

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

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

Modeler: Doug Havlina

Date: 8/29/03

PNVG Code: WSAG2

Potential Natural Vegetation Group: Warm sagebrush (Wyoming big sagebrush) with Trees.

Geographic Area: Pacific Northwest, Columbia Plateau, Northern Rockies, Central Rockies, Great Basin, California.

Description: Wide-ranging potential natural vegetation group common to Basin and Range province, extending into the Pacific Northwest and east into the central Rockies. Wyoming big sagebrush usually occupies foothills, terraces, slopes and plateaus. Soils are generally shallow and well drained. These relatively arid sites may abut ponderosa pine, juniper species, pinyon species, xeric sagebrush, and grasslands across its range. Pinyon and juniper species are the most common encroaching species, although ponderosa pine may move into some moister Wyoming sage sites. Due to resource limitations, Wyoming big sagebrush communities have fewer understory species relative to other big sagebrush subspecies.

Fire Regime Description: Fire Regime Groups III (35-100+ year, mixed severity), and IV (35-100+, stand replacement).

Vegetation Type and Structure

Class	Percent of Landscape	Description
A: post replacement	15	Post-fire community of forbs and perennial grasses
B: mid-development closed	5	Mid-seral, dense (>15%) canopy cover sagebrush stands with understory of forbs and grasses. Sapling to pole sized encroaching pinyon and/or juniper species present.
C: mid- open	10	Mid-seral, open (<15%) sagebrush community with perennial grasses and forbs in interspaces. Sapling to pole sized encroaching pinyon and/or juniper present.
D: late- open	50	Late-seral, open (<15%) sagebrush community

		with limited shrub/herbaceous community. Scattered mature juniper or pinyon species on safe sites protected from fire.
E: late- closed	20	Late-seral, closed (>15%) sagebrush community, noticeable dead component, with limited shrub/herbaceous community. Scattered mature juniper or pinyon species on safe sites protected from fire.
Total	100	

Fire Frequency and Severity

Fire Frequency- Severity	Modeled Probability	Pct, All Fires	Description
Replacement Fire	.00766	46	Crown fire in stages B and E resetting succession to bunchgrass/forb community
Non-Replacement Fire	.009	54	Mosaic fire in stages B, C and D creating or maintaining open sagebrush structure
All Fire Frequency*	.0166	100	

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

References

Agee, James K. 1994. Fire and Weather Disturbances in Terrestrial Ecosystems of the Eastern Cascades. Gen. Tech. Rep. PNW-GTR-320. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 37 p.

Anderson, Hal E. 1982. Aids to Determining Fuel Models For Estimating Fire Behavior. Gen. Tech. Rep. INT-122. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 22 p.

Arno, Stephen F. 2000. Fire in western forest ecosystems. In: Brown, James K.; Kapler-Smith, Jane, eds. 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: 97-120.

Barrett, Stephen, W., Arno, Stephen F., and Menakis, James P. 1997. Fire Episodes in the Inland Northwest (1540-1940) Based on Fire History Data. Gen. Tech. Rep. INT-GTR-370. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 17 p.

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.

Everett, Richard L., and Ward, Kenneth. 1984. Early Plant Succession on Pinyon-Juniper Controlled Burns. *Northwest Science*, Vol. 58, No. 1. p. 57-68.

Franklin, J.F., and Dyrness, C.T. 1973. *Vegetation of Oregon and Washington*. Research Paper PNW-80. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. 216 p.

Hall, Frederick C. 1980. Fire History – Blue Mountains, Oregon. Presented at: Fire History Workshop, University of Arizona, Tucson, AZ.

Hardy, Colin C., Kirsten M. Schmidt, James P. Menakis, R. Neil Samson. 2001. Spatial data for national fire planning and fuel management. *Int. J. Wildland Fire*. 10(3&4): 353-372.

Hironaka, M., Fosberg, M.A., and Winward, A.H. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. *University of Idaho, College of Forestry, Wildlife, and Range Sciences Bulletin Number 35*. 44 p.

