	Whole tree
TT	Top third of crown
MT	Middle third of crown
BT	Bottom third of crown

APPENDIX L: ACCURACY STANDARDS

Table 54: Settings Measurements

Field	Tolerance
Project Name	No errors
Region	No errors
Proclaimed Forest	No errors
District	No errors
Location	No errors
Stand Number	No errors
Ownership	No errors
State	No errors
County	No errors
Administrative Forest	No errors
Date	No errors
Photo ID	No errors
Exam Level	No errors
Exam Purpose	No errors
Stratum	No errors
Existing Vegetation Composition Type	No errors
Potential Vegetation Reference	No errors
Potential Vegetation	No errors
Structure	No errors
Capable Growing Area	± 10 percent
Fuel Model	No errors
Elevation	± 2 contour intervals

Field	Tolerance
Aspect	± 45 degrees
Slope	± 10 percent
Slope Position	± 1 class
Acres	No errors
Radial Growth Interval	No errors
Radial Growth Interval #2	No errors
Height Growth Interval	No errors
Fuel Photo Reference	No errors
Precision Protocol	No errors
Examiner	No errors
Stand Remarks	No errors
Damage Category	No errors
Damage Agent	No errors
Damage Severity	No errors
Species of Management Interest	No errors
Sketch Map and Traverse Notes	n/a

Table 55: Sample Design Criteria

Field	Tolerance
Form Type	n/a
Selection Method Type	No errors
Sample Expansion Factor	No errors
Plots Installed	No errors
Sub-population Filter	No errors
Starting Azimuth	No errors
Sample Design Remarks	No errors

Field	Tolerance
Selection Criteria Number	No errors
Sub-pop Variable	No errors
Sub-pop Minimum Value	No errors
Sub-pop Maximum Value	No errors

Table 56: Plot Data

Field	Tolerance
Plot Number	No errors
Plot Latitude	No errors
Plot Longitude	No errors
Capable Grow Area	± 10 percent
Plot Aspect	± 45
Plot Scope	± 10 percent
Slope Position	± 1 class
Slope Horizontal Shape	± 1 class
Slope Vertical Shape	± 1 class
Plot Elevation	± 2 contour intervals
Existing Vegetation	No errors
Potential Vegetation	Accurate to series understory union and phases
Plot History	No errors
Plot History Date	Year required in field 12 is other than code 10 or blank
Fuel Model	No errors
Residual Descriptive Code	No errors
Distance to Seed Wall	± 100 feet
Plot Remarks	n/a

Table 57: Tree Data

Field	Tolerance
Plot Number	No errors
Tag ID Number	No errors
Tree Status	No errors allowed in recognizing and coding down trees
Site/Growth Trees	No errors
Tree Species	No errors
Tree Count	See specifics in Table 58
Number Stems	No errors
DBH/DRC Intensive Exam	See specifics in Table 59
DBH/DRC Extensive Exam	See specifics in Table 60
DBH/DRC Quick Exam	See specifics in Table 61
Height	10 percent
Height to Crown	10 percent
Radial Growth	1/20 th inch
Radial Growth #2	1/20 th inch
Height Growth	See specifics in Table 62
Tree Age	10 percent (based on actual tree ring count at breast height for trees ≥ 3.0 " DBH otherwise based on total age recorded)
Crown Ratio	10 percent
Crown Class	No errors
Crown Width	No errors
Wildlife Use	No errors

Field	Tolerance
Log/Snag Decay	No errors
Cone Serenity	No errors
Damage Category	No errors, specifics listed in Table 63
Damage Agent	No errors
Damage Part	No errors
Damage Severity	No errors
Tree Remarks	n/a

Table 58: Tree Data, Tree Count

Height Range	Diameter Range	Trees on Point	Tolerance
*All	All	0	0 trees
≤ 0.5 feet	All	1-5	± 2 trees
≤ 0.5 feet	All	6+	± 50 percent
> 0.5 feet	< 0.5 in.	1-5	± 1 tree
> 0.5 feet	< 0.5 in.	6+	± 20 percent
All	.5" – breakpoint DBH	1-5	± 1 tree
All	.5" – breakpoint DBH	6+	± 10 percent
All	Breakpoint DBH +	1+	0 trees

* There is no tolerance for recording a tree when none are actually present in any of the above size classes. The recording of a fixed plot tree when none are present will result in a single discrepancy. The recording of a variable plot tree when none are present will result in an unacceptable unit.

Group criteria are standardized to facilitate stand exam contract inspection and payment. However, distinguishing characteristics other than tree class, species, and size class may warrant individual tree recording or more refined grouping criteria. Such characteristics include: age, crown ratio, crown class, or incident of damage.

