FYI

FOREST
RESOURCES

May 25, 1993

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Dear Dr. Thomas:

I hope the meeting Friday, May 21, was helpful for you and your associates in the challenging task. As always, I learned a lot when talking with you.

Forest Resources Management Division

Many solutions to the issue can be scientifically sound. The real challenge is to be creative in finding a scientifically sound solution which will be most efficient. (As an example, both the sundial and the quartz watch are scientifically sound; the main difference is that the quartz watch is more creative.)

I am following up our meeting with this letter containing suggestions. We discussed some of these suggestions. Please contact me if you want me to work with you further on these. The suggestions are divided into four areas:
--the process you are involved in,
--suggesting and analyzing an alternative,
--presenting the information, and
--further considerations.

THE PROCESS YOU ARE INVOLVED IN

The scientific process needs impartiality at each step; I urge you to separate the various tasks of:

1. developing criteria for basing decisions;
2. developing a broad range of scientifically credible alternatives;
3. analyzing the various alternatives;
4. judging (ranking) the strengths of each alternative relative to each criteria;
5. reviewing the above scientific process;
6. choosing a preferred alternative.

Having not interacted with your team before last Friday, I do not know its organization, etc.; however, one major problem is a perception that you and several members of your team are biased toward your previously developed approaches--that you can not be viewed as objective for all tasks. Somehow, you will need to show that:

--you do not have any biases toward your previous approaches;
--you received objective reviews of your and other alternatives;
--as many other alternatives and approaches as possible were openly solicited and fairly analyzed and considered;
--the presentation and decision of alternatives (both which to present and which to choose) were done objectively.

Another major problem will be any review process. Reviews are often misconstrued if the reviewer is asked: "Is the report to be reviewed scientifically sound?" In reviewing the product of your efforts, additional questions need to be asked: "Are there other scientifically sound alternatives which should be considered?" and "What was the process of developing the report so that creativity, objectivity, and scientific rigor were maximized?"

In terms of criteria for basing the decision, I suggest the following broad criteria be included to avoid negative impacts here and to other regions:

1. Protection of spotted owls and other old growth species habitats;
2. Protection of other species including fish (or the structures in which they live);
3. Global environmental protection (avoid increasing harvesting elsewhere)
4. Employment (especially in timber dependent communities where unemployment is now high)
5. Cost/revenue to the government
6. Cost/return to the economy

I and others have described these in papers and letters I gave you.

SUGGESTING AND ANALYZING AN ALTERNATIVE

I urge you to consider a wide range of alternatives using the scientific technique of "bounding" any range of alternatives by taking it to an unexpected extreme. (As we discussed, we are not lawyers, so the "legality" of some of them may need to be resolved by others.)

Attached is an example of "proactive" VS "preservation" management on one piece of land. It is similar to some of

the scenarios we discussed; this example fleshes out the analysis of one of them. The example both suggests a possible pro-active approach on both public and private lands and suggests a way of comparing the results. You have the resources to compare these with more accurate numbers. I urge you to compare these and other creative scenarios.

The example compares two options. "Proactive" management seems to be better for the spotted owl and other criteria; however, this analysis was done VERY roughly. I encourage you to analyze this "proactive" approach as well as more and less "proactive" ones using analytical methods such as I have described here.

One approach may be to have a mixture of various degrees of "proactive" management across the states, depending on the risk (e.g., fires) and relative hardships of the communities.

PRESENTING THE INFORMATION

You had suggested that the information would be presented at two times and in two parts: the initial biological alternatives, and the suggestions for mitigation and improvement. I strongly urge you NOT to present these separately or to find a way to avoid my concern below.

Separate presentations will leave the impression that the mitigation is a "compromise" from the only scientifically sound solution. There are many scientifically sound solutions. If creatively considered, the mitigation should be an integral part of the scientific sound solution.

Presenting them separately may lead to political "jockeying" for positions.

FURTHER CONSIDERATIONS

Wood Flow:

We agree that we need to be concerned about the wood flow to the timber-dependent communities during the possible "bottleneck" of the next few decades. One possible way to resolve the bottleneck is through creative alternatives such as the one I've suggested above (see attached example).

