

# Appendix Q. Fire Regime and Vegetation Condition

This appendix provides an overview of fire regime groups and descriptions, fire regime condition classifications, and a general description of the condition of corresponding vegetation types.

**Table Q.1. Fire Regime Groups and Descriptions**

Group	Frequency	Severity	Severity Description
I	0-35 years	Low/mixed	Generally low-severity fires replacing less than 75% of the dominant over story vegetation; can include mixed-severity fires that replace up to 75% of the over story
II	0-35 years	Replacement	High-severity fires replacing greater than 75% of the dominant over story vegetation
III	35-200 years	Mixed/low	Generally mixed-severity; can also include low-severity fires
IV	35-200 years	Replacement	High severity fires
V	200+ years	Replacement/any severity	Generally replacement-severity; can include any severity type in this frequency range
Source: DOI and The Nature Conservancy 2008			

**Table Q.2. Fire Regime Condition Classifications**

Condition Class	Severity Description
1	For the most part, fire regimes in this fire condition class are within historical ranges. Vegetation composition and structure are intact. Therefore, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.
2	Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.
3	Fire regimes on these lands have been substantially altered from their historical return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure, and diversity have been substantially altered.
Source: DOI and The Nature Conservancy 2008	

The tables below are an estimate of vegetative conditions based on data from Existing Vegetation, Fire Regimes, and Fire Regime Condition Class (FRCC) from regional LANDFIRE data on biophysical settings (BpS model), as well as estimates from on the ground conditions. The BpS model describes the vegetation, geography, biophysical characteristics, succession stage, disturbance regime, and assumptions. It is designed to accompany the quantitative state and transition models.

**Table Q.3. Forest and Woodland Fire Regime Groups, Fire Regime Condition Classifications, and Vegetation Structure and Health in the Planning Area**

Vegetation Type	FRCC Description	Fire Regime Group	Landscape Level FRCC	Vegetation Structure and Health
Forest (inclusive of major forest types; lodgepole pine and Douglas fir)	Stand replacement fires dominate FRG IV. The FRCC for the forested communities is displaying indicators of moderate departure from reference conditions and is within the timeline where stand replacement fire would return the communities to a vegetative state dominated by perennial grass and forbs with tree seedlings. Some of these indicators include insect and disease outbreaks and fuel loading associated with a mature forest stand. Some areas of the planning area that point within the timeline may have been altered by changes in the fuel loading by logging and fuels reduction activities, as well as historic fire suppression.	IV	2	<p><b>Lodgepole Pine Structure:</b> Mid-development with Mid–open to Closed canopy 21 to 100 percent moderate to dense pole-sized trees sometimes very dense (dog hair) trees.</p> <p><b>Health:</b> Fire regime of replacement severity – high (35-100 years). Very dense tree stands are more susceptible to disease and insect infestations.</p> <p><b>Douglas Fir Structure:</b> Mid-development closed to open canopy, canopy closure is 10 percent to greater than 35 percent, with small trees to late development with large trees with mixed understory of grass and scattered shrubs. Some stands of Douglas Fir showing old growth characteristics are specific areas.</p> <p><b>Health:</b> Fire Regime of replacement severity – high (35-100 years) high number of trees per acre more susceptible to disease and insect infestations.</p>
Woodlands (inclusive of major woodland types; juniper, aspen and limber pine)	The majority of woodlands fall within FRG IV with isolated woodland stands in rock outcrops falling within FRG V. FRCC 2 is indicative of the woodland communities having moderate departure from reference conditions. Indicators for this FRCC include encroachment of conifers into mature to decadent aspen stands and encroachment of juniper and limber pine out from historic rocky and shallow-soiled sites into shrub habitat.	IV and V	2	<p><b>Juniper Structure:</b> Mid development open class, canopy 21-40 percent, and trees established usually short and widely spaced.</p> <p><b>Health:</b> Fire frequency 35-100+ years. This class last until trees are approximately 100 years old then succeeds to vegetative class with trees greater than 100 years of age.</p> <p><b>Aspen Structure:</b> Mid development closed canopy 41-100 percent; dense, pole six trees in this class. Succession to different class after 50 years. Less forb and shrub cover in understory.</p> <p><b>Health:</b> Succession to different class after 50 years. Less forb and shrub cover in understory in this class.</p> <p><b>Limber Pine Structure:</b> Mid development open canopy 21-40 percent; trees established usually short and widely spaced.</p>