Table 59: Tree Data, DBH/DRC Intensive Exam

Tolerance	Diameter
No errors	<.5 inch
± .1 inch	.5 inch – 13.9 inches
± .2 inch	14.0 inches – 23.9 inches
± .3 inch	24.0 inches – 34.9 inches
± .5 inch	35.0 inches +
± .1 inch	Borderline variable plot trees
± .1 inch	Estimated DRC

Table 60: Tree Data, DBH/DRC Extensive Exam

Tolerance	Diameter
± 1 inch	≤ 20 inches
± 5% of diameter	> 20 inches

Table 61: Tree Data, DBH/DRC Quick Exam

Tolerance	Diameter
± 2 inches	≤ 20 inches
± 10% of diameter	> 20 inches

Table 62: Tree Data, Height Growth

Tolerance	Diameter
± 1 foot	Trees > 6 feet
± 0.1 foot	Trees ≤ 6 feet

Table 63: Tree Data, Damage Category

Damage Category	Damage Category Description	Tolerance
11	Bark Beetles	No misses on live trees with a severity of 2 or greater
12	Defoliators	No misses on live trees with a severity of 3 or greater
13-17	Other Insects	No misses of shoot moths or weevils on live trees
21	Root/Butt Diseases	No misses on live trees with a severity of 2 or greater
22	Stem Decays/Cankers	No misses on live trees with a severity of 3 or greater
25	Foliage Diseases	No misses on Elytroderma on live trees
41-42	Animal Damage	No misses on live trees with terminal leader damage or with greater than $\frac{1}{4}$ of bole circumference affected
50	Abiotic Damage	No misses on wind, snow, or ice bending, breakage, or bole cracks and frost damage to shoots on trees less than 1-inch diameter and lightning
70	Human Damage	No misses on live trees for logging damage or fire if the damage affects greater than $\frac{1}{4}$ of the bole circumference or if an open wound is in contact with the ground

Table 64: Ground Surface Cover

Field	Tolerance
Plot Number	No errors
Cover Type	No errors
Cover Percent	± 10 percent

Table 65: Vegetation Composition

Field	Tolerance
Plot Number	No errors
Live/Dead	No errors
Layer	No errors
Life form	No errors
Species	No error in species-level identification for dominant, common, or community type indicator plants; no plant name can be repeated within a layer
Minimum Height	± 10 percent of height
Average Height	± 10 percent of height
Maximum Height	± 10 percent of height
Canopy Cover	± 10 percent
Average Diameter	No errors
Maturity	No errors
Cover Remarks	n/a
User Field	n/a

Table 66: Down Woody

Field	Tolerance
Plot Number	No errors
First Duff	± ½ inch
Second Duff	± ½ inch
Fuel Depth	No errors
Twigs 0 – .24	± 40 percent
Twigs .25 - .99	± 30 percent

Field	Tolerance
Twigs 1.0 – 2.99	± 20 percent
Volume 1	n/a
Weight 1	n/a
Volume 2	n/a
Weight 2	n/a
Volume 3	n/a
Weight 3	n/a
Volume 4	n/a
Weight 4	n/a
Piece Count	No missed pieces
Decay Class	No errors
Diameter	± 1 inch on measurements
Piece Length	No errors

APPENDIX M: GLOSSARY OF TERMS

Table 67: Glossary

Term	Definition
Aspect	A position facing or commanding a given direction; exposure. Aspect is the compass direction of the prevailing slope with respect to true north.
Azimuth	A horizontal angular measure from true north to an object of interest.
Basal Area	The cross-sectional area of the stem or stems of a plant or of all plants in a stand; generally expressed as square units per unit area. For trees, measured at 4.5 feet above ground; forbs and grasses are measure at the root crown

Term	Definition
Bole Length	The straight-line distance measured parallel to the main bole of a tree, from its base to its tip.
Breast Height	A point located on the uphill side of the main stem, by measuring 4.5 feet along the uphill side of the bole from ground level or the predominant root collar. Preclude slight, non-compacted litter accumulations when establishing breast height.
CALVEG	Classification and Assessment with LANDSAT of Visible Ecological Groupings. It is a California-wide system for classifying vegetative and non-vegetative cover types. The primary cover type relates to life form and uses a 3-character alpha code.
Canopy Cover	The percent of a fixed area covered by the crown of an individual plant species or delimited by the vertical projection of its outermost perimeter; small openings in the crown are included.
Compacted Live Crown Ratio	The percent of the total height of the tree that supports a full, live crown. For trees that have uneven length crowns, occularly transfer lower branches to fill holes in the upper portions of the crown, until a full, even crown is created.
Compartment	A land area, usually between 3,000 and 8,000 acres, easily identified on the ground by physical features. A compartment tis comparable in size to a sub-watershed, or landscape management unit. It is used as a convenience for maintaining stand records and planning vegetation management projects.
Crown Class	The relative position of the tree or shrub crown with respect to the competing vegetation around it. Crown class for each tree or shrub is judged in the context of its immediate environment, that is those trees or shrubs which are competing for sunlight with the subject tree or shrub.
Crown Length	The vertical distance from the top of the leader to the base of the crown, measured to the lowest live branch-whorl with live branches in at least three quadrants, and continuous with the main crown.
Crown Ratio	The ratio of compacted live crown length to bole length. Lengths are measured parallel to the bole from the base of the tree to the tip.

