

Silvicultural Prescription for Bam Timber Sale  
Black Hills Analysis Area  
South East Zone, Fremont-Winema National Forests

<b>Planning Project ID:</b>	Black Hills EA
<b>Timber Sale/Project Implementation ID:</b>	Bam/2013
<b>Ranger District:</b>	Bly

**Current Condition:**

Stands within the Bam timber sale consist of predominantly ponderosa pine and lodgepole pine. Other stands are mixed conifer and contain sugar pine, ponderosa pine, lodgepole pine, white fir, and western juniper.

Stand basal area (BA) and stand density index (SDI) are above the upper management zone for their respective plant associations. Present plant associations are CPS212 (ponderosa/bitterbrush), CPS213 (ponderosa/bitterbrush-manzanita), and a small representation of CWS112 (mixed conifer/snowbrush-manzanita). Antelope bitterbrush is present in all units and is the dominant understory shrub for units 1, 2, 3 and 4. Manzanita and snowbrush are the dominant shrubs present in units 5, 6, and 7. Bitterbrush coverage ranges from 15-30%. Units 1, 3, 4, 5, 6, and 7 exhibit a multistory structure while unit 2 is mostly evenaged.

**Insect and disease:**

Some units (3, 6 and 7) have experienced moderate-high mortality from the mountain pine beetle (*Dendroctonus ponderosae*) and other stands are at high risk. High risk meaning lodgepole pine stands at the susceptible size (9-10 in. DBH) and density (SDI>170) for mountain pine beetle attack. Unit 1 has large ponderosa pine mortality caused by the western pine beetle (*Dendroctonus brevicomis*). All units have some degree of dwarf mistletoe with DMR ratings ranging from 1 to 4.

**Desired Condition:**

The majority of the stands in the Bam area were historically single story ponderosa pine stands. The goal is to restore these stands back to open single story conditions with a residual stand density ranging from 30-60 square feet/acre (sq. ft/ac) favoring ponderosa pine. Some stands will have higher densities due to the amount of trees over 21 inches DBH. Some stands in the Bam area are and were historically mixed conifer stands consisting of ponderosa pine, sugar pine, and white fir. The goal for these stands is to reduce the stands susceptibility to mountain pine beetle by reducing stand densities. Prescriptions would increase crown height and reduce canopy bulk density so that after treatment it would be more difficult for a surface fire transitioning into a crown fire. Residual stands will be a mixed of mostly ponderosa pine, sugar pine, and much lower levels of lodgepole pine and white fir. Non old growth juniper, typically less than 21in. DBH, would be greatly reduced throughout stands.

### **Planning Direction:**

Land and Resource Management Plan (Forest Plan, 1989) Management Area 5 (MA 5), timber and range emphasis, is to be managed for timber outputs. However, current direction is for ponderosa pine restoration treatments in landscapes altered by fire suppression and past evenage timber management. A Forest Plan amendment allows the cutting of white fir over 21 inches in DBH. White fir greater than 21 inches in DBH can be cut when in direct competition (within 2x the radius of the drip line) with either a ponderosa pine with reddish-orange bark, wide plates, and deep wide fissures or sugar pine greater than 21 inches in DBH.

Prescriptions would increase the amount of singlestory and two storied stands, at stocking levels within the management zone, as computed using Cochran's method (Cochran, 1996). Treatments meeting current objectives will satisfy visual requirements. Current planning direction comes from the Forest Plan along with recommendations from the Klamath Tribes Forest Plan (2008).

### **Project Treatment Objectives:**

Treatments will focus on maintaining and/or promoting late old structure (LOS) conditions, while creating resilient forest conditions. Stand density (BA and SDI) will be reduced by thinning from below via variable density management. Variable density management is the process of selecting then removing trees in a non-uniform pattern to increase spacing and growth which resembles the historic range of variability.

Treatments will also focus on lowering SDI to the range specified for the respective plant association.

