Responses to Reviewer Comments

RESPONSE TO THE SCIENTIFIC REVIEW OF THE DRAFT ELLIOTT STATE FOREST MANAGEMENT PLAN

INTRODUCTION

On February 3-4, 2004, a workgroup met in Salem to reconcile the comments of six scientists who reviewed draft chapters of the revised Elliott State Forest Management Plan (FMP). The work group consisted of technical specialists from the Oregon Department of Fish and Wildlife (ODFW) and the Oregon Department of Forestry (ODF):

ODFW	ODF
Marnie Allbriten	Marcia Humes
Alan Ritchey	Jeff Brandt
Jon Germond	Doug Robin
	Jasen King
	Larry Sprouse
	Greg Kreimeyer

Reviews were received prior to the meeting from:

Janet Ohmann, Forest Ecologist, US Forest Service
Larry Irwin, Wildlife Biologist, NCASI
Bill Emmingham, Prof. of Silviculture, OSU
Chad Oliver, Prof. of Forestry/Environmental Studies, Yale Univ.
Peter Bisson, Fisheries Biologist, US Forest Service
Bob Gresswell, Fisheries Ecologist, USGS

The reviews by Eric Forsman, Wildlife Biologist, US Forest Service, and Peter Teensma, Fire Ecologist, US Forest Service, were received after the meeting and were considered during the revision of the draft documents.

The reviewers were asked to respond to a series of questions related to the draft "Concepts" and "Strategies" chapters of the revised FMP to (see memo to reviewers):

- Provide a credible review of the scientific basis of the landscape management strategies, and
- Assess the feasibility of the proposed strategies to achieve the objectives in the plan.

The review comments were analyzed question by question. For the most part, the reviews were constructive and supportive. All said we are taking a good approach that is modern, integrative, and will support sustainable ecosystem management. They believe the plan includes good interpretation and use of the available science. They suggested better connection between the concepts and strategies and clearer explanations for outsiders not familiar with ODF. Many of the comments were for more detail that the workgroup felt are more appropriate for an implementation plan rather than for a strategic-level FMP.

The peer review process worked quite well. It showed areas in our strategies that were good as well as those that needed work. Based on the comments received, the workgroup was able to construct the foundation for what will be a much improved FMP.

RESPONSES TO REVIEWS

General Comments

Issue: Need better description of the current condition of the forest and the desired future condition.

Response: We agree. The public review will include maps of forest condition at the time of the review and tables that describe how modeling predicts changes in forest condition over time. When possible, maps will include forest condition in a regional context.

Issue: Lacks detail of landscape design and the silvicultural pathways and approaches that will be used.

Response: We agree that the FMP lacks that level of detail. However, we feel that it is more appropriate for a District Implementation Plan that describes intended management activities. The Implementation Plan will be reviewed and, when necessary revised, at 10-year intervals. A draft Implementation Plan for one management basin will be available during the public review period.

Issue: Need better connection between the Concepts and Strategies sections and clarification of guidelines, standards, and strategies.

Response: We agree. The documents will be revised in several places to clarify how the management strategies relate to the concepts of sustainable forest ecosystem management. A table will be available during public review of the FMP that shows the linkages between goals, concepts, and strategies. This, and recommendations reported below, will require reorganization of the FMP.

Issue: In Chapter 4, it is unclear why Aquatic and Riparian concepts have been singled out in the section on integrated resource management, which encompasses a long list of resources and values.

Response: We agree that this section needs rethinking. The Integrated Resource Management Concepts are intended to focus on special resource values not covered in the Sustainable Forest Ecosystem Management. These resources include, for example, air quality, energy and minerals, special

forest products, etc. To clarify these differences in strategies, we will include Integrated Resource Management Concept 2 (aquatic systems) as a new Concept 4 of the Sustainable Forest Ecosystem Management Concepts in Chapter 4 (Concepts). In Chapter 5 (Strategies), the Aquatic and Riparian strategies will be described as part of the section on Strategies of Sustainable Forest Ecosystem Management. Finally, the appendix containing specific aquatic and riparian standards will become an integral part of the Strategy description.