Term	Definition
DEM	Digital Elevation Model. USGS geographic elevation data distributed in raster form. Digital representation of the shape of the earth's surface. Typically, digital elevation data consists of arrays of values that represent topographic elevations measured at equal intervals on the Earth's surface.
Diameter	The length of a straight-line segment passing through the center of an item and terminating at its periphery.
Diameter at Breast Height (DBH)	A measure at breast height (4.5 feet), outside bark, of the tree bole, perpendicular to the tree bole.
Diameter at Root Collar (DRC)	The straight line passing through the center of a cross section of a bole measured at the root collar of a shrub or tree.
Down Log	Stem material (conifer or hardwood) that is lying on the ground. If a stem material is leaning more than 45 degrees from vertical, is not self-supporting, and/or in contact with the ground, it is considered a down log.
Down Woody Material	Woody pieces of trees and shrubs that have been uprooted (no longer supporting growth) or severed from their root system, not self-supporting, and are lying on the ground.
Duff Layer	Duff is the fermentation and humus layer of the forest floor. It does not include the freshly cast material in the litter layer. The top of the duff is where needles, leaves, and other cast-off vegetative material have noticeably begun to decompose. Individual particles usually will be bound by fungi mycelium. When moss is present, the top of the duff is just below the green portion of the moss. The bottom of the duff is the start of the soil ("A" horizon).
Elevation	Vertical distance from a datum, usually mean sea level, to a point or object on the earth's surface. Not to be confused with altitude, this refers to points above the earth's surface.
Fuel Bed	The fuel bed is accumulation of dead, woody residue on the forest floor. It begins at the top of the duff layer and above. It includes litter, dead limb wood, and bole wood from tree species, as well as dead material from shrub, herbaceous, and grass species.

Term	Definition
Fuel Model	Mathematical descriptions of fuel properties (e.g., fuel load and fuel depth) that are used as inputs to calculations of fire danger indices and fire behavior potential.
GPS	Global Positioning System. A network of radio-emitting satellites deployed by the U.S. Department of Defense. Ground-based GPS receivers can automatically derive accurate surface coordinates for all kinds of GIS, mapping, and surveying data collection.
Ground Level	The forest floor, made up by soil and duff layer. It does not include unincorporated woody debris that may rise above the ground line. In reference to a point of measure, it is the highest point of the ground touching the base of the object being referenced.
Group Tally	A count of one or more items of the same type or species and recorded as a single line entry.
Growth	A measure of the increase in growth layers for a specified time frame.
Height Growth	The increase in height over a set period of time.
Intersect Diameter	Measurement of diameter at a point where the sampling plane intersects the geometric center of the object being tallied. No adjustment is made for stem irregularities at the point of intersection.
Lean (Tree)	The deflection from vertical, > 15 degrees of a straight line passing through the geometric center of the base and top of the main stem.
Length	The measurement of the extent of something along its greatest dimension.
Life Form	Species and individuals that are grouped into classes on the basis of their similarities in structure and function. A growth form that displays an obvious relationship to important environmental factors.
Limiting Distance	A comparative measurement between the subplot radius and the distance from the subplot center to the center of the object. The comparison is used to determine whether the object is in or out of the fixed area subplot. The object is "IN" if the measured distance is equal to or less than the subplot radius. The object is "OUT" if the measured distance is greater than the subplot radius.

Term	Definition
Live Crown Length	The straight-line distance measured parallel to the main bole of a tree, from the top of the live crown to the base of the live crown.
Ownership	The identification of the legal owner/administrator on both the surface and subsurface estates.
Plant Species	The major subdivision of a genus or subgenus of a plant being described or measured.
Plot Configuration	The size and shape of the sampling unit (plot) and the spatial arrangement of subplots within that unit.
Plot	A sub-sample of a plot or stand exam. This is the unit on which data are recorded to individual trees, snags, logs, understory vegetation, and fuels. Data can be collected on either a fixed area or variable radius area.
Proclaimed Forest	Units of the National Forest System as originally proclaimed or designated by Congress.
Quadratic Mean Diameter	The diameter of the tree of average basal area.
Radial Growth Increment	The increase in tree radius over a period of time at breast height, or occasionally at the base.
Random Sample	Any method of sample selection based on the theory of probability (degree of certainty). At any stage of the operation of selection, the probability of any set of units being selected must be known. It is the only method that can provide a measure of precision of the estimate.
Reconciliation Code	A code used to reflect the status of an individually tallied item with regards to previous surveys.
Slope	A deviation from the horizontal.
Species	A code that represents a fundamental category of taxonomic classification of an organism.
Stand	A spatially continuous group of trees and associated vegetation having similar structures and growing under similar soil and climatic conditions.