If this flow of timber is insufficient, it may be possible to arrange incentives to harvest wood in eastern Washington and Oregon and transport them west of the mountains. (In the eastern Oregon and Washington forest ecosystems health report, much thinning and other harvesting was suggested in these areas to maintain a healthy, balanced ecosystem. These thinnings and harvests may not be economically feasible in themselves; however, they may be

feasible through a joint production of timber, jobs, and sound ecosystems.)

Community stability:

We agree that we need to maintain the creativity of the rural people during the decades of shortages of timber flow. These people and their skills are necessary to enhance, protect, and maintain stable ecosystems and to manufacture ecologically sound timber products.

If there is insufficient employment in the "spotted owl" management scenario developed, it may be appropriate to utilize the skill and creativity of the local people for thinning, pruning, stream restoration, and otherwise enhancing the many values of the forest.

For their creativity to be utilized, they must accept (or choose) and be an integral part of any solution. Otherwise, their creativity may be channelled to confound any externally imposed solution.

A lag time for Forest Plans and for Watershed Analysis Plans:

We discussed that other areas may become available for active management after Forest Plans (U.S.Forest Service lands) and Watershed Analysis Plans (other lands) are developed. As you suggested, these projects may take several years.

During these several years, there may be many mills which close permanently--and communities and people will suffer.

I strongly urge that the planning process be streamlined by getting the local people involved in the actual planning. Recent technologies in G.I.S. and satellite systems are allowing efficient understanding of the issues. One of my graduate students helped a local community develop a very balanced plan for an area by providing them with the information.

The advantages of getting local people actively involved are: they will actively defend and support the plan; they know the area and can develop the plan efficiently; and they will develop it rapidly and efficiently so they can proceed with the management.

I also urge that private landowners be given incentives (a free market approach) to encourage them to create the needed structures. This will allow rapid, independent initiatives to create the structures. (It's what has driven the U.S. so far.)

I hope these suggestions are helpful. The objective is to provide the President and the American people with open-minded, creative, and scientifically sound solutions. If I can be of any help to your committee, please feel free to contact me. As we discussed, I have freed my schedule during the next few weeks to be as available as possible.

Yours truly,

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cc. President Clinton
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EXAMPLE COMPARING "PROACTIVE" VS "PRESERVATION" MANAGEMENT FOR SPOTTED OWLS AND OTHER VALUES.

Chad Oliver, Professor of Silviculture, College of Forest Resources, University of Washington, Seattle, Washington. 98195. (May 25, 1993)

(More intensive analysis should be done; however, the example shows that a "proactive" management approach may be more effective than large "preservation" areas. These are just two examples among many which should be considered.)

This example compares a "preservation" and an active "landscape management" scenario. These are just two of a wide range of scenarios which could be developed. The "landscape management scenario" includes preservation of "old growth", creation of more "old growth" structures, and active involvement of private landowners through incentives. The "preservation scenario" creates an "old growth reserve" which locks up all National Forest lands for no management. The example looks at solutions which would provide that flow for 20 years since a major problem is wood flow for the next two decades until some balance of harvestable age classes is reached. More detailed analyses would need to be done to develop a long-range scenario.

The example covers 895,000 acres. "Operational falldown" could reduce the numbers considerably and still show positive results. Different levels of proactive "landscape management" could be done in different areas. The mixture of alternatives would have several positive effects:

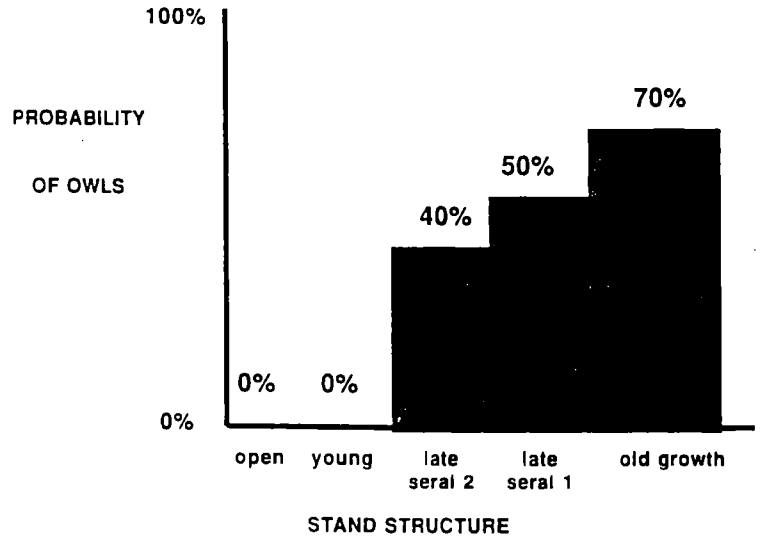
--it would allow a mixture of conservation and other social values, risk, and certainty to be matched to each specific location;
--it would allow the different alternatives to be tested in application, to determine which is most effectives. (This testing of different scenarios is a major part of the "adaptive management" approach.)

