

# TIMBER

## E-1 Silvicultural Prescriptions Meet Management Area Goals

OUTPUT, MANAGEMENT PRESCRIPTION, EFFECTS TO BE MEASURED	REPORTING PERIOD & FREQUENCY	VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION
Assure silvicultural management prescriptions are best suited to management area goals with all resources considered	Annually - one sale	Test management area outputs against those predicted

### METHODS

One timber sale is reviewed on the ground annually by an interdisciplinary team. In October 2004, a team reviewed the Robert's Sanitation Timber Sale (harvested in the winter of 2003/2004) as part of an internal Best Management Practices audit (see Soil & Water section for results). What was not apparent at that time, however, was the effectiveness of the treatment on continued mortality by mountain pine beetles. The project was approved under a category of actions that did not require documentation in an environmental assessment or environmental impact statement. The category included commercial and non-commercial sanitation harvest of trees to control insect or disease not to exceed 250 acres, and including the removal of infested/infected trees and adjacent live uninfested trees as determined necessary to control the spread of insects or disease." Prior to treatment, 10-20% mortality in ponderosa pine had occurred. It was not known if the treatment would be implemented in time to reduce subsequent mortality. Without treatment, mortality was expected to be 60-80%. There were also concerns over reducing the number of snags for cavity nesters.

The project was located within Forest Plan Management Area B, which emphasizes timber management and a moderate level of livestock forage production while minimizing impacts to other resources. Reducing potential tree mortality rate is consistent with timber management goals for this management area.

In December 2006, a survey of 29 sample points, using variable plots with basal area factor of 20, was conducted to answer some of these questions. Specifically, the treatment was described in the decision memo as "...removing about 1/2 of the ponderosa pine, lodgepole pine and Douglas-fir trees..." and would contain "...about 70-100 trees/acre following the harvest activities."

### FINDINGS

The cruise (field tree measurements) conducted prior to contract award indicated about 55% of the trees >8" would be cut and about 45% were marked for retention. This review indicated that over half of the trees less than 14" DBH (diameter at breast height) were planned to be cut, while 60-75% of the larger trees, over 14", were marked to be left. The target condition was to retain about 65-80 square feet of basal area (BA). The survey conducted in December of 2006 showed about 126 trees/acre (TPA) remaining, 23 trees/acre are dead (see Table 1). This equates to 80 square feet retained including about 16 square feet of mortality. This is consistent with approximately 83 square feet of basal area that, through the timber cruise conducted prior to harvest, was estimated to be remaining. The 16 square feet of basal area of dead trees is 20% of the total basal area remaining and represents mortality from all causes (if calculated using number of trees/acre, this comes out to be 18%). It is likely that some of the mortality occurred during or before treatment and was not harvested because of small size or other defects. This mortality estimate also includes snags intentionally marked for retention.

**Table 1. Robert's Salvage Monitoring Survey Results; 12/11/2006**

Diameter	8"	10"	12"	14"	16"	18"	20"	22"	Total
BA/ac(D)	3	2	5	2	2	<1	>1	0	16 ft <sup>2</sup> /ac
TPA (D)	8	4	6	2	>1	<1	<1	0	<23 trees/ac
BA/ac(L)	17	8	17	14	3	>1	2	>1	64 ft <sup>2</sup> /ac
TPA (L)	49	15	22	13	>2	<1	1	<1	103 trees/ac

(D=Dead; L=Live; BA in square feet/acre; TPA in number of trees/acre)

There was a slightly higher number of trees/acre remaining than identified in the decision memo (126 versus 100). The difference, however, included snags intentionally left for wildlife purposes. Basal area following treatment was within ranges identified in the decision memo.

The treatment was designed to reduce mortality by making the stand less attractive to mountain pine beetles. Numerous studies support the contention that mortality is less in stands of lower density. Some "hits" were detected in December of 2006 on trees that had not yet turned red indicating some mortality is still occurring. These trees were counted as dead trees. The actual loss following treatment is less than the 18-20% for reasons mentioned. The decision memo indicated that mortality of 60-80% was possible without treatment. This has been reported to occur in *lodgepole pine* stands, but ponderosa pine stands typically experience 30%-60% mortality depending on stand structure. Nearby areas have lost over 30% of the larger ponderosa pine. While post treatment mortality is greater than expected, it is less than ½ the mortality that could have occurred with no treatment. In large part, the treatment "substituted" harvest for insect mortality with the exception that the harvest removed more trees from smaller diameter classes while beetle mortality is typically greater in the larger diameter classes. From a management perspective, objectives of the treatment were met. Fuels and stand density were reduced from the untreated condition.

The Forest Plan standard for snag retention in ponderosa pine / Douglas-fir stands is 158 trees over 10" DBH per 100 acres (Forest Plan page 2-35). Table 1 above indicates there are presently about 14 trees/ac, or over 8 times the minimum level prescribed by the standard. In addition, large diameter green trees are present as snag replacements.