Issue: Lacks detail on specific adaptive management and monitoring activities.

Response: We agree that the FMP lacks that level of detail. The adaptive management and monitoring framework is well described in Chapter 6. Details of specific monitoring activities will be included in the District Implementation Plan and Habitat Conservation Plan.

Issue: All reviewers made suggestions for editing for clarification, grammar, and spelling.

Response: These suggestions were accepted where appropriate.

Specific Review Questions

Question 1: Are the management goals, concepts, and strategies adequately defined for you to answer the following questions? If not, what assumptions will you need to make to answer the questions? You may refer back to this question after answering the following questions if needed.

Issue: Reviewers responses indicate that the goals, concepts and strategies are reasonably well represented in the FMP. However, they all agree that until the detail in the HCP and IP is available it is difficult to assess the likelihood of success.

Response: The FMP is written at the strategic level. It presents the general framework for management of the Elliott State Forest. The District Implementation Plan and Habitat Conservation Plan will describe specific management activities in greater detail, including how harvest and habitat goals will be achieved. For clarification, a table will be included in the public review draft of the FMP that shows the linkages between goals, concepts, and strategies.

Question 2: What are the scientific and technical strengths and weaknesses of the approaches described in Sustainable Forest Ecosystem Management Strategies 1-6?

Please discuss the merits and weaknesses of each individual strategy. Are there alternative strategies that better meet the management goals?

Issue: There is a general need for more clarity and consistency in the use of terminology and additional summary information.

Response: For the public review draft, we will include a description of the "ecological" forest vegetation types and the importance of different vegetation zones, seral stages, and multiple species in the description of the forest (Chapter 2). We will clarify the importance of hardwoods in many stands.

Strategy 1: Actively manage for a diversity of stand structures

Issue: Overall, the reviewers agreed the concepts and approaches were good, but the discussion needed more detail in some areas. Particularly, more detail is needed on how the stand targets were developed.

Response: The strategy will be edited to include the rationale for the development of stand targets. We do not intend to include a specific description of how we will deal with catastrophic disturbances. In such instances where "the clock is reset" we will apply the adaptive management process to assess changes at various planning levels. We will consider the reviewer's suggestions for editing.

Strategy 2: Design a functional arrangement of stand types

Issue: Needs clarification on how we define "functional arrangement" and how we intend to implement the strategy

Response: We will edit the strategy to emphasize how we approach developing the landscape design and how it results in the arrangement of habitat that we assume will be functional. We will also edit to illustrate awareness of the importance of open and earlier stages of forest development. We assume there will be no substantive changes to the strategies that would affect modeling.

The workgroup discussed the logical flow of the implementation of Strategies 1 & 2. We decided that it made more sense to think of the arrangement of stands on the landscape (landscape design) first and then what happens in the landscape units (diversity of types). Therefore, presentation of Concept/Strategy 1 and 2 will be reversed

Strategy 3: Establish reserves to protect special resources

Issue: Needs clarification on the function of reserves, where they will be located, and what level of management activity will be allowed. Several reviewers felt that some reserves should be managed for specific habitat conditions, while others felt that some reserves should not be managed at all. In particular, several reviewers questioned whether salvage logging is compatible with the intended function of reserves.

Response: We will include maps and tables to describe management basins including reserve areas

In the discussion of the various types of reserves, we will include a statement regarding the desired function of each reserve type. The method for determining whether a reserve is actually serving the function (e.g. after a stand-replacing fire) will also be described. Finally, the decision process for dealing with loss of function of reserves will be outlined.

The workgroup agreed that excluding timber harvest, including salvage, from reserves would provide clarity about activities in reserves and be consistent with the common definition of reserves as areas where active management is not practiced. It was felt that this would not constrain management of the forest. The workgroup agreed that salvage should be allowed for public safety reasons.