Johnson, C.G., and Simon, S.A. 1987. Plant Associations of the Wallowa-Snake Province. U.S. Forest Service Region 6 Ecological Technical Paper 255A-86.

Kilgore, B.M. 1981. Fire in ecosystem distribution and structure: western forests and scrublands. p. 58-89. In: H.A. Mooney et al. (Technical Coordinators). *Proceedings: Conference on Fire Regimes and Ecosystem Properties*, Honolulu, 1978. Gen. Tech. Rep. WO-GTR-26.

Kuchler, A.W. 1964. *Potential Natural Vegetation of the Conterminous United States*. American Geographic Society Special Publication No. 36. 116 p.

McKenzie, Donald, Peterson, David L., and Agee, James K. 2000. Fire Frequency in the Interior Columbia River Basin: Building Regional Models from Fire History Data. *Ecological Applications*, 10(5), 2000. p. 1497-1516.

Miller, Rick, Baisan, Chris, Rose, Jeff, and Pacioretty, Dave. 2001. Pre-and Post-Settlement Fire Regimes in Mountain Big Sagebrush and Aspen: The Northwestern Great Basin. Final Report to the National Interagency Fire Center. 28 p.

Ogle, Karen, and DuMond, Valerie. 1997. *Historical Vegetation on National Forest Lands in the Intermountain Region*. U.S. Department of Agriculture, Forest Service, Intermountain Region, Ogden, UT. 129 p.

Ott, Jeffrey, E., McArthur, E. Durant, and Sanderson, Stewart C. 2001. Plant Community Dynamics of Burned and Unburned Sagebrush and Pinyon-Juniper Vegetation in West-Central Utah. In: Proceedings, USDA Forest Service RMRS-P-9. p. 177-190.

Platou, Karen A. 1985. Plant Successional Patterns on Seral Sagebrush/Grass Ranges in Northern Nevada. M.S. Thesis, University of Nevada, Reno. 105 p.

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.

Soule', Peter T., and Knapp, Paul A. 1999. Western juniper expansion on adjacent disturbed and near-relict sites. J. Range Manage. 52:525-533. September 1999.

Soule' Peter T., and Knapp, Paul A. 2000. *Juniperus occidentalis* (western juniper) establishment history on two minimally disturbed research natural areas in central Oregon. Western North American Naturalist (60)1, p. 26-33.

Stein, Steven J. 1988. Fire History of the Paunsaugunt Plateau in Southern Utah. Great Basin Naturalist. Vol. 48, No. 1. p. 58-63.

Tausch, Robin J., and West, Neil E. 1987. Differential Establishment of Pinyon and Juniper Following Fire. The American Midland Naturalist 119(1). p. 174-184.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [Access Date: 8/28/03].

USDI Bureau of Land Management, Idaho State Office. 1999. Proceedings: Sagebrush Steppe Ecosystems Symposium. (Entwistle, Patricia G., DeBolt, Ann M., Kaltenecker, Julianne H., and Steenhof, Karen [Compilers]). Publication No. BLM/ID/PT-001001+1150. 145 p.

Wall, Travis G., Miller, Richard F., and Svejcar, Tony J. 2001. Juniper encroachment into aspen in the Northwest Great Basin. J. Range Manage. 54:691-698. November 2001.