No ponderosa pine over 21 inches in DBH will be cut. The publication *Identifying Old Trees and Forests in Eastern Washington* (Pelt, 2008) will be used to help in identifying old ponderosa pine trees that may be less than 21 inches in DBH. Ponderosa pine exhibiting old growth characteristics (reddish-orange bark, wide plates, and deep wide fissures (Pelt, 2008) are appropriate to retain within the context of restoration prescriptions.

Old growth juniper is not targeted to be cut. These are trees whose bark is thick and fibrous, with developed vertical furrows (Miller et al., 2007). Snags and down logs at the landscape level will meet Eastside Screen requirements.

### **Alternatives: from Environmental Assessment**

1. No action
2. 16,072 ac of ground based treatments. 2,644 ac of plus helicopter logging systems, and 2,633 ac of treatment in MA 3 and MA14 (old growth stands).
3. 15,000 ac of ground based treatments. No helicopter logging systems or treatments in old growth stands.

**Selected Alternative:**

2. 16,072 ac of ground based treatments. 2,644 ac of helicopter logging systems, and 2,633 ac of treatment in MA 3 and MA14 (old growth stands).

**Expectations: Understory**

After thinning, via mechanical and/or underburning methods, residual understory would range 50-100 TPA less than 12 in. DBH consisting mostly of ponderosa pine spaced mosaically across the landscape. Most encroaching juniper would be removed from stands which will allow for favored species seedlings and saplings to thrive. Shrubs, forbs, and grasses should increase due to a more open canopy.

**Expectations: Overstory**

After variable density thinning takes place, residual stands would be heterogeneously spaced across the landscape where medium to large trees dominate the overstory. Ponderosa pine would be the dominant species. Residual overstory would be in a clumpy and open fashion.

**Logical Treatment Sequence:**

Yr.	Activity	Acres	Units	FACTS CODE	Funding	Treatment Description
0	Commercial Thin via conventional tractor or mechanized system.	~550 (Bam)	ALL	4220	PPPP	Stands will be thinned to a BA range of 30-60 sq. ft/ac using variable density thinning.
0	Treat stumps with Sporax to exclude H. Annosus inoculation.	~550 (Bam)	ALL	8120	PPPP	<b>All other plant associations (all other units):</b> Apply borax as a preventative measure (within 24 hours of cutting) to conifer stumps greater than 18 inches in diameter (with the exception of Douglas-fir, incense-cedar, and western juniper). This guidance applies when cutting live trees or trees that have been dead a year or less.
0	Whole tree yard or leave top attached to last log.	~550 (Bam)	ALL	1120	PPPP	Remove activity fuels to landing.
0	Pile landing slash.	Piles		1153	PPPP	Biomass production if applicable.
1	Burn landing piles.	AC		1130	BDBD	Biomass production if applicable.
2	Small tree thin (PP <9 in., other spp. <7 in.).	AC	2, 3, 4, 5, 6, 7	4392	CWKV- as funds available.	50-100 TPA Biomass production if applicable.
2	Lop and Scatter thinning slash to 18 in.	AC		1150	CWKV- as funds available.	Biomass production if applicable.

Yr.	Activity	Acres	Units	FACTS CODE	Funding	Treatment Description
3-10	Underburn as part of landscape burning project.	~550 (Bam)		1113	WFHF	Reduce fuels.

**Expected Results:**

Residual stands will have stocking levels closer to their historical range. As a result of more growing space, remaining trees would experience faster growth rates, increased vigor, and stronger defenses toward insects and disease. BA would range from 30 sq. ft./ac in lower elevation stands to 60 sq. ft./ac in stands with slightly more productive sites. Some residual stands may have BA exceeding 60 sq. ft./ac due to the amount of >21in. trees that cannot be cut. Openings and leave areas will be dispersed across the landscape. Residual stands would be able to withstand low to moderate intensity fires and the chance of a crown fire would be reduced throughout the Black Hills Project area.

**Monitoring Plan:**

1. Presale forester, marking crew foreperson, or zone silviculturist will review marking.
2. The zone silviculturist will work closely with the sale administrator to ensure silviculture objectives are being met.
3. Post sale visit by zone silviculturist will review results post-harvest and review small tree thinning prescription.

