NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

FOREST STAND IMPROVEMENT

(Ac.)

CODE 666

DEFINITION

The manipulation of species composition, stand structure and stocking by cutting or killing selected trees and understory vegetation.

PURPOSE

Increase the quantity and quality of forest products by manipulating stand density and structure.

Timely harvest of forest products

Development of renewable energy systems.

Initiate forest stand regeneration.

Reduce wildfire hazard.

Improve forest health reducing the potential of damage from pests and moisture stress.

Restore natural plant communities.

Achieve or maintain a desired native understory plant community for special forest products, grazing, and browsing.

Improve aesthetic and recreation values.

Improve wildlife habitat.

Alter water yield.

Increase carbon storage in selected trees.

CONDITIONS WHERE PRACTICE APPLIES

All forest land.

Forest land may include “invaded stands” (on rangeland ecological sites) of ponderosa pine/mixed conifer, juniper and/or piñon trees. (Soil surveys provide guidance on site potential.) Use Brush Management (314) where invaded tree stands will be manipulated or removed on rangeland, native or naturalized pasture, and hay lands. When obvious tree-size material is being removed, consider using Land Clearing (460).

This standard is not applicable for Alley Cropping (311), Multi-story Cropping (379), Windbreak/Shelterbelt Establishment (operation and maintenance) (380) and Windbreak/Shelterbelt Renovation (650).

CRITERIA

General Criteria Applicable to All Purposes

The New Mexico State Forestry Division should be consulted for assistance regarding harvest permits, writing forest management or harvesting plans, and/or for general technical forestry expertise. Worksheets on the Field Office Technical Guide list the basic requirements of a Stewardship Plan and a Harvest Plan.

Manipulation of species composition, stand structure and stocking should be done with the best possible silvicultural basis.

Where forest thinning is planned, a pre-inventory must be performed to determine what level of treatment is required (high, medium, or low removal). Post treatment a second inventory must be performed to determine if the objective has been achieved.

If harvesting is planned, the harvest-regeneration strategy will be identified based on forest type and site conditions, and using the specifications document and the job sheet for guidance. The following are options for final harvests:

- Uneven-aged management systems (single-tree selection, group selection)
- Even-aged management (clear-cut, patch-cut, seed-tree, shelterwood)

Preferred tree and understory species of appropriate quality will be identified and retained to achieve all planned purposes. Any

and all treatments should improve the stand condition.

The extent or size and orientation of treatment area(s) shall be identified as part of practice design.

Preferred tree and understory species are identified and retained to achieve all planned purposes.

Spacing, density, size class, number and amounts of trees and understory species to be retained will follow established guidelines for the intended purposes.

Stocking guidelines shall contain stocking in terms of basal area, spacing or trees per acre by species and size class distribution.

The method, felling direction and timing of tree cutting for harvesting shall protect site resources, e.g., residual trees, wetlands, cultural resources, improvements and utilities. Time tree cutting to avoid buildup of insect or disease populations. Felling direction must be compatible with trail layout as specified by Forest Trails and Landings (655). Forest stand improvement activities shall be performed to minimize soil erosion, compaction, rutting, and damage to remaining vegetation and maintain hydrologic conditions.

Refer to the Access Road (560) standard for roads associated with forest stand improvement activities.

Slash and debris will be treated such that they do not present an unacceptable fire, safety, environmental, or pest hazard. Such remaining material will not interfere with the intended purpose or other management activities. Refer to Woody Residue Treatment (384). Burning of slash and other debris on-site shall follow the standard Prescribed Burning (338).

Comply with the commercial harvest requirements, (NMAC 19.20.4) and Best Management Practices, (BMPs), which can be found in New Mexico Forest Practices Guidelines.
http://www.emnrd.state.nm.us/FD/Publications/documents/NM_ForestPracticesGuidelines2008.pdf

Additional Criteria to Develop Renewable Energy Systems

Bioenergy intensity and frequency of energy biomass removals will be managed to prevent long-term negative impacts on the stand.

