

Appendix H Fuel Treatment Methods

Treatments listed below would be implemented after project plans with required site-specific analyses, including NEPA¹, are completed, approved and funded. The following description of treatments identifies methods and how they would be used in fuels management projects to attain resource or fire management objectives.

- **Prescribed Burning²:** Prescribed burning is the controlled application of fire to wildland fuels in either their natural or altered state, under specified environmental conditions, which allows the fire to be confined to a predetermined area, and produce the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives. A site-specific written prescribed burn and analyses must be prepared and approved. Plans contain measurable objectives, a predetermined prescription, stipulations, and an escaped fire plan to be implemented if needed. Alaska Department of Environmental Conservation (ADEC) procedures and requirements for managing smoke to help ensure that prescribed fire activities minimize smoke and air quality problems must be addressed. Written approval from ADEC for prescribe fires forty acres or larger is required.

Management objectives of prescribed burning include, but are not restricted to, the control of certain species, enhancement of growth, reproduction, or vigor of certain species, management of fuel loads, and maintenance of vegetation community types that best meet multiple-use management objectives. Prescribed burn procedures and policies also apply to slash pile burns.

Use of prescribed fire includes development of a prescribed fire prescription. These prescriptions would be designed with regard to site characteristics and the reproductive characteristics of the plant species present on the site. Fire effects on a particular plant community or species can be controlled through the choice of weather and fuel moisture conditions under which the fire is staged, the time of year when the site is burned, the size of the burned area as it relates to post-fire recovery and wildlife use. Given the prescribed fire prescription, the analysis would consider factors such as plant mortality, post-fire sprouting, reproduction from seed, effect of season of burning, effects of weather, post-fire plant productivity, relationship of fire to animal use, and post-fire plant competition (BLM, 1991). Background on each of these relationships is reviewed in Appendix F of the 1991 Vegetation Treatment EIS.

- **Mechanical:** Mechanical methods of vegetation treatment employ several different types of equipment to suppress, inhibit, or control herbaceous and woody vegetation. The goal of mechanical treatments is to kill or reduce the cover of undesirable vegetation and thus encourage the growth of desirable plants. Wheeled tractors, crawler-type tractors, mowers, or specially designed vehicles with attached implements for mechanical vegetation treatments may be used. The best mechanical method for treating undesired plants in a particular location depends on the following:

- Access to site.

¹ Federal Register Notice 33824, Vol. 68, No. 108, Thursday, June 5, 2003 contains the Categorical Exclusion for Fuels Projects; See BLM WO IM No. 2003-221, 221 Change 1 and 2004-065 Information BLM Use of the Categorical Exclusions for Hazardous Fuels Treatments and Post-Fire Rehabilitation Projects.

²BLM OF&A IM No. OF&A 2004-003 Prescribed Fire Management for BLM guidance. The IM also contains additional prescribed fire references.

- Characteristics of the undesired species present such as plant density and re-sprouting ability.
- Need for seedbed preparation and re-vegetation.
- Topography and terrain.
- Soil characteristics such as type, depth, erosion potential, and susceptibility to compaction.
- Climatic and seasonal conditions.
- Potential cost of improvement as compared to expected results.

Bulldozing consists of a wheeled or tracked vehicle with a hydraulic controlled blade. Vegetation is pushed over and uprooted and then left in windrows or piles. Bulldozing is best adapted to removing scattered stands of large brush or trees. There are several different kinds of blades available depending of the type of vegetation and goals of the project. The disadvantage of bulldozing is soil disturbance and damage to non-target plant species and the possibility of spreading weed seeds and propagules that may be harbored on equipment from other sites.

Disk plowing in its various forms can be used for removing shallow-rooted herbaceous and woody plants. Disk plows should only be used where all of the vegetation is intended to be killed. There are several different kinds of root plows that are specific for certain types of vegetation. In addition to killing vegetation, disk plowing is effective in loosening the soil surface to prepare it for seeding and to improve the rate of water infiltration. The disadvantage of disk plowing is that it may be expensive and usually kills all species. Also, plowing is usually not practical on steep slopes (greater than a 35% to 45% slope) or rocky soil. Plant species that sprout from roots may survive.

Chaining and cabling is accomplished by dragging heavy anchor chains or steel cables hooked behind two tractors in a U-shape, half circle or J-shaped manner. Chaining and cabling is affective on rocky soils and steep slopes. Chaining and cabling are best used to control non-sprouting woody vegetation such as small trees and shrubs. However, desirable shrubs may be damaged in the process. Herbaceous vegetation is normally not injured by this control method. This control method is cost effective as large areas can be readily treated. The chains or cables also scarify the soil surface in anticipation of seeding desirable species. The disadvantage is that weedy herbaceous vegetation can survive this treatment.

There are various tractor attachments that are used for mowing, beating, crushing, chopping, or shredding vegetation depending on the nature of the plant stand and goals of the project. The advantage in using this type of equipment is that selective plants may be targeted to achieve specific goals. For example, mowing is effective in reducing plant height to a desirable condition and it usually does not kill vegetation. Mowing is more effective on herbaceous than woody vegetation. On the other hand, a rolling cutter can kill woody non-sprouting vegetation by breaking stems at ground level but leave herbaceous vegetation. Mowing, beating, crushing, chopping, or shredding usually does not disturb soil. Rocky soil and steep slopes may limit this use of this equipment.

Debris management after a mechanical control treatment application is critical in fuels reduction projects. Large woody debris that is left on-site will dry and may become more hazardous than before the treatment. Herbaceous debris is usually not a problem because it will decompose relatively fast based on relative humidity, temperature and seasonality of mechanical implementation. Various methods for the disposal of woody vegetation will be considered as technology develops and new methods of biomass utilization become available. The current standard operating procedure is to pile and burn under acceptable fire management practices.

- **Manual:** Hand-operated power tools and hand tools are used in manual vegetation treatment to cut, clear, or prune herbaceous and woody species. In manual treatments, workers may cut plants above ground level; pull, grub, or dig out plant root systems to prevent subsequent sprouting and re-growth; scalp at ground level or remove competing plants around desired vegetation; or place mulch around desired vegetation to limit the growth of competing vegetation. Hand tools such as the handsaw, axe, shovel, rake, machete, grubbing hoe, pulaski, brush hook, and hand clippers are used in manual treatments. Workers also may use power tools such as chain saws and power brush saws.

Although the manual method of vegetation treatment is labor intensive and costly, compared to prescribed burning, it can be extremely species selective and can be used in areas of sensitive habitats or areas that are inaccessible to ground vehicles. Manual treatment of undesired plants would be used on sites where fire (prescribed or naturally ignited) is undesirable or where significant constraints prevent widespread use of fire as a management tool. Manual vegetation treatments cause less ground disturbance and generally remove fewer amounts of vegetation than is associated with other treatment methods.