Term	Definition
Stand Exam Grid	Basic data collection method for stand exams. It consists of a set of plots, separated by equal distances on a grid pattern. The lines of the grid (transects) are oriented in cardinal directions. There is a predetermined distance between plots. The number of transects and grid plots will vary depending upon the size and shape of the stand.
Stratified Sample	A method of sampling forest resources where stands or polygons of similar properties are lumped into strata. This improves the efficiency of an inventory by reducing the variability within a given population. The less variability there is within a strata, the fewer samples will need to be taken to achieve a statistically valid result.
Stratum	A group of stands within a condition class; similar characteristics such as forest type, tree size class, and canopy density.
Stump	The woody base of a tree remaining in contact with the soil after the trunk or main stem has been severed at a point less than 4.5 feet above ground height (measured on the uphill side).
Tree	A woody perennial plant, typically large, with a single well-defined stem carrying a more or less definite crown.
Tree Age	Total age of the above-ground stem of a tree (not age of the root stock or the total age from seed). Total age is usually the annual ring count to the pith of the tree at breast height plus an estimate of the number of years it took the tree to reach breast height.

APPENDIX N: FUEL MODELS

The original 13 fuel models are from “Aids to Determining Fuel Models for Estimating Fire Behavior,” Hal E. Anderson, INT-122, 1982. The remaining fuel models are from “Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model” by Joe H. Scott and Robert E. Burgan. RMRS – GTR-153. June 2005.

Table 68: Fuel Models

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
1	n/a	Short grass (1 foot)	Grass and grass-dominated	Original 13	0.74	0	0	1
2	n/a	Timber (grass and understory)	Grass and grass-dominated	Original 13	2	1	0.500	1
3	n/a	Tall grass (2.5 feet)	Grass and grass-dominated	Original 13	3.01	0	0	2.50
4	n/a	Chaparral (6 feet)	Chaparral and shrub fields	Original 13	5.01	4.010	2	6
5	n/a	Brush (2 feet)	Chaparral and shrub fields	Original 13	1	0.500	0	2
6	n/a	Dormant brush, hardwood slash	Chaparral and shrub fields	Original 13	1.50	2.500	2	2.50
7	n/a	Southern rough	Chaparral and shrub fields	Original 13	1.13	1.870	1.500	2.50
8	n/a	Closed timber litter	Timber litter	Original 13	1.50	1	2.500	0.20
9	n/a	Hardwood litter	Timber litter	Original 13	2.92	0.410	0.150	0.20
10	n/a	Timber (litter and understory)	Timber litter	Original 13	3.01	2	5.010	1
11	n/a	Light logging slash	Slash	Original 13	1.50	4.51	5.510	1
12	n/a	Medium logging slash	Slash	Original 13	4.01	14.03	16.53	2.30
13	n/a	Heavy logging slash	Slash	Original 13	7.01	23.04	28.05	3

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
91	NB1	Urban/ Developed	Non-burnable	Scott and Burgan	0	0	0	0
92	NB2	Snow/Ice	Non-burnable	Scott and Burgan	0	0	0	0
93	NB3	Agricultural	Non-burnable	Scott and Burgan	0	0	0	0
98	NB4	Open Water	Non-burnable	Scott and Burgan	0	0	0	0
99	NB5	Bare Ground	Non-burnable	Scott and Burgan	0	0	0	0
101	GR1	Short, Sparse Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0	0	0.40
102	GR2	Low Load, Dry Climate (Dynamic)	Grass	Scott and Burgan	0.10	0	0	1
103	GR3	Low Load, Very Coarse, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0.40	0	2
104	GR4	Moderate Load, Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	0.25	0	0	2
105	GR5	Low Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.40	0	0	1.50
106	GR6	Moderate Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.10	0	0	1.50

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
107	GR7	High Load, Dry Climate Grass (Dynamic)	Grass	Scott and Burgan	1	0	0	3
108	GR8	High Load, Very Coarse, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	0.50	1	0	4
109	GR9	Very High Load, Humid Climate Grass (Dynamic)	Grass	Scott and Burgan	1	1	0	5
121	GS1	Low Load, Dry Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.20	0	0	0.90
122	GS2	Moderate load, Dry Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.50	0.500	0	1.50
123	GS3	Moderate Load, Humid Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	0.30	0.250	0	1.80
124	GS4	High Load, Humid Climate Grass-Shrub (Dynamic)	Grass-Shrub	Scott and Burgan	1.90	0.300	0.100	2.10
141	SH1	Low Load, Dry Climate Shrub (Dynamic)	Shrub	Scott and Burgan	0.25	0.250	0	1
142	SH2	Moderate Load, Dry Climate Shrub	Shrub	Scott and Burgan	1.35	2.400	0.750	1
143	SH3	Moderate Load, Humid Climate Shrub	Shrub	Scott and Burgan	0.45	3	0	2.40
144	SH4	Low Load, Humid Climate Timber-Shrub	Shrub	Scott and Burgan	0.85	1.150	0.200	3

