EFFECTS OF REDUCED NATIONAL FOREST SYSTEM TIMBER HARVEST 1/

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Abstract.--Interest groups and individuals favoring lower timber harvests on National Forests have differing views about the appropriate timber harvest level for the National Forest System. At the low end of the harvest spectrum, it has been suggested that environmental issues warrant as much as a 50 percent reduction. This paper reports on the results of an analysis of a reduction of this magnitude. The paper reports on issues used to simulate a major NFS reduction, the timber levels associated with each, and the likely impacts on private timber harvest, softwood inventories, stumpage prices, NFS receipts, employment, lumber prices, imports, and domestic production of softwood lumber. A second analysis was done to simulate the effect of a large increase in pine planting on nonindustrial pine plantations.

INTRODUCTION

There are several timber-related issues currently being discussed that weigh heavily on National Forest timber harvest levels. Individually, and collectively, resolution of these issues at the expense of timber harvest on National Forests would have significant impacts on timber values, receipts to the U.S. treasury, the U.S. balance of trade, employment, and the timber growth and inventory situation on private lands. To date, the potential effects of these issues have not been examined except in a very general way.

Interest groups and individuals favoring lower timber harvests on National Forests have differing views on what the appropriate harvest level should be for the National Forest System. At the low end of the harvest spectrum has been the suggestion that resolution of the major timber-related issues at the expense of timber harvest would result in as much as a 50 percent reduction in harvest. The potential impacts of a reduction this significant in National Forest timber harvest are large and subject to much conjecture. In an effort to establish a common understanding of these impacts, this paper reports the results of an analysis of them.

Some individuals and interest groups supporting lower harvests on National Forests also support the concept that the reduction in National Forest harvest levels could and should be offset by increased management and timber harvest on private lands. One way of doing this would be to increase planting on nonindustrial private lands. The potential effects of increased planting of softwoods on nonindustrial private lands as a way of offsetting the impacts of a reduction in NFS harvest are also reported in this paper.

SIMULATING THE REDUCTION

Issues Selected

For the purposes of this analysis, the impacts of resolution of four issues were analyzed individually and collectively. These issues are only a means to reduce timber harvest in a reasonable way for analytical purposes. Selection of the issues and their sequencing in the analysis should not be interpreted as an indicator of Agency priorities. Definitions of issues are critical for determination of


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possible effects on timber production. The issues and definitions are:

1. Preservation of all old growth on the west side of the Pacific Northwest Region.

2. Set-asides for spotted owl (as defined in alternative L of the spotted owl EIS) and the red cockaded woodpecker (as defined in the interim R-8 guidelines responsive to the court decision in Texas).

3. Elimination of below-cost timber programs, where below cost programs are defined as programs where both Report #1 (current year costs and receipts) and Report #2 are negative.

4. Elimination of harvesting in existing roadless areas.

The potential impacts of each issue were determined independently and collectively. The collective impact was determined with the issues ordered above. For example, the effects of issue number one were determined, then for number two and so forth for the remaining two issues. Then the effects of combining issues one, two, and three, and finally, all four combined. Altogether, there were seven analyses. When issues were combined, the overlapping effects on timber harvest levels were considered. For example, much of the habitat for the northern spotted owl is in old growth. Thus if old growth timber is set aside, allowance for the spotted owl would have little additional impact on the harvest level.

Analysis of potential offsets of reductions in National Forest harvest was based on the assumption that 50,000 acres of nonindustrial private land would have to be planted to offset each 100 million cubic foot reduction in National Forest harvest. Most of the land available for tree planting is in the South and the analysis assumes that the planting would be done in this region.

For each of the four issues and their combinations as above, analyses were done to demonstrate the effects of simultaneous reduction in National Forest harvest and increased planting on nonindustrial private land in the South.