Vegetation Type	FRCC Description	Fire Regime Group	Landscape Level FRCC	Vegetation Structure and Health
				<p><i>Health:</i> Fire frequency 35-100+ years. This class last until trees are approximately 100 years old then succeeds to vegetative class with trees greater than 100 years of age.</p>
<p>Source: LANDFIRE 2010                      FRG Fire Regime Group                      FRCC Fire Regime Condition Class</p>				

**Table Q.4. Grasslands and Shrubland Fire Regime Groups, Fire Regime Condition Classifications, and Vegetation Structure and Health in the Planning Area**

Vegetation Type	Dominant Fire Regime Group	Estimated Landscape Level FRCC	FRCC Description	Vegetation Structure and Health
Grasslands	I	FRCC 1: 34 percent FRCC 2: 26 percent FRCC 3: 41 percent	Grasslands within the Lander Field Office would historically have experienced fire return interval of 25 years across the landscape. These areas have an altered fuel loading due to a combination of factors including historic and current livestock grazing, human infrastructure and fire suppression. Fire frequency within this vegetative type is far less than would have occurred historically, though the potential loss of key ecosystem components is minimal. Vegetation composition and structure has been significantly altered in FRCC 3 areas.	<p><b>FRCC 1 Structure:</b> Early development class – shrub cover minimal or non-existent, bare ground 10-30 percent, vegetative canopy 0-30 percent (forb cover 10-40 percent, grasses 60-90 percent), maintains vegetation in early development, mixed severity fire (0-37 years) does not change successional age.</p> <p><b>Health:</b> Replacement fire frequency 75 years. Forb density and cover responsive to climatic conditions, in rare flood events (500-year). Moves vegetation to more shrubby condition mid-development, closed after down cutting.</p> <p><b>FRCC 2 Structure:</b> Mid development open to closed class – mostly stable and resilient system with moderate canopy closure, total canopy cover 25-80 percent (grasses greater than 85 percent, forbs 0-5, shrubs 0-10 percent).</p> <p><b>Health:</b> Replacement fire frequency of 75 years, causes transition back to early development class; recurring drought would thin vegetation and keep canopy open.</p> <p><b>FRCC 3 Structure:</b> Late development open to closed class – closed canopy of grasses forbs and shrubs; total cover greater than 85 percent (grasses 25-50 percent, forbs 0-5 percent, shrubs 10-75 percent, 10 percent in transition to shrub or tree dominated communities), mixed fire 35 years moving to mid-development class.</p> <p><b>Health:</b> Replacement fire frequency 75 years. Extended drought would cause transition back to mid-development class with thinning of shrubs; flooding every 100 years would cause transition to early development class.</p>
Sagebrush Shrublands	IV	FRCC 1: 16 percent FRCC 2: 48 percent FRCC 3: 35 percent	Sagebrush shrublands within the Lander Field Office are generally dominated by mature to decadent sagebrush with a secondary component of grass. Depending upon their location within the Lander Field Office,	<p><b>FRCC 1 Structure:</b> Early development Sagebrush cover 0-15 percent (area depending if basin big sagebrush, Wyoming big sagebrush and/or mountain big sagebrush), generally grass dominated with herbaceous cover 30-50 percent, fire frequency 0-35 years.</p> <p><b>Health:</b> Early development class-replacement fire occurs 150-200 years; little to no effect by insect or disease.</p> <p><b>FRCC 2 Structure:</b> Mid-development open sagebrush cover 15-30 percent (area depending if basin big sagebrush, Wyoming big sagebrush and/or</p>