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
145	SH5	High Load, Dry Climate Shrub	Shrub	Scott and Burgan	3.60	2.100	0	6
146	SH6	Low Load, Humid Climate Shrub	Shrub	Scott and Burgan	2.90	1.450	0	2
147	SH7	Very High Load, Dry Climate Shrub	Shrub	Scott and Burgan	3.5	5.300	2.200	6
148	SH8	High Load, Humid Climate Shrub	Shrub	Scott and Burgan	2.05	3.400	0.850	3
149	SH9	Very High Load, Humid Climate Shrub (Dynamic)	Shrub	Scott and Burgan	4.50	2.450	0	4.40
161	TU1	Low Load, Dry Climate Timber-Grass-Shrub (Dynamic)	Timber - Understory	Scott and Burgan	0.20	0.900	1.500	0.60
162	TU2	Moderate Load, Humid Climate Timber-Grass-Shrub (Dynamic)	Timber - Understory	Scott and Burgan	0.95	1.800	1.250	1
163	TU3	Moderate Load, Humid Climate Timber-Grass-Shrub (Dynamic)	Timber – Understory	Scott and Burgan	1.10	0.150	0.250	1.30
164	TU4	Dwarf Conifer with Understory	Timber – Understory	Scott and Burgan	4.50	0	0	0.50
165	TU5	Very High Load, Dry Climate Timber-Shrub	Timber – Understory	Scott and Burgan	4	4	3	1
181	TL1	Low Load Compact Conifer Litter	Timber Litter	Scott and Burgan	1	2.200	3.600	0.20

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
182	TL2	Low Load Broadleaf Litter	Timber Litter	Scott and Burgan	1.40	2.300	2.200	0.200
183	TL3	Moderate Load Conifer Litter	Timber Litter	Scott and Burgan	0.50	2.200	2.800	0.30
184	TL4	Small Downed Logs	Timber Litter	Scott and Burgan	0.50	1.500	4.200	0.40
185	TL5	High Load Conifer Litter	Timber Litter	Scott and Burgan	1.15	2.500	4.400	0.60
186	TL6	Moderate Load Broadleaf Litter	Timber Litter	Scott and Burgan	2.40	1.200	1.200	0.30
187	TL7	Large Downed Logs	Timber Litter	Scott and Burgan	0.30	1.400	8.100	0.40
188	TL8	Long-Needle Litter	Timber Litter	Scott and Burgan	5.80	1.400	1.100	0.30
189	TL9	Very High Load Broadleaf Litter	Timber Litter	Scott and Burgan	6.65	3.300	4.150	0.60
201	SB1	Low Load Activity Fuel	Slash-Blowdown	Scott and Burgan	1.50	3	11	1
202	SB2	High Load Activity Fuel or Moderate Load Blowdown	Slash-Blowdown	Scott and Burgan	4.50	4.250	4	1
203	SB3	High Load Activity Fuel or Moderate Load Blowdown	Slash-Blowdown	Scott and Burgan	5.50	2.750	3	1.20

Fuel Model	Fuel Model Code	Fuel Model Name	Fuel Type	Model Set	Fuel 1-hr	Fuel 10-hr	Fuel 100-hr	Fuel Bed Depth
204	SB4	High Load Blowdown	Slash-Blowdown	Scott and Burgan	5.25	3.500	5.250	2.70

Table 69: Detailed Descriptions of the Fuel Models

Code	Detailed Description
1	Contains fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Generally less than one-third of the area contains shrubs or timber. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations. Annual and perennial grasses are included in this fuel model.
2	Herbaceous material with litter and dead-down stem wood from the open shrub or timber overstory. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area. Stand many include clumps and may include pinyon-juniper.
3	Stands are tall, averaging about three feet, but considerable variation may occur. Approximately one-third or more of the stand is considered dead and cured. May include cultivated grains that have not been harvested, tall prairie, and marshland grasses.
4	Stands of mature shrubs, 6 feet or more tall such as California mixed chaparral, the high pocosin along the east coast, the pine barrens of New Jersey, or the closed jack pine stands of the north-central states. Besides flammable foliage, stand may contain dead woody material. May contains a deep litter layer.
5	Shrubs are young with little dead material, and the foliage contains little volatile material. Usually shrubs are short and almost totally cover the area. Young, green stands with no dead wood qualify: laurel, vine maple, alder, or even chaparral, manzanita, or chamise.
6	The shrubs are older, but not as tall as model 4, nor do they contain as much fuel as model 4. This model covers a broad range of shrub conditions: intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. May include hardwood slash that has been cured. Pinyon-juniper shrub lands may be represented.
7	Stands of shrubs are generally between 2 and 6 feet high. Palmetto-galliberry understory, with a pine overstory are typical. Low pocosin may be represented. Black spruce shrub combinations in Alaska may also be represented.