We will describe the thought process in dealing with "catastrophic events" and add as much clarity as possible as to what is allowed to occur in reserves. As stated in the response under Strategy 1, we do not intend to include a specific description of how we will deal with catastrophic disturbances. In such instances where "the clock is reset" we will apply the adaptive management process to assess changes at various planning levels.

Strategy 4: Actively manage to provide key legacy structures outside reserves

Issue: This strategy is complex and has multiple subsections. The reviewers offered many suggestions.

Response: General: The strategy has been streamlined to include only: green tree retention, snags, and down wood. These structural components will be defined on a per acre per unit basis.

The other structural components original addressed by the strategy – remnant old growth, layered canopies, herbs and shrubs, and gaps – are now covered in the revised Strategy 2 (diversity of stand types).

Native tree species will be part of the green tree retention sub-strategy. Native species will be discussed in the new discussion of the ecology of the Elliott in Chapter 2.

Salvage will be discussed as part of the new section on silvicultural tools.

Strategy 4a – Remnant old growth: Becomes part of new Strategy 2

Strategy 4b – Large trees and defective trees: Becomes Strategy 4a. Renamed "Green Tree Retention". The standard for GTR will be "On upland units, retain 2-4 green trees per acre with DBH greater than or equal to the stand average". In stands <20" DBH, retain 4 green trees per acre per unit. Consider retention of minor species (e.g. redcedar, hemlock). We will consider retaining minor species with DBH smaller than the stand average. The reference to riparian standards will be deleted.

Strategy 4c – Snags: Becomes Strategy 4b – Snags. All existing snags will be retained where feasible and appropriate (except for safety considerations) with a 20" DBH minimum. In timber sales, one-half to three hard snags per acre will be created or retained. At least 50% of total snags will be retained in uplands. When necessary, hard snags will be created from retained green trees over 20" DBH.

Strategy 4d – Down Wood: Becomes Strategy 4c – Down Wood. The standard will be "Retain 300 – 600 cubic feet per acre per unit in decay classes 1 and 2, to include at least 32 linear feet and 26" diameter large end if available in stands >20" DBH. (32' length need not be continuous but with 6' minimum length). At least 50% of volume must be conifer. Leave all existing down wood in younger stands where feasible and practical.

Strategies 4e – Layered Canopies; 4f – Native Species; 4g – Herbs and Shrubs; 4h – Gaps: Now covered in new Strategy 2 and discussed as part of the silvicultural tools section.

Strategy 5: Integrated Pest Management

Issue: Generally needs clarification, particularly concerning triggers and thresholds for action.

Response: We will add information, including additional literature references, to clarify our approach. We recognize that there may be some situations where taking no action would be more effective and less costly, contrasted with an example where action would likely occur. We will discuss with Insect and Disease staff specialists to redraft this strategy to reflect how we will respond to different pest and disease situations. We will make a stronger link to Concept 3.

Strategy 6: Implementation plan

Issue: There is general affirmation that the an implementation plan is necessary. However, there is some concern from the reviewers that this is really a "strategy" and some uncertainty if we have adequately described it.

Response: We will improve language describing the IP time horizon. We will clarify that we do look out several decades in modeling and have an understanding from the modeling of the best stands to be working in. The IPs will be based upon a set of objectives developed through modeling and will describe how we will implement the modeled approach. Decadal outputs from modeling will be included in the FMP.

There was some question within the workgroup about whether this step should be considered a strategy. We decided that it was actually a part of FMP implementation activities. Therefore, the improved description of District Implementation Plans will be moved to Chapter 6.

Question 3: The approaches summarized in Chapter 4 promote the development of forest areas with complex stand structure, reserve areas for the protection of special resources, and non-reserve areas with an emphasis on commodity production distributed across the landscape. What are the scientific and technical strengths and weaknesses of this approach? Is this approach compatible with the concept of a dynamic balance of forest structures across the landscape?