**Marking Guides:**

Look for marking guides in individual or combined unit prescriptions.

**Notes:**

Variable density management is the process of selecting then removing trees in a non-uniform pattern to increase spacing and growth which resembles the historical range of variability.

A “good tree” is a tree with 30% or more of live crown ratio, a conical shape, little or no sign of insect, disease or mechanical damage, evidence of recent height growth, no dead tops.

Approved by: Lora Vialpando      06/25/2013

*Certified Silviculturist*

Silvicultural Prescription  
South East Zone, Fremont-Winema National Forest

**Planning Project ID:** Black Hills EA  
**Timber Sale/Project Implementation ID:** Bam Timber Sale  
**Existing Stand(s):** 1, 2, 4

**I. ABIOTIC DATA**

Aspect:	Elevation ft.	Slope %	Soil: Suitable
Varies	5200	5-25	Fair-Good

**II. BIOTIC DATA**

Plant Association and corresponding unit(s):	GBA:	SI:	Lower/Upper Mgt. (SDI):
CPS212 (2)	89	81	108/161
CPS311 (1)	117	81	98/146
CPS213 (1, 2, 4)	79	76	98/146

Existing Stand: 1, 2, 4

Data: Informal exam on September 12, 2012

SPP.	BA/AC	T/AC	SDI	%CC	Structure	Successional
PIPO	120	450	300+	50	YFMS	Mid
LPP	20					

**% Species**

//////	PP	WF	LP	IC	ASPEN	JUN
By BA	85	0	15	0	0	trace

**Marking and Layout:**

Retain 10-15% of each treatment unit greater than 20 acres in unthinned patches (skips) to provide for mule deer cover and habitat diversity across the landscape. Unthinned patches would be irregular in shape and range in size from 1/8 to 1/2 acre. Appropriate areas for skips include patches of denser forest, sites that offer habitat diversity, such as snags and concentrations of woody debris, rocky outcrops, and moist or wet microsites.

Retain natural openings and create gaps designed to mimic natural openings from 1/10<sup>th</sup> to 2 acres in size on 5-10% of units greater than 20 acres. Structure can be retained in some gaps but will not be retained in all gaps. Both skips and gaps should be dispersed across the unit.

The remaining unit should average 40 sq. ft. BA/ac. Leave trees first by preference: ponderosa pine (reddish-orange bark, wide plates, and deep wide fissures), ponderosa pine, incense-cedar, white fir, then lodgepole pine; ponderosa pine should be retained in clusters of 2-5 or more stems as much as possible.

Retain five needle pines (sugar pine). Culture around genetic trees in area. 90% of residual trees will be well formed trees (good trees). The remaining 10% will be trees with decay, crooks, or forks for wildlife purposes and future snags.

	<u>Designation by Prescription</u>
1, 2, 4	<p>Bam Stewardship Contract Individual Tree</p> <p>Retain 10-15% of each treatment unit greater than 20 acres in unthinned patches. Unthinned patches would be irregular in shape and range in size from 1/8 to 1/2 acre. Create openings from 1/10 to 2 acres in size on 5-10% of units greater than 20 acres.</p> <p>Both openings and leave areas should be dispersed throughout the unit.</p> <p>Category A: The following trees shall be left and are expressly not designated for cutting and/or removal:</p> <ol style="list-style-type: none"> <li>1. All trees 21.0 inches in DBH or larger.</li> <li>2. Sugar pine.</li> <li>3. Dead trees, unless designated to be cut.</li> <li>4. Trees marked with orange paint.</li> </ol> <p>Category B: Of the remaining trees, leave trees will be the healthiest trees with the fullest crown. Leave trees will be selected in order of priority as follows.</p> <ol style="list-style-type: none"> <li>1. Ponderosa pine</li> <li>2. Lodgepole pine</li> <li>3. White fir</li> <li>3. Juniper spp. (non-old growth juniper)</li> </ol> <p>Thin remaining stand to 40 sq. ft. BA acceptable range 30-50 BA.</p> <p>Remove all trees meeting A2 specifications, other than category A trees, within 60 feet of live aspen (considered to be 5 aspen trees at least 5 feet tall within 30 feet of each other) and mountain mahogany (considered to be 5 mountain mahogany plants at least 3 feet tall within 30 feet of each other).</p>