Code	Detailed Description
8	Contains closed canopy stands of short needle conifers or hardwoods that have leafed out. The compact litter layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present. Representative conifer types are white pine, lodgepole pine, spruce, fir, and larch.
9	Both long-needle conifer stands and hardwood stands, especially the oak-hickory types, are typical. Closed stands of long-needled pine like ponderosa, Jeffrey, red pines, or southern pine plantations are grouped in this model. May contain concentrations of dead-down woody material.
10	Dead-down fuels include quantities of 3-inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Any forest type may be considered if heavy down material is present; examples are insect- or disease-ridden stands, wind thrown stands, over-mature situations with deadfall, and aged light thinning or partial cut slash.
11	Contains slash and herbaceous material intermixed with slash. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern pine harvests are considered. Clearcuts generally produce more slash than represented here. The less than 3-inch material load is less than 12 tons per acre. The greater than 3 inch is represented by not more than 10 pieces, 4 inches in diameter, along a 60 foot transect.
12	The visual impression is dominated by slash and much of it is less than 3 inches in diameter. The fuels are well distributed. Heavily thinned conifer stands, clearcuts, and medium or heavy partial cuts are represented. The material larger than 3 inches is represented by encountering 11 pieces, 6 inches in diameter along a 50 foot transect.
13	There is a continuous layer of slash. Large quantities of material larger than 3 inches are present. Clearcuts and heavy partial cuts in mature and over-mature stands are depicted where the slash load is dominated by the greater than 3 inch diameter material. Fuels less than 3 inches are generally only 10 percent of the total load. May include situations where the slash still has "red" needles attached.
91	Land covered by urban and suburban development. The area must not support wildland fire spread. In some cases the area may experience structural fire losses during a wildland fire incident; however, structure ignition in those cases is either house-to-house or by firebrands, neither of which is directly modeled using fire behavior fuel models. If sufficient vegetation surrounds structures such that wildland fire spread is possible, then choose a fuel model appropriate for the wildland vegetation.
92	Land covered by permanent snow and ice. Areas covered by seasonal snow and ice can be mapped to two different fuel models.

Code	Detailed Description
93	Agricultural land maintained in a non-burnable condition, examples include irrigated annual crops, mowed or tilled orchards, and so forth. However, there are many agricultural areas that are not kept in a non-burnable condition. For example, grass is often allowed to grow beneath vines or orchard trees, and wheat and similar crops are allowed to cure before harvest; in those cases use a different fuel model.
98	Land covered by open bodies of water such as lakes, rivers, and oceans.
99	Land devoid of enough fuel to support wildland fire spread. Such areas include: gravel pits, arid deserts with little vegetation, sand dunes, rock outcroppings, beaches, and so forth.
101	The primary carrier of fire in sparse grass, though small amounts of fine fuel may be present. The grass is generally short, either naturally or by grazing, and may be sparse or discontinuous. The moisture extraction is indicative of a dry climate fuelbed, but may also be applied in high-extinction moisture fuelbeds because in both cases predicted spread rate and flame length are low compared to other grass models.
102	The primary carrier of fire is grass, though small amounts of fine dead fuel may be present. Load is greater than 101, and fuelbed may be more continuous. Shrubs, if present, do not affect fire behavior.
103	The primary carrier of fire is continuous, coarse, humid-climate grass. Grass and herb fuel load is relatively light; fuelbed depth is about 2 feet. Shrubs are not present in significant quantity to affect fire behavior.
104	The primary carrier of fire is continuous, dry-climate grass. Load and depth are greater than 102; fuelbed depth is about 2 feet.
105	The primary carrier of fire is humid-climate grass. Load is greater than 103 but depth is lower, about 1-2 feet.
106	The primary carrier of fire is continuous humid-climate grass. Load is greater than 105 but depth is about the same. Grass is less coarse than 105.
107	The primary carrier of fire is continuous dry-climate grass. Load and depth are greater than 104. Grass is about 3 feet tall.
108	The primary carrier of fire is continuous, very coarse, humid-climate grass. Load and depth are greater than 106. Spread rate and flame length can be extreme if grass is fully cured.
109	The primary carrier of fire is dense, tall, humid-climate grass. Load and depth are greater than 108, about 6 feet tall. Spread rate and flame length can be extreme if grass is fully more mostly cured.