The example will be described in terms of "Scientific Background", "Area of the Example", "Alternative Management Regimes", "Criteria for Decisions", "The Analysis", and "Tradeoffs and Results."

THE SCIENTIFIC BACKGROUND:

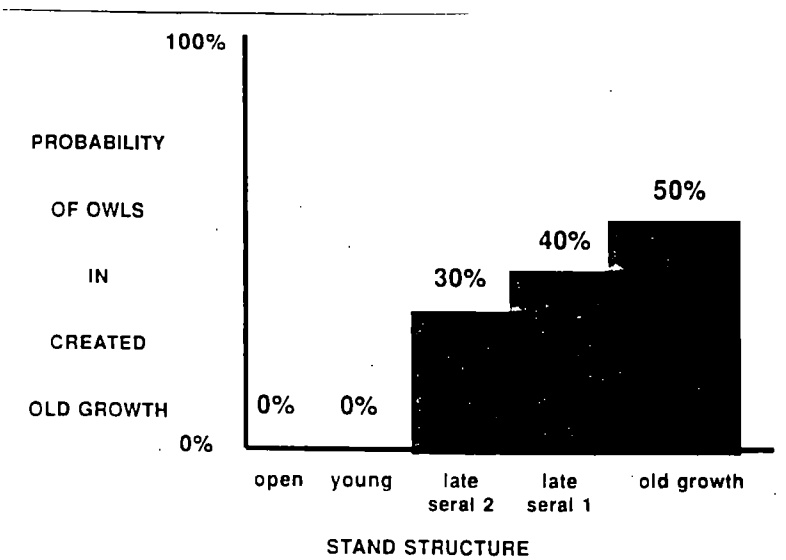
Suitability of forests for spotted owls is based on the forest structure. Although there is limited information, the probability of finding owls in various forest structures probably increases with increasing "old growth" structure (See Figure 1).

Figure 1. Probability of owls living successfully in various forest structures probably increases with "old growth" structure.



Where "old growth" structures do not exist, it is possible to create them more rapidly with proactive thinning of younger stands than by leaving such young stands to "grow naturally." The probability of finding owls in such "created" old growth and "late seral" structures is probably less than in undisturbed structures (Figure 2). There is evidence that owls inhabit these "created" structures in many areas; the "uniformity of process" concept leads us to believe it would happen in other places.

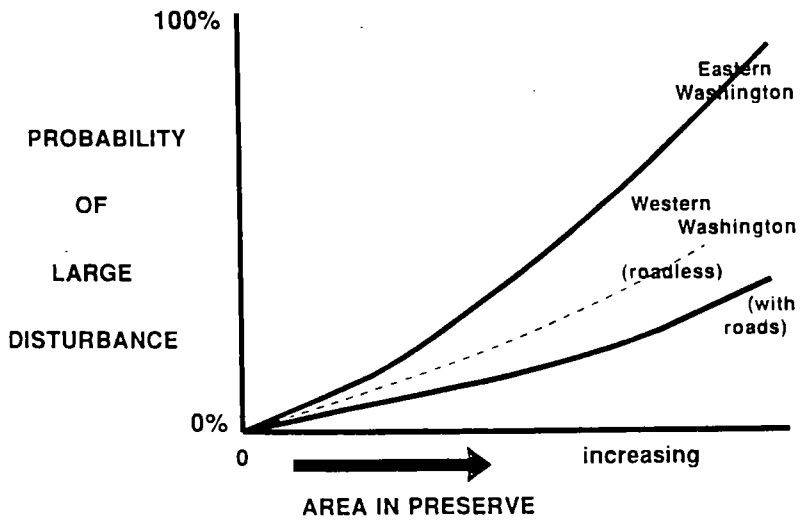
Figure 2. Probability of owls living successfully in various forest structures probably increases with artificially created "old growth" structures, although it is possible that the probability is lower.