Vegetation Type	Dominant Fire Regime Group	Estimated Landscape Level FRCC	FRCC Description	Vegetation Structure and Health
			<p>these sites would have historically carried fire with variable burnt patch size. A combination of factors including historic and current livestock grazing, human infrastructure and fire suppression have altered the natural disturbance regime within the sagebrush shrublands found in the Lander Field Office. Key ecosystem components are still present, though vegetation composition and structure has been significantly altered in FRCC 3 areas.</p>	<p>mountain big sagebrush), generally becoming shrub dominated, herbaceous cover 10-20 percent, fire frequency same and FRCC 1.</p> <p><i>Health:</i> Same year span on replacement fire however some occurrence of insect or disease impact.</p> <p><b>FRCC 3 Structure:</b> Late development (open and closed). Sagebrush cover greater than 25-80 percent (area depending if basin big sagebrush, Wyoming big sagebrush and/or mountain big sagebrush). Generally shrub dominated with mature and over mature with suppressed understory; herbaceous cover 10 percent; replacement fire occurs every 80-100 years.</p> <p><i>Health:</i> 35-100+ year frequency replacement; replacement fire may cause transition to early development class. Insects and disease occur.</p>
<p>Greasewood and Salt Desert Shrub</p>	<p>IV</p>	<p>Unspecified, needs to be split from Sagebrush Shrublands. Estimated to be dominated by FRCC 1 across landscape.</p>	<p>Fire was very infrequent in this vegetative type. Fire Return Intervals are estimated to be 200 years.</p>	<p><b>Greasewood Structure:</b> Vegetative cover 0-20 percent and/or 21-50 percent; some grasses with greasewood sprouts and rabbitbrush present in early development. In late development open class – greasewood shrubs maturing or have reached maturity and would increase canopy closure; perennial grasses still in understory.</p> <p><i>Health:</i> Wet periods contribute to mortality; susceptible to invasion of nonnative grasses (cheatgrass).</p> <p><b>Salt Desert Shrub Structure:</b> Early development class is only class for the vegetative type – vegetative cover is 0-20 percent; shrubland composed of Gardeners and mat saltbush with some winterfat, scattered forbs, and grasses.</p> <p><i>Health:</i> Wet periods contribute to mortality; susceptible to invasion of nonnative grasses (cheatgrass).</p>

Vegetation Type	Dominant Fire Regime Group	Estimated Landscape Level FRCC	FRCC Description	Vegetation Structure and Health
Mountain Shrub	IV	Unspecified, needs to be split from Sagebrush Shrublands. Estimated to be dominated by FRCC 2 across landscape.	These vegetative communities are dominated by mature to decadent shrub. Though these communities are generally in condition class 2, all of the ecological components are present.	<p><b>Structure:</b> In mid to late development class dominant shrubs are (dependent on primary shrub): sagebrush 15-30 percent; shrub cover with curlleaf mountain mahogany, bitterbrush snowberry and rabbitbrush and mature sagebrush co-dominant, 30-40 percent; grasses and forbs may be present in gaps between shrubs.</p> <p><b>Health:</b> Replacement fire frequency is 80-150 years. Insect and disease may occur; weather related mortality every 200 years would transition to early development.</p>
<p>Source: LANDFIRE 2010</p> <p>Vegetative structure in each vegetative class incorporates biophysical setting models for Map Zone 22; Inter-Mountain Basins Curl-leaf Mountain Mahogany woodland, Inter-mountain Basins Mat Saltbush shrubland, Wyoming Basins Dwarf Sagebrush shrubland and steppe, Inter-Mountains Basins Big Sagebrush shrubland-Basin Big Sagebrush, Inter-Mountain Basins Big Sagebrush shrubland-Wyoming Big Sagebrush, Inter-Mountain Basin Montane Sagebrush steppe, Inter-Mountain Basins Semi-Desert Shrub Steppe, Inter-Mountains Basins Semi-desert Grassland, Northern Rock Mountain Lower Montane-Foothill-valley grassland, and Inter-Mountains Basins Greasewood Flat.</p> <p>FRG Fire Regime Group FRCC Fire Regime Condition Class</p>				