Code	Detailed Description
121	The primary carrier of fire is grass and shrubs combined. Shrubs are about 1 foot height, grass load is low. Spread rate is moderate; flame length is low. Moisture of extinction is low.
122	The primary carrier of fire is grass and shrubs combined. Shrubs are 1 to 3 feet high, grass load is moderate. Spread rate is high; flame length moderate. Moisture of extinction is low.
123	The primary carrier of fire is grass and shrubs combined. Moderate grass/shrub load, average grass/shrub depth less than 2 feet. Spread rate is high; flame length moderate. Moisture of extinction is high.
124	The primary carrier of fire is grass and shrubs combined. Heavy grass/shrub load, depth greater than 2 feet. Spread rate high; flame length very high. Moisture of extinction is high.
141	The primary carrier of fire is woody shrubs and shrub litter. Low shrub fuel load, fuelbed about 1 foot; some grass may be present. Spread rate is very low; flame length very low.
142	The primary carrier of fire is woody shrubs and shrub litter. Moderate shrub fuel load (higher than 141), depth about 1 foot, no grass fuel present. Spread rate is very low; flame length low.
143	The primary carrier of fire is woody shrubs and shrub litter. Moderate shrub load, possibly with pine overstory or herbaceous fuel, fuel bed depth 2 to 3 feet. Spread rate is low; flame length low.
144	The primary carrier of fire is woody shrubs and shrub litter. Low to moderate shrub and litter load, possibly with pine overstory, fuel bed depth about 3 feet. Spread rate is high; flame length moderate.
145	The primary carrier of fire is woody shrubs and shrub litter. Heavy shrub load, depth 4-6 feet. Spread rate is very high; flame length very high. Moisture of extinction is high.
146	The primary carrier of fire is woody shrubs and shrub litter. Dense shrubs, little or no herbaceous fuel, fuelbed depth about 2 feet. Spread rate is high; flame length high.
147	The primary carrier of fire is woody shrubs and shrub litter. Very heavy shrub load, depth 4 to 6 feet. Spread rate lower than 146, but flame length similar. Spread rate is high, flame length is very high.
148	The primary carrier of fire is woody shrubs and shrub litter. Dense shrubs, little or no herbaceous fuel, fuelbed depth about 3 feet. Spread rate is high; flame length high.

Code	Detailed Description
149	The primary carrier of fire is woody shrubs and shrub litter. Dense, finely branched shrubs with significant fine dead fuel, about 4 to 6 feet tall; some herbaceous fuel may be present. Spread rate is high; flame length is very high.
161	The primary carrier of fire is low load of grass and/or shrub with litter. Spread rate is low; flame length is low.
162	The primary carrier of fire is moderate litter load with shrub component. High extinction moisture. Spread rate is moderate; flame length is low.
163	The primary carrier of fire is moderate forest litter. High extinction moisture. Spread rate is high; flame length is moderate.
164	The primary carrier of fire is short conifer trees with grass or moss understory. Spread rate is moderate; flame length is moderate.
165	The primary carrier of fire is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length is moderate.
181	The primary carrier of fire is compact forest litter. Light to moderate loads, fuels 1 to 2 inches deep. May be used to represent a recently burned forest. Spread rate is very low; flame length is very low.
182	The primary carrier of fire is broadleaf (hardwood) litter. Low load, compact broadleaf litter. Spread rate is very low; flame length is very low.
183	The primary carrier of fire is moderate load conifer litter, light load of coarse fuels. Spread rate is very low; flame length low.
184	The primary carrier of fire is moderate load of fine litter and coarse fuels. Includes small diameter downed logs. Spread rate is low; flame length low.
185	The primary carrier of fire is high load of fine litter; light slash or mortality fuel. Spread rate is low; flame length low.
186	The primary carrier of fire is moderate load broadleaf litter, less compact than 182. Spread rate is very moderate; flame length is low.
187	The primary carrier of fire is heavy load of forest litter, includes large diameter downed logs. Spread rate is low; flame length low.
188	The primary carrier of fire is moderate load long-needle pine litter, may include small amount of herbaceous load. Spread rate is moderate; flame length low.
189	The primary carrier of fire is very high load, fluffy broadleaf litter. This can also be used to represent heavy needle-drape. Spread rate is very moderate; flame length moderate.

Code	Detailed Description
201	The primary carrier of fire is light dead and down activity fuel. Fine fuel load is 10 to 20 t/ac weighted towards fuels 1 to 3 inch diameter class; depth is less than 1 foot. Spread rate is moderate; flame length moderate.
202	The primary carrier of fire is moderate dead and downed activity fuel or light blowdown. Fine fuel load is 7 to 12 t/ac, evenly distributed across 0 to 0.25, 0.25 to 1, and 1 to 3 inch diameter classes, depth is about 1 foot. Blowdown is scattered, with many trees still standing. Spread rate is moderate; flame length moderate.
203	The primary carrier of fire is heavy dead and down activity fuel or moderate blowdown. Fine fuel load is 7 to 12 t/ac, weighted toward 0 to 0.25 inch diameter class, depth is more than 1 foot. Blowdown is moderate; trees compacted to near the ground. Spread rate is high; flame length high.
204	The primary carrier of fire is heavy blowdown fuel. Blowdown is total, fuelbed is not compacted, most foliage and fine fuel still attached to blowdown. Spread rate is very high; flame length very high.