The harvesting of energy biomass shall be accomplished in a manner that will not compromise the other intended purpose(s) and functions. If applicable refer to State woody biomass Best Management Practices (BMPs).

Additional Criteria to Reduce Wildfire Hazard

Reduce stocking rates of trees to minimize crown-to-crown spread of fire.

Remove “ladder” fuels to minimize the occurrence of crown fires.

Further treat or eliminate slash accumulations next to roads and trails.

Reduce or eliminate species with high volatility but not to a level that would compromise other intended purposes.

For additional wildfire risk and damage reduction, refer to the standards Fuel Break (383) and Firebreak (394).

Additional Criteria to Improve Wildlife Habitat

Manage for a variety of native tree species and stocking rates that meet desired wildlife and pollinator species food and cover requirements.

Retain copses and clumps of trees to provide thermal and hiding cover. Use Wildlife Habitat Evaluation Guide sheets (eFOTG : WHEGs) and species accounts to determine spatial relationships of habitat elements. For woodland/timber dependent species of concern such as Goshawk, Gray Vireo or Spotted Owl contact your state wildlife biologist for criteria guidance.

Create, recruit and maintain sufficient snags and down woody material to meet requirements of desired species and secondary cavity nesting species in balance with conditions needed to achieve other intended purposes.

Minimize improvement actions that disturb seasonal wildlife activities.

Refer to Early Successional Habitat Development/Management (647), Rare and

Declining Habitats (643), Upland Wildlife Habitat Management (645), and Wetland Wildlife Habitat Management (644) to further develop and manage wildlife-related activities.

Additional Criteria to Increase Carbon Storage in Selected Trees

Manage for tree species and stocking rates that have higher rates of growth and potential for carbon sequestration.

CONSIDERATIONS

Silvicultural objectives and harvest-regeneration strategies may change over time and may be limited by prior management.

Successful regeneration of desirable species is usually dependent upon timely application of forest stand improvement and other practices, e.g., prescribed burning, site preparation, tree and shrub establishment, prescribed grazing and access control.

The extent, timing, size of treatment area, or the intensity of the practice should be adjusted to minimize cumulative effects (onsite and offsite), e.g., hydrologic and stream alteration, habitat fragmentation, nutrient cycling, biodiversity and visual resources.

For purposes other than improving wildlife habitat, the practice should be timed to minimize disturbance of seasonal pollinator and wildlife activities.

Landowners should secure a written contract with any service provider that specifically describes the extent of activity, duration of activity, liability and responsibilities of each party and amount and timing of payments for services provided

Slash, debris and other vegetation (biomass) removed during stand improvement may be used to produce energy. Management alternatives should consider the amount of energy required to produce and convert the biomass into energy with the amount produced by the biomass. Wildlife and sustainability requirements should also be considered.

lnvasive or noxious woody vegetation should be controlled.

Clients should be advised of responsibilities of wildfire control and consider the development of a wildfire control plan including “defensible” space, access routes, fire-season water source, and location of wildfire control facilities.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes and narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Periodic inspections during and after treatment activities are necessary to ensure that purposes are achieved and resource damage is minimized, e.g., assessment of insects, disease and other pests, storm damage, and damage by trespass. The results of inspections shall determine the need for additional treatment under this practice.

REFERENCES:

New Mexico Forest Practices Guidelines (http://www.emnrd.state.nm.us/FD/Publications/PubsMain.htm)

NRCS National Forestry Handbook (http://soils.usda.gov/technical/nfhandbook/)

Silvics of North American Trees: http://forestry.about.com/gi/dynamic/offsite.htm?site=http://www.na.fs.fed.us/spfo/pubs/silvics%5Fmanual/table%5Fof%5Fcontents.htm

USDA-FS. Western Forest Insects and Diseases -- An On-line Catalog (covers all western insects and diseases) (http://www.fs.fed.us/r6/nr/fid/wid.shtml)

USDA. Forest Service, Region 3 FSH2509.22 - Soil and Water Conservation Practices Handbook, Dated 12/03/1990

University of Washington Forestry Tools: (http://www.ruraltech.org/tools/)