The "confidence" of our probabilities in Figures 1 and 2 are both low. Questioning our confidence in one figure without also questioning our confidence in the other would be a selective (biased) assessment and not scientifically correct.

The risk of a very large disturbance destroying a forest increases with the area of contiguous, unmanaged forest (Figure 3). Where forest management has interrupted the contiguousness of stand structures, fires and windstorms are less likely to occur. Where roads make "cleanup" after windstorms and fire fighting feasible, the risks of fires is even less--especially where road access can be blocked if necessary. Lack of interest (and even enmity) of local people toward the forest increases the risk of fires. Fires are also more likely in old forests in certain areas than others because of local climatic differences.

Figure 3. Probability of a large disturbance occurring is directly related to the size of contiguous unmanaged forests.



AREA OF THE EXAMPLE:

Assume an area of National Forest land with the following:

Old growth forests.....170,000 acres
Late seral ("late seral 1").....75,000 acres
Moderately old ("late seral 2").....100,000 acres
"Stem exclusion" ("young").....50,000 acres
Recently clearcut ("open").....100,000 acres

Nearby is private land with the following attributes:

"Stem exclusion" ("young").....200,000 acres
Recently clearcut ("open").....200,000 acres

(This example is similar to the Mt.Baker-Snoqualmie National Forest Spotted Owl Habitat Conservation Area, 1990.)

ALTERNATIVE MANAGEMENT REGIMES:

Two scenarios are suggested for managing the National Forest and related area:

Landscape management alternative (#1): By this scenario, the "old growth" is not harvested, "late seral" and "moderately old" stands are thinned to create "old growth (ST)" and "late seral 1 (ST)" structures respectively. 150,000 acres of the "young" stands on private lands are thinned to create "late seral 2 (ST)" structures (using government incentives). Thinned stands jointly produce wildlife structures (snags and downed logs) and timber for processing.

Preservation Alternative (#2): By this scenario, the entire National Forest HCA area described above is set aside as an "old growth preserve", and no management is allowed. Private lands are harvested (at about 50 years rotation age).

CRITERIA FOR DECISIONS:

Several criteria are used for comparing the merits of the alternatives. The criteria are generally relative (other scenarios would actually produce lower values for certain criteria):

1. **Spotted owl suitability:** Relative suitability is the sum of all acres in a structure multiplied by the probability of it being suitable for owls (Figures 1 and 2) and then reduced for risk of destruction (Figure 3).
2. **"Open" species suitability:** Just as we "myopically" discounted the importance of "old growth" structures and habitats in the past, we do not want to discount the importance of "open" structures in the future. "Open" species suitability is the sum of the open acres multiplied by a probability of a species being found in it (here assumed simplistically to be 80%).
3. **Fish management:** Ability to enhance and manage riparian zones is directly related to both access to the zones and funds to give incentives to manage. For this reason, the "landscape management" alternative was listed as more suitable than the "preservation" alternative.
4. **Global environment:** If wood is not harvested from the Pacific Northwest, more polluting steel, aluminum, brick, concrete, and plastic are used OR wood is harvested from elsewhere--e.g., Siberia.

   Board foot volume produced by each scenario indicates the amount of non-wood products (and associated pollution) not used. Board feet produced were assumed as follows:

Thinning "late seral 1" yields 15 thous. Bd. ft./acre
Thinning "late seral 2" yields 15 Bd. ft./acre
Thinning "young" yields 10 thous. Bd. ft./acre
Clearcutting "young" yields 40 thous. Bd. ft./acre

Added clearcutting in Siberia indicates impact of harvesting wood in othe areas to substitute for Pacific Northwest wood. Fifteen acres must be harvested in Siberia to obtain the wood from harvesting one acre in the Pacific Northwest.

5. **Employment:** One million board feet harvested is assumed to produce 9 person-years of employment.
6. **Return to the government:** Net revenue from timber sales less expenditures in incentives.

Revenue to the government: Revenue is assumed at the rate of $ 400 per thousand board feet harvested.