Issue: The approach is generally supported by the reviewers. However, each identified specific concerns or weaknesses.

Response: We will evaluate the individual suggestions and edit the document accordingly. We acknowledge that there is uncertainty about the extent to which application of silvicultural tools can emulate natural disturbances and recognize that over an extended period of application we will learn more about this. It is likely that we can emulate some aspects and will fail to emulate others. Past reviews have led us to believe that we have high probability of developing the structural conditions described in the plans. Monitoring over time will help us understand how effective the approach

is in maintaining ecological processes and how effective it is in providing habitats.

The plan recognizes natural disturbances have existed over time in these forests. The plan incorporates that concept versus a static state model of the forest through time. We have not selected any specific fire occurrence regime or wind event regime, etc. But since these events do occur, we assume there is value in maintaining a range of conditions that emulate disturbance. Adaptive management over time may lead us to understand more clearly the relationships that drive the biological and physical processes. As that understanding increases we can better define the strategies we are employing.

The plan recognizes the relationship through the landscape design concept of identifying a desired future condition of the range of stand types across the array of environmental gradients. We have chosen an approach that allows managers to decide during implementation planning how the various stand types are arrayed on the landscape. A guideline is to develop a range of types across the range of environmental gradients.

We will improve clarity about the natural stand progressions that we describe and how we view our managed stands emulating stand types in the natural progression. We are managing for the stand types rather than the processes. The stand types themselves are difficult enough to track. Any given stand has numerous processes that are ongoing within the stand. Our approach directs managers to develop the stand types using silvicultural techniques that are employed to take advantage of our knowledge of stand processes to develop the desired conditions.

Question 4: Are the definitions of stands or habitats described in Chapter 4 sufficient to design forest management approaches that will achieve the goals of providing habitats for the range of native plant and wildlife species, and promoting healthy ecosystem function?

Issue: Confusion about the relationship of stand development processes (stand initiation, stem exclusion, etc.) to the stand (management) types (regeneration, complex, etc.)

Response: We will edit appropriate sections to clarify the relationship between development processes and management endpoints. This will include how we intend to use silvicultural tools to take advantage of stand development processes. Silvicultural tools will be referenced as part of Strategy 2. The relative importance of conifer, mixed conifer/hardwood, and hardwood stands will be clarified.

Question 5: What is the likelihood that the use of silvicultural manipulation will encourage the development of forest stands described in Chapter 4?

Issue: The reviewers generally support the concept that we will be able to develop the described stand conditions. However, some clarification is needed.

Response: We will edit the document for clarity for the public review draft. We will include an appendix with silvicultural pathways. We acknowledge that past thinning operations tended to simplify stands in many cases, whereas our proposed density management approach generally increases stand complexity. We will evaluate suggestions from reviewers for specific ideas to incorporate.

Question 6: The amount of complex stands and reserves anticipated in the desired future condition for the Elliott State Forest ranges between 50%-65% of the Forest. The amount of complex stands and reserves in individual management basins could vary from 35%-75%. If we apply the Sustainable Forest Ecosystem Strategies as described in Chapter 5, what is the likelihood that the amount and distribution of complex structure, reserves, and non-reserve areas will meet the management goals for fish and wildlife, forest condition, and timber?

Issue: Given the information at their disposal, none of the reviewers could directly answer whether we will meet all our goals for the stated resources. While there is general scientific support for the concepts we are proposing, there is concern about whether or not the stand types and structural characteristics will function adequately to meet the goals.

Response: As previously stated we will incorporate an appendix that describes the silvicultural techniques and pathways that we will employ. This will provide reviewers with a better understanding of management intensity and resultant timber production than can be expected. Our modeling work describes this directly, but this information was not available for review.

Recommended changes that provide better descriptions of stand types and natural stand development will help to clarify the theory behind why we think the approach will work. Displays of current condition and future landscape conditions and design will help clarify the spatial arrangement of habitat.