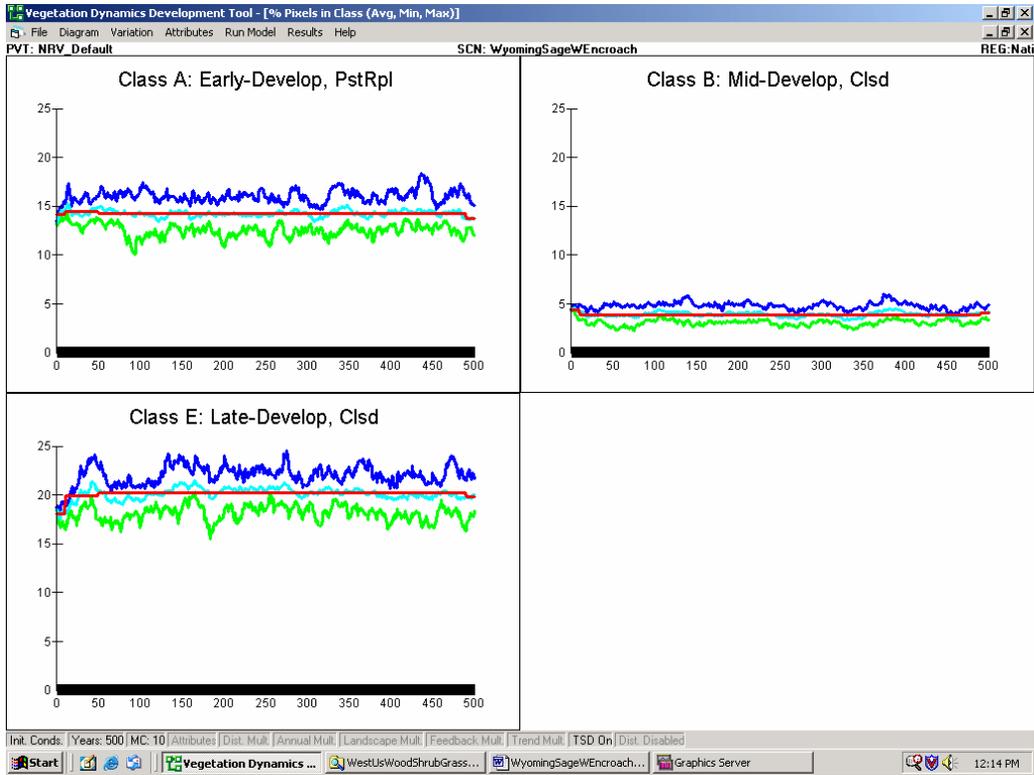
Ward, Kenneth V. 1977. Two-Year Vegetation Response and Successional Trends for Spring Burns in the Pinyon-Juniper Woodland. M.S. Thesis, University of Nevada, Reno. 54 p.