SPECIES REQUIRING DRC

The following tree species require a measurement at “root collar” (DRC) instead of at “breast height” (DBH).

Table 70: Detailed Descriptions of the Fuel Models

Code	Common Name	Scientific Name
ACGL	Rocky Mountain maple	<i>Acer glabrum</i>
ACGR3	Bigtooth maple	<i>Acer grandidentatum</i>
ACNE2	Boxelder	<i>Acer negundo</i>
ALIN2	Gray alder	<i>Alnus incana</i>
ALINT	Thinleaf alder	<i>Alnus incana</i> ssp. <i>tenuifolia</i>
ALOB2	Arizona alder	<i>Alnus oblongifolia</i>
ARAR2	Arizona madrone	<i>Arbutus Arizonica</i>
ARXA80	Texas Madrone	<i>Arbutus xalapensis</i>
ARPR	Pringle manzanita	<i>Arctostaphylos pringlei</i>
CEIN7	Littleleaf mountain mahogany	<i>Cercocarpus intricatus</i>

Code	Common Name	Scientific Name
CELAR	Netleaf hackberry	Celtis laevigata var. reticulate
CELE3	Curl-leaf mountain mahogany	Cercocarpus ledifolius
CEMO2	Alderleaf mountain mahogany	Cercocarpus montanus
CEMOP	Hairy mountain mahogany	Cercocarpus montanus var. paucidentatus
COSE16	Redosier dogwood	Cornus sericea
COSES	Redosier dogwood	Cornus sericea ssp.sericea
CUAR	Arizona cypress	Cupressus arizonica
FRVE2	Velvet ash	Fraxinus velutina
FRGO	Goodding's ash	Fraxinus goddingii
JUCO11	Redberry juniper	Juniperus coahuilensis
JUCO6	Common juniper	Juniperus communis
JUCOD	Common juniper	Juniperus communis var. depressa
JUDE2	Alligator juniper	Juniperus deppeana
JUMA	Arizona walnut	Juglans major
JUMO	Oneseed juniper	Juniperus monosperma
JUNIP	Juniper	Juniperus
JUOS	Utah juniper	Juniperus osteosperma
JUPI	Pinchot's juniper	Juniperus pinchotii
JUSC2	Rocky Mountain juniper	Juniperus scopulorum
PIDI3	Border pinyon	Pinus discolor
PIED	Twoneedle pinyon	Pinus edulis
PIMO	Singleleaf pinyon	Pinus monophylla
PIMOM2	Singleleaf pinyon	Pinus monophylla var. monophylla
PLWR2	Arizona sycamore	Platanus wrightii

Code	Common Name	Scientific Name
PROSO	Mesquite	Prosopis L.
QUAR	Arizona white oak	Quercus arizonica
QUCH2	Canyon live oak	Quercus chrysolepis
QUEM	Emory oak	Quercys emoryi
QUERC	Oak	Quercus
QUGA	Gambel oak	Quercus gambelii
QUGR3	Gray oak	Quercus grisea
QUHY	Silverleaf oak	Quercus hypoleucoides
QUOB	Mexican blue oak	Quercus oblongifolia
QUPA4	Quercus pauciloba	Quercus pauciloba
QURU4	Netleaf oak	Quercus rugose
QUTO2	Toumey oak	Qurecus toumeyi
QUTU2	Sonoran scrub oak	Quercus turbinella
RONE	New Mexico locust	Robinia neomexicana
RONEN	New Medico locust	Robinia neomexicana var. neo Mexicana
SAAM2	Peachleaf willow	Salix amygdaloides
SABE2	Bebb willow	Salix bebbiana
SABO	Bonpland willow	Salix bonplandiana
SAEX	Narrowleaf willow	Salix exigua
SAGL	Grayleaf willow	Salix glauca
SAGO	Goodding's willow	Salix gooddingii
SALA6	Arroyo willow	Salix lasiolepis
SALI	Strapleaf willow	Salix liguligolia
SALIX	Willow	Salix
SALU	Shining willow	Salix lucida

Code	Common Name	Scientific Name
SALUC	Greenleaf willow	Salix lucida ssp. Caudata
SALUL	Pacific willow	Salix lucida ssp. lasiandra
SAMO2	Park willow	Salix monticola
SAPL2	Diamondleaf willow	Salix planifolia
SASC	Scouler's willow	Salix scouleriana
SATA	Yewleaf willow	Salix taxifolia
TAMAR2	Tamarisk	Tamarix
VACAP	Arizona rosewood	Vauquelina californica ssp. Pauciflora