Analysis Procedure

Regional offices of the Forest Service estimated the effects of these issues on timber harvest (defined as softwood roundwood and sawtimber and hardwood roundwood and sawtimber) measured in cubic feet. The projection of timber harvest used as a baseline projection is the volume in the sum of the final and draft Forest plans in effect as of July 1, 1989. Timber harvest volumes estimated under the terms of each issue or combination of issues were then used as input to the Timber Assessment Market Model (TAMM). The TAMM model has been used extensively within the Forest Service and by interest groups to simulate the effects of various timber issues on the U.S. forest sector. For example, it was used to make the simulations for the timber analyses of the five strategies in the draft 1990 RPA Program.

TAMM simulates private and public harvests with private harvest being market-responsive and public harvests fixed at predetermined levels. In the model, supplies and demands interact so as to produce a market equilibrium. It projects various measures of the U.S. timber demand and supply situation annually to the year 2040.

Outputs from the seven simulations in this analysis were each compared with corresponding outputs from "strategy two" of the draft 1990 RPA Program. Strategy two has been termed "Sum of Forest Plans." Thus, changes from "strategy two" outputs have been defined as the impacts of the issues individually and collectively. All other assumptions in the TAMM model remain as for "strategy two." Thus, population, gross national product, management intensity on private lands, and other key assumptions remain unchanged among the various simulations. The only change in input to TAMM is the National Forest timber harvest determined to be associated with the particular issue or set of issues.

Each of the seven simulations above was also done with the assumed planting of additional acres on nonindustrial private land in the South at a rate of 50,000 acres per 100 million cubic foot reduction in harvests on National Forests above and beyond the planting assumed in "strategy two" of the draft 1990 RPA Program. Paired simulations were compared to determine the extent to which the tree planting might offset the reduction in harvest on National Forests. For example, the effects of preservation of all old growth timber on the west side of the Pacific Northwest plus increased tree planting in the South, and so forth for the remaining issues and the various combinations of issues.

RESULTS

After taking into account the possible effects of old growth, threatened and endangered species, below cost timber programs, and roadless areas, the allowable sales quantities of softwood sawtimber were reduced 40 percent at the national level compared with the sum of final and draft plans as of July 1, 1989. There were reductions in each national forest region. In the PNW region, sawtimber harvests are decreased 60 percent in western Washington and Oregon and by 26 percent in the remainder of the region. In the PSW region, sawtimber harvest is reduced 26 percent in the first decade. Elimination of below-cost timber programs largely accounts for a 38 percent reduction in
sawtimber harvest in the Rocky Mountain region in the first decade. The small softwood timber program in the Eastern region is reduced to 8 million cubic feet in the first decade. Sawtimber output from National Forests in the Southern region is reduced by about one-third. The Alaska region sawtimber volume is reduced to 13 million cubic feet from 75 million cubic feet.

Any reduction in National Forest harvest levels would have an effect on the timber industry dependent on that particular source of timber supply. Changes in harvest in one region also affect the industry in other regions. The issue is mainly a western one, however, and it is mainly softwoods. Threatened and endangered species habitat is the single most important issue for the PNW region. In the PSW region, preservation of old growth is the single most important issue, and in the Rocky Mountain region, it is below cost timber programs. For the Alaska region, it is elimination of harvest in existing roadless areas.

General Effect of Additional Pine Plantations

Intensified management of nonindustrial private lands, mostly through increased acreages of pine plantations, is often suggested as an offset to reduced NFS harvest. The planting of additional pine plantations in the South to compensate for the reduction in NFS softwood harvest mainly in the West does not affect projections until these plantations reach minimum harvest age—they start affecting projections mainly in the decade of 2020-2030. In general, these plantations reduce stumpage prices in all regions, especially in 2035. The additional wood volume in the South gives this region a competitive advantage in the National market and leads to lower harvests in the West.