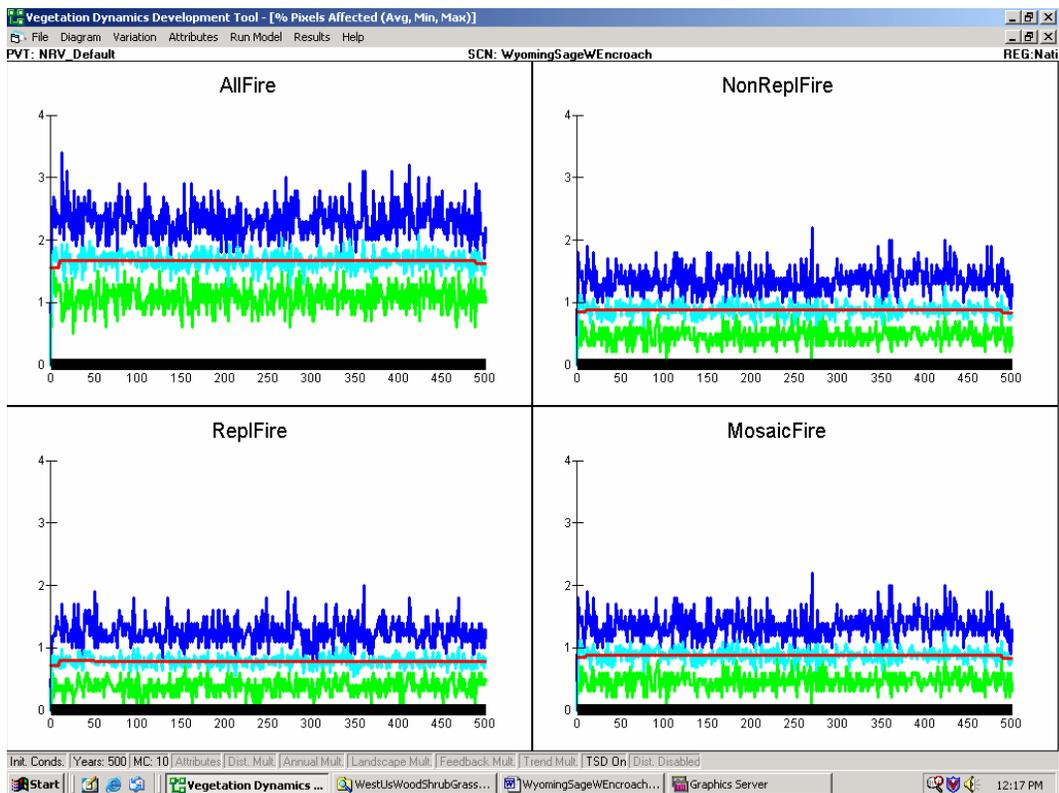
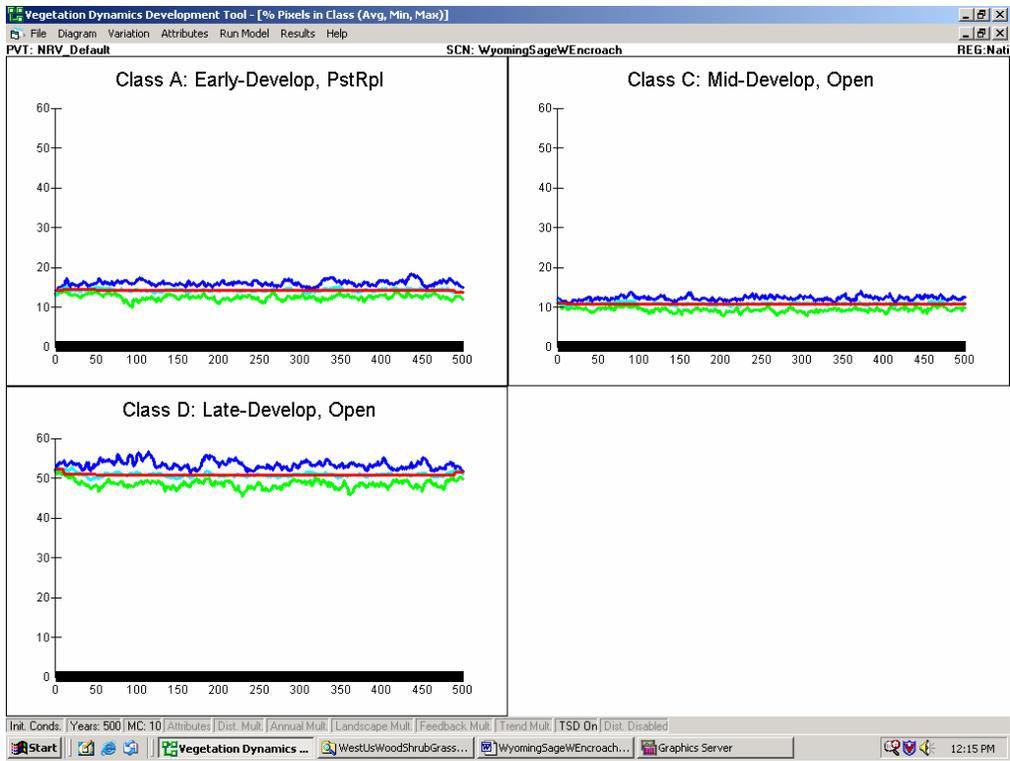
Wright, Henry A., Neuenschwander, Leon F., and Britton, Carlton M. 1979. The role and use of fire in Sagebrush-Grass and Pinyon-Juniper Plant Communities. Gen. Tech. Rep. INT-GTR-58. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 48 p.

Young, James A., and Evans, Raymond A. 1981. Demography and Fire History of a Western Juniper Stand. *J. Range Manage.* 34:501-505. November 1981.

Young, James A., and Evans, Raymond A. 1978. Population Dynamics after Wildfires in Sagebrush Grasslands. *J. Range Manage.* 31:283-289. July 1978.

VDDT Results





Photographs:
Landscape CC1

Landscape CC2

Landscape CC3

Landscape-Current

Landscape-Historical

Class A – Early Development

Class B – Mid-Development Closed

Class C – Mid-Development Open

Class D – Late Development Open

Class E – Late Development Closed