Steps to Assess, Plan, Design, and Implement a Forest Management Project

1. Discuss landowner goals and objectives. Is there a need for a management plan? Gather field inventory data for all forest stand strata using fixed or variable radius plots and forest stand improvement inventory forms. Determine if a harvest permit is required.

2. Compute correlations between average Trees/Acre, spacing, Basal Area, and diameter-at-breast-height or diameter-at-root-collar. Consider landowner objectives.

3. Complete an environmental evaluation of all benchmark conditions. (FOTG – Section 1)

4. Discuss management options and conservation treatment alternatives based on current conditions, forest ecology, and landowner goals:
   - Forest stand enhancement – growth, thinning, harvest-reforestation, pests, aesthetics, wildlife, grazing, recreation
   - Marketing – forest product types, mills, hunting, recreational and other opportunities
   - Access and erosion control – access roads, trails and landings, water bar spacing
   - Wildfire risk reduction – firebreaks, fuel breaks, forest slash treatment, integration of access roads and trails, defensible space

5. Consider and select a slash treatment method.

6. Return to the unit and mark/flag “leave” trees to demonstrate desired spacing.

Purposes for Forest Stand Improvement (Practice 666) and Potential Landowner Goals

- Increase the quantity and quality of forest products by manipulating stand density and structure.
- Achieve a desired understory plant community for special forest products, grazing and browsing.
- Harvest forest products (including an objective for renewable energy production).
- Restore natural plant communities.
- Initiate forest stand regeneration.
- Improve aesthetic, recreation, and open space values.
- Reduce wildfire hazard.
- Improve wildlife habitat.
- Improve forest health reducing the potential of damage from pests and moisture stress.

Is a Harvest Permit Required?

- Is it Private Land (not Tribal)?
- Are forest products being sold, or exchanged for services, on:
  - 25 acres or more in a calendar year of larger material?
  - 75 acres or more in a calendar year of fuel wood?

Note that every tree species in New Mexico is considered commercial. (Even oak if harvested with other commercial species)

Follow Specs/Job Sheets and you should be in compliance with Best Management Practices.

Calculation: Equivalent Diam. at Root Collar for Multiple-Stemmed Trees

Instructions: Measure the diameter of each stem taller than 4.5 feet at the base of the stem approximately 12” off the ground.

EDRC = \sqrt{drc^2 + drc^2 + drc^2 + ...} \quad \text{(the sq rt of the sum of the squared diam.)}

Forestry Conversion Factors

- 1 acre = 43,560 sq. ft. = 4,047 sq. meters = 0.405 hectares
- 1 cord = 85 cubic feet wood or 128 cuft wood + voids
- 1/100-acre plot = 3.7 feet radius or 6.6 feet x 6.6 feet
- 1/250-acre plot = 7.4 feet radius or 13.2 feet x 13.2 feet
- 1/100-acre plot = 11.8 ft. radius or 20.9 feet x 20.9 feet
- 1/20-acre plot = 26.3 feet radius or 46.7 feet x 46.7 feet
- 1/10-acre plot = 37.2 feet radius or 66 feet x 66 feet
- 1/4-acre plot = 58.9 feet radius or 104.4 feet x 104.4 feet
- 1/2-acre plot = 83.3 feet radius or 147.6 feet x 147.6 feet
- 1-acre plot = 118’ radius or 209’ x 209’; 1 meter = 39.37”
Instructions

Step 1 – divide live crown into thirds

Step 2 – rate each third separately

0 = no visible infections
1 = light (1/2 or less of total number of branches infected)
2 = heavy infection (more than ½ total number of branches in the third infected.)

Step 3 = Add ratings of thirds to obtain rating for total tree.

Leave Tree Considerations

Recommended Target Basal Area by Cover Type, Site Index, and Fire Regime

<table>
<thead>
<tr>
<th>Site Index</th>
<th>Pinon-Juniper</th>
<th>Ponderosa Pine</th>
<th>Mixed Conifer</th>
<th>Spruce-fir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SI</td>
<td>10-30 Savannah</td>
<td>40-50</td>
<td>80-90</td>
<td>Varies widely</td>
</tr>
<tr>
<td>Mid-Range SI</td>
<td>90-100 Persistent</td>
<td>50-70</td>
<td>90-100</td>
<td>Approx. 80-160</td>
</tr>
<tr>
<td>High SI</td>
<td>70-80</td>
<td>100-120</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fire Regime (yrs) | Sav-freq. PW-infreq. | 15-30 (dry) | 300+ (wet) |

If your trees are about 8” in diameter at breast height and you want to stock your land at 60 square feet of basal area per acre, you would have about 170 trees per acre.

Tree Height Scale (read direct at 100 feet horizontal distance from tree holding scale 6” from eye)

Basal Area Factor at 24” reach from eye

Road/Trail Drainage Guide

Minimum legal requirements, spacing between water bars by % grade

<table>
<thead>
<tr>
<th>% Grade</th>
<th>Distance* (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4.9</td>
<td>150</td>
</tr>
<tr>
<td>5.0-9.9</td>
<td>130</td>
</tr>
<tr>
<td>10.0-14.9</td>
<td>75</td>
</tr>
<tr>
<td>15.0-24.9</td>
<td>50</td>
</tr>
<tr>
<td>25.0-40</td>
<td>25</td>
</tr>
</tbody>
</table>

*Measured on/along road slope. More specific data dependent on aspect, parent material, and slope location found in Forest Practice Guidelines.

Streamside Management Area Guide

<table>
<thead>
<tr>
<th>% Slope (above stream)</th>
<th>Buffer Strip Width* (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>90</td>
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<tr>
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</tr>
<tr>
<td>60</td>
<td>180</td>
</tr>
<tr>
<td>70</td>
<td>200</td>
</tr>
</tbody>
</table>

*Measured as horizontal distance.

Slash Treatment Guidelines (Practice 384)

Chipping – generally in defensible space or smaller projects. Leaves material on the ground in small chips. (avg depth 2”, no >6”)

Mastication – often includes tree thinning in payment. Leaves material on the ground in chunks . (max depth 6-8”, max length 3’)

Lop and Scatter – when material is left on the ground in small lengths. (max depth 3’, max length 4’)

Pile and burn, Pile and remove – when material is left on the ground in piles for prescribed burning or for removal. (max - 12’ by 12’ by 12’)

Hawksworth Dwarf Mistletoe Rating

Instructions

Step 1 – divide live crown into thirds

Step 2 – rate each third separately

0 = no visible infections
1 = light (1/2 or less of total number of branches infected)
2 = heavy infection (more than ½ total number of branches in the third infected.)

Step 3 = Add ratings of thirds to obtain rating for total tree.

Example

If this third has no visible infections, its rating is (0).

If this third is lightly infected, its rating is (1).

If this third is heavily infected, its rating is (2).

This tree gets a rating of 0 + 1 + 2 = 3

Defensible Space Zones

Defensible Space is typically implemented around structures where wildfire presents a significant hazard. Zone 1 is 0-30 feet minimum (more depending on slope and plant type) where residual plants are lean, green, clean and well spaced. Zone 2 is from 30-100 feet and where heavy thinning should occur. Zone 3 is from 100- property boundary and where continued thinning should occur.

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Leave Tree Considerations

Always think about the future quality of the stand when selecting residual trees.

Work within the limitations of the stand and to the extend possible:

Select healthy, well-formed trees without visible defect, decay, etc.

On a tree with multiple stems or forks, take all or none.