Effects on Softwood Sawtimber Harvest on Private Lands

Increased harvest on private lands offsets somewhat the reduction in softwood sawtimber harvest on National Forests, but not completely and then only in the short term. In the first decade in the reduced NFS harvest projection, NFS sawtimber harvest declines 680 million cubic feet and harvest on private lands increases by about 400 million cubic feet. By the fifth decade, NFS harvest declines 793 million cubic feet. The harvest on private lands in the South and West is constrained by a lack of softwood timber of minimum harvest age.

By 2035, the additional pine plantations lead to increased harvest on private lands in the South to the point where it compensates for 85 percent of the reduction in NFS harvest. In the planted pine augmentation projection in 2035, private harvest of softwood sawtimber increases 672 million cubic feet and the reduction in NFS harvest is 793 million cubic feet.

Effects on Softwood Inventories in Softwood Types

The lack of trees of merchantable size on forest industry lands and on some other private lands shows up in the timber inventory volumes projected through time. Private harvest generally increases in response to the reduction in NFS harvest in 1995 and then falls under the private harvest in the baseline projection. The draw-down in inventories in the first decade of the projection period affects harvests in later decades. Private inventories are not drawn down more extensively in the reduced NFS harvest projection because trees were already being harvested at minimum harvest age in the base-line projection.

Effects on Stumpage Prices

In the base-line projection, softwood stumpage prices in the South and West are projected to rise rapidly until 2015 and then level off. The reduction in NFS harvest accentuates this projection. Stumpage prices rise faster and flatten out beyond 2015 at a higher level. The planted pine plantations reduce stumpage prices in all regions except the Eastern region by 2035.

Effects on NFS Receipts

In the base-line projection, NFS receipts are projected to increase steadily through time. In the reduced NFS harvest projection, receipts initially exceed the base-line projection. After 2005, they continue to increase, but are less than in the base-line projection. The additional pine plantations on private lands reduce NFS receipts in 2015 and thereafter. The 25 percent payments to counties would follow the same trend as total receipts.

Effects on Employment

Mainly because of adoption of labor-saving technology, employment is projected to decline in each region except the Eastern region in the base-level projection. The reduction in timber harvest makes the decline even more pronounced. In total, employment declines by 110,000 people in the base-line projection and about 125,000 people in the reduced NFS harvest projection. In the decade 2025-2035, the softwood plantations in the South lead to increased employment in this region and decreased employment in the West. The pine plantations have a net effect of increasing U.S. timber industry employment by 7,000 people compared with the base-line projection.

Effects on Softwood Lumber Prices

As a result of the reduction in NFS harvest, softwood lumber prices are 10 to 15 percent higher than the base-line projection throughout the projection period. The additional pine plantations in the South tend to
reduce imports, but not significantly until the decade of the 2020's.

Effects on Domestic Production of Softwood Lumber

In the base-line projection of softwood lumber production, output is expected to increase to 47.4 billion board feet by 2035 and in the reduced NFS harvest projection, output is 42 billion board feet in 2035. In the planted pine augmentation projection, output is 46.5 billion board feet. The output levels in the three projections reflect market interactions with softwood plywood and other products as well as with stumpage price.

CONCLUSION

The various simulations that were done for this project indicate the extent of effects to be expected from major reductions in NFS sawtimber harvest. In general, they contribute to trends already reflected in the base-line projection with the exceptions of reduced NFS receipts and increased softwood lumber imports. Reductions in NFS harvest contribute to higher sawtimber prices and reduced employment in the timber industry. Because of a lack of merchantable softwood sawtimber inventory on forest industry lands, there is little increase in private sawtimber harvest to compensate for the reduction in NFS harvest. It is not until Southern pine plantations reach merchantable age after the turn of the century that prices turn down in either the base-line or the reduced NFS harvest projections.

In the long-run, the additional pine plantations in the South prove to be substitutes for the reduced NFS timber harvest in terms of softwood lumber prices and softwood lumber imports, but the South gains at the expense of the West in terms of product output and employment. In the short-term of the next 25 years, additional pine plantations do not affect the demand/supply outlook.