

**\*\*11/4/03 DRAFT\*\***

**Fire Regime Condition Class (FRCC) Interagency Handbook  
Reference Conditions**

**Modeler:** Kelly Pohl

**Date:** 9/23/03

**PNVG Code:** PPIN6

**Potential Natural Vegetation Group:** Ponderosa Pine

**Geographic Area:** Southern Rockies

**Description:** Occurs in foothills and montane zones of southern Rockies on gentle to moderately steep terrain, especially on south-facing slopes. Bordered toward lower elevations by grassland or shrubland communities; bordered toward higher elevations by ponderosa pine-Douglas-fir or other mixed conifer types. Douglas-fir can be found in this PNVG.

**Fire Regime Description:** Fire Regime Group I. Dominated by surface fire and mixed-intensity fire regimes, with moderately frequent return intervals. Frequent surface fires maintain open types and reduce density in closed types. Mosaic fires create large openings. Note that there is some disagreement about the role of mixed-intensity fires in this type.

**Vegetation Type and Structure**

Class	Percent of Landscape	Description
A: post replacement	15	Openings dominated by grass, oak, and mountain mahogany from post stand-replacement fire. Some openings may persist.
B: mid-development closed	10	>30% canopy cover dominated by sapling-pole ponderosa pine, Douglas-fir, or Abies spp.
C: mid- open	15	<30% canopy cover consisting of sapling-pole ponderosa pine. Shub species may be present.
D: late- open	45	<30% canopy cover consisting of large-diameter ponderosa pine. Some persistent old growth may be included. Shrub species may be present.
E: late- closed	15	>30% canopy cover of ponderosa pine, Douglas-fir, and Abies spp.
Total	100	

**Fire Frequency and Severity**

Fire Frequency-Severity	Modeled Probability	Percent, All Fires	Description
Replacement Fire	.005	15	Rare replacement fire, mostly in B and E.
Non-Replacement Fire	.023	85	80% surface fire in C and D. Occasional (20%) mosaic fire in all classes.
All Fire Frequency*	.028	100	

\*Sum of replacement fire and non-replacement fire probabilities.

**References**

Allington, Catherine. 1998. Fire history and landscape pattern in the Sangre de Cristo Mountains, Colorado. PhD Dissertation, Department of Forest Sciences, Colorado State University, Fort Collins, Colorado. 55 p.

Allen, Robert B., and Peet, Robert K. 1990. Gradient analysis of forests in the Sangre de Cristo Range, Colorado. *Canadian Journal of Botany* 68: 193-201.

Allen, Robert B., Peet, Robert K., and Baker, William L. 1991. Gradient analysis of latitudinal variation in southern Rocky Mountain forests. *Journal of Biogeography* 18: 123-139.

Baker, William L., and Ehle, Donna. 2001. Uncertainty in surface fire history: the case of ponderosa pine forests in the western United States. *Canadian Journal of Forest Research* 31: 1205-1226.

Brown, James K.; Smith, Jane Kapler, eds. 2000. *Wildland fire in ecosystems: effects of fire on flora*. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

Brown, Peter M., Kaufmann, Merrill R., and Shepperd, Wayne. 1999. Long-term, landscape patterns of past fire events in a montane ponderosa pine forest of central Colorado. *Landscape Ecology* 14: 513-532.

Brown, Peter M., Ryan, Michael G., and Andrews, Thomas G. 2000. Historical fire frequency in ponderosa pine stands in Research Natural Areas, central Rocky Mountains and Black Hills, USA. *Natural Areas Journal* 20: 133-139.

Brown, Peter M., and Shepperd, Wayne D. 2001. Fire history and fire climatology along a 5 degree gradient in latitude in Colorado and Wyoming, USA. *Palaeobotanist* 50: 133-140.

Donnegan, Joseph A., Veblen, Thomas T., and Sibold, Jason S. 2001. Climatic and human influences on fire history in Pike National Forest, central Colorado. *Canadian Journal of Forest Research* 31: 1526-1539.

Huckaby, Laurie S., Kaufmann, Merrill R., Stoker, Jason M., and Fornwalt, Paul J. 2001. Landscape patterns of montane forest age structure relative to fire history at Cheesman Lake in the Colorado Front Range. In: Vance, Regina K., Edminster, Carleton B., Covington, W. Wallace, and Blake, Julie A., comps. *Ponderosa pine ecosystem restoration and conservation: steps toward stewardship: 2000 April 25-27*. Flagstaff, AZ. Proceedings RMRS-P-22. Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station: 19-27.

Kaufmann, Merrill R., Huckaby, Laurie, and Gleason, Paul. 2000. Ponderosa pine in the Colorado Front Range: Long historical fire and tree recruitment intervals and a case for landscape scale heterogeneity. In: *Proceedings, Joint Fire Science Conference and Workshop*: Boise, ID, June 1999, Vol 1: 153-160.

Kaufmann, Merrill R., Regan, Claudia M., and Brown, Peter M. 2000. Heterogeneity in ponderosa pine/Douglas-fir forests: age and size structure in unlogged and logged landscapes of central Colorado. *Canadian Journal of Forest Research* 30: 698-711.

Kaufmann, Merrill R., Fornwalt, Paula J., Huckaby, Laurie S., and Stoker, Jason M. 2001. Cheesman Lake—A historical ponderosa pine landscape guiding restoration in the South Platte Watershed of the Colorado Front Range. In: Vance, Regina K., Edminster, Carleton B., Covington, W. Wallace, and Blake, Julie A., comps. *Ponderosa pine ecosystem restoration and conservation: steps toward stewardship: 2000 April 25-27*. Flagstaff, AZ. Proceedings RMRS-P-22. Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station: 9-18.

Kaufmann, Merrill R., Huckaby, Laurie S., Fornwalt, Paula J., Stoker, Jason M., and Romme, William H. In press. Using tree recruitment patterns and fire history to guide restoration of unlogged ponderosa pine/Douglas-fir landscape in the southern Rocky Mountains after a century of fire suppression. *Forestry* (in press).

Peet, Robert K. 1978. Latitudinal variation in southern Rocky Mountain forests. *Journal of Biogeography* 5: 275-289.

Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p. + CD.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, Available online (15 August 2003): <http://www.fs.fed.us/database/feis/>.

Veblen, Thomas T., Kitzberger, Thomas T., Donnegan, Joseph. 2000. Climatic and human influences on fire regimes in ponderosa pine forests in the Colorado Front Range. *Ecological Monographs* 10(4): 1178-1195.

PERSONAL COMMUNICATION:

Kaufmann, Merrill R. US Department of Agriculture, Forest Service, Rocky Mountain Research Station. September 5, 2003.

Brown, Peter. Rocky Mountain Tree-Ring Research, Inc. September 8, 2003.

# VDDT Results