Silvicultural Prescription  
South East Zone, Fremont-Winema National Forest

**Planning Project ID:** Black Hills EA  
**Timber Sale/Project Implementation ID:** Bam Timber Sale  
**Existing Stand(s):** 3, 5, 6, 7

**I. ABIOTIC DATA**

Aspect:	Elevation ft.	Slope %	Soil: Suitable
Varies	5200	5-25	Fair-Good

**II. BIOTIC DATA**

Plant Association and corresponding unit(s):	GBA:	SI:	Lower/Upper Mgt. (SDI):
CPS212 (3, 6, 7)	89	81	108/161
CPS213 (3, 5, 6, 7)	79	76	98/146
CWS112 (5)	118	80	108/161

Existing Stand: 3, 5, 6, 7

Data: Informal exam on September 12, 2012

SPP.	BA/AC	T/AC	SDI	%CC	Structure	Successional
PIPO	80	450	300+	50	YFMS	Mid
PICO	60	300	300			
PILA	20	200				

**% Species**

//////	PP	WF	LP	SP	ASPEN	JUN
By BA	50	trace	35	15	0	trace

**Marking and Layout:**

Retain 5-10% of each treatment unit greater than 20 acres in unthinned patches (skips) to provide for mule deer cover and habitat diversity across the landscape. Unthinned patches would be irregular in shape and range in size from 1/8 to 1/2 acre.

Leave trees first by preference: ponderosa pine (reddish-orange bark, wide plates, and deep wide fissures), ponderosa pine and then incense-cedar; ponderosa pine should be retained in clusters of 2-5 or more stems as much as possible.

Retain five needle pines (sugar pine). Culture around genetic trees in area. 90% of residual trees will be well formed trees (good trees). The remaining 10% will be trees with decay, crooks, or forks for wildlife purposes and future snags.

Cut all lodgepole pine. Thin remaining stand to an average range of 30-50 sq. ft. BA. It is acceptable if removal of lodgepole pine results in openings and basal area less than 30

sq. ft. If openings become larger than 2 acres please bring to the attention of the Forest Service on the ground designated representative (sale administrator/inspector/COR) and/or the Silviculturist.

By targeting leave to ponderosa pine, a mosaic quality to the unit will be achieved.

	<u>Designation by Prescription</u>
3, 5, 6, 7	<p>Bam Stewardship Contract Individual Tree</p> <p>Category A: The following trees shall be left and are expressly not designated for cutting and/or removal:</p> <ol style="list-style-type: none"> <li>1. All trees 21.0 inches in DBH or larger.</li> <li>2. Dead trees, unless designated to be cut.</li> <li>3. Trees marked with orange paint.</li> </ol> <p>Category B: Of the remaining trees, leave trees will be the healthiest trees with the fullest crown. Leave trees will be selected in order of priority as follows.</p> <ol style="list-style-type: none"> <li>1. Sugar pine</li> <li>2. Ponderosa pine</li> <li>3. Incense-cedar</li> <li>4. White fir</li> <li>5. Juniper spp. (non-old growth juniper)</li> </ol> <p>Cut all lodgepole pine. Thin remaining units to 50 sq. ft. BA acceptable range 40-60 BA. It is acceptable if removal of lodgepole pine results in openings and basal area less than 40 sq. ft. Please bring it to ground designated representative if openings become larger than 1 acre.</p> <p>Remove all trees meeting A2 specifications, other than category A trees, within 60 feet of live aspen (considered to be 5 aspen trees at least 5 feet tall within 30 feet of each other) and mountain mahogany (considered to be 5 mountain mahogany plants at least 3 feet tall within 30 feet of each other).</p>