Cost to the government: Incentives for private landowners to maintain "late seral 2" structures for 20 years through thinning, creating snags, etc. is assumed to cost $ 2,000/acre (assuming joint production with timber--to be harvested at the end of 20 years, when other stands would be manipulated this way).

8. **Cost to economy:** Revenue from harvest of timber is assumed to have a multiplier of 4. Numbers are differences in returns.

THE ANALYSIS:

The area in each structure after 20 years is shown in Figure 4. The probability of containing an owl multiplied by the area in that structure gives the "total" value. The "spotted owl suitability" of the alternative is this total less the risk of destruction (by fires, winds, or both). Risk with the "preservation" alternative would be much higher in such places as eastern Washington (Figure 3).

TRADEOFFS AND RESULTS (FIGURE 5):

Results of the analysis shows more of all values are generated by "proactive" management. The complete "preservation" alternative provides even less "owl growth" habitat as well as other structures.

Other scenarios intermediate to (and more extreme than) these could also be done. Where the confidence in estimates is low, sensitivity analyses could be done to determine the importance of being conservative with an estimate.

(The conversion factors used were very crude because of limited time and resources. These factors could be improved dramatically.)

More "proactive management" scenarios could be done in areas where risk of habitat destruction with "hands-off" preservation is high (e.g., eastern Washington and Oregon) and where rural communities are in most need of relief.

This and other alternative "landscape management scenarios" with different levels of "proactiveness" done at different places across the states could provide a steady flow of stand structures, timber products, and other factors and would allow examination of a variety of ways to produce desired values.

Figure 4. Area in each structure after 20 years, and total suitability for each structure with the landscape management Alternative (Figure 4A) and preservation alternative (Figue 4B). (Note both alternatives preserve existing "old growth.")

Figure 4A. Alternative # 1: Landscape Management Alternative.

Structure	Prob. of Sp.owl suitability	Acres	Total Spotted Owl suitability: (Acres X Prob.)
Unmanaged structures:			
Old Growth:	70%	170,000	119,000
Late Seral 1:	50%	0	0
Late Seral 2:	40%	0	0
Young:	0%	200,000	0
Open:	0%	200,000	0
Created structures:			
Old GrowthST:	50%	75,000	37,500
Late SeralST 1:	40%	100,000	40,000
Late SeralST 2:	30%	150,000	45,000
TOTAL		895,000	241,500
Risk of destruction (Fig.3)			5%
SPOTTED OWL SUITABILITY: (Total - risk):			**229,425**

Figure 4B. Alternative # 2: Complete Preservation Alternative.

Structure	Prob. of Sp.owl suitability	Acres	Total Spotted Owl suitability: (Acres X Prob.)
Unmanaged structures:			
Old Growth:	70%	170,000	119,000
Late Seral 1:	50%	75,000	37,500
Late Seral 2:	40%	100,000	40,000
Young:	0%	500,000	0
Open:	0%	50,000	0
Created structures:			
Old GrowthST:	50%	0	0
Late SeralST 1:	40%	0	0
Late SeralST 2:	30%	0	0
TOTAL		895,000	196,500
Risk of destruction (Fig.3)			15%
SPOTTED OWL SUITABILITY: (Total - risk):			**167 025**

Figure 5. Relative tradeoffs for a variety of values with "landscape management" and "preservation" alternatives. Higher values indicate more positive benefits. (These values are crude, but show trends. Sensitivity analyses could be used to determine changes caused by inaccuracies of data.)

Criteria	**Alt. #1 Landscape & Preserve Old Growth**	**Alt. # 2 Old Growth Preserves**
Spotted Owl suitability:	229,425	167,025
"Open" spp. suit.: 80%	160,000	40,000
Fish Management	+	0
Global Environment:		
Hvst/yr (mill.bd.ft.)	610	100
Added Siberia hvst.(acres/yr)	0	150,000
Employment (person-yrs.)	5,456	900
Gov't. cash flow (20 yr)		
Revenue to Gov't.	$ 1,900,000,000	$ 0
Cost (incentives)	$ 300,000,000	$ 0
Net:	$ 1,600,000,000	$ 0
Cost to economy (20 yr)	$ 970,000,000	$ 160,000,000