Future monitoring will provide the answer as to whether or not our approaches are effective. Specific monitoring activities will be described in the District Implementation Plan and the Habitat Conservation Plan.

Question 7: We have developed Sustainable Forest Ecosystem Management Strategy #4 in an effort to provide important legacy structural components in stands across the forest landscape. We are currently considering three different ranges of values for hard down wood (decay classes 1 & 2) to be provided at the time of regeneration harvest: 50-300 cubic feet/acre, 300-600 cubic feet/acre, and 600-900 cubic feet/acre. Our assumption is that adequate amounts of down wood in decay classes 3-5 currently exist, and will be left, on the landscape. What are the biological costs or benefits associated with each of the proposed ranges? Would your assessment be different if you assume a less than adequate amount of down wood in decay classes 3-5? Would your assessment be different if you assume these ranges apply only to stands proposed to become complex types and no additional down wood would be retained in stands proposed to become non-complex types?

Issue: The reviewers offer additional literature references and suggest we consider the following as we develop these standards:

- Landscape vs. site-specific standards
- Use existing data on levels on the Elliott as guidance
- Leave more in some areas, less in others

Response: We agree that these are important considerations and they will be reflected in the final standards. Also see response to Question 2, Strategy 4.

Question 8: Do you feel that the pertinent scientific information and current knowledge base has been incorporated into these management concepts and strategies? If not, what is missing?

Issue: Linkages between concepts and strategies are weak.

Response: Previous action items (e.g. Question 1) include preparing better descriptions that link the concepts to the strategies.

Issue: Lack of detail about silvicultural approaches and prescriptions.

Response: We agree that the FMP lacks that level of detail. However, we feel that it is more appropriate for a District Implementation Plan that describes intended management activities. For the public review draft of the FMP, we will include an appendix that describes the silvicultural tools that we will consider.

Question 9: In your opinion, how are the concepts and strategies likely to affect key species of concern, particularly northern spotted owls, marbled murrelets, and coho? Do you see any differences in short- vs. long-term effects? Please describe any adverse affects you may identify and associated opportunities to mitigate those adverse impacts.

If feasible, also discuss opportunities to modify the management strategies to prevent or minimize the identified negative affects.

Issue: The reviewers agree that the approaches seem reasonable. Specific suggestions were made regarding landscape design and effects on fish.

Response: We will give careful consideration to how landscape design can benefit fish during implementation planning. Unfortunately, the reviewers did not receive the tables of the specific aquatic and riparian management standards. These will be included in the public review draft. We anticipate important input to our evaluation of the aquatic and riparian strategies from two studies currently in review. These independent studies include an analysis of the rationale for the strategies and their effectiveness.

Question 10: The discussion of specific monitoring questions (Chapter 6) is designed to guide forest managers toward high priority monitoring topics. The questions are intended as examples and are not designed to serve as project-specific monitoring questions. Are the monitoring concepts and questions structured in a way that testable, relevant, and efficient monitoring projects could be developed from them? Why or why not? Do the monitoring questions adequately address the ecological and management assumptions within each resource strategy? Please state any assumptions you feel are not adequately addressed.

Issue: The reviewers agree on the importance of a strong monitoring program to determine the proper implementation and effectiveness of the FMP. However, they felt that specifics were lacking.

Response: We agree that the FMP lacks that level of detail. The adaptive management and monitoring framework is well described in Chapter 6. No immediate action is required. Details of specific monitoring activities will be included in the District Implementation Plan and Habitat Conservation Plan. Several recent literature references were suggested and we will consider them as we develop the specifics of our monitoring plan.

Question 11: Does the description of adaptive management (Chapter 6) clearly present steps necessary to translate monitoring results into changes in management at different planning levels and on different temporal and spatial scales? What steps or concepts are missing?

Issue: Lack of detail about specific activities.

Response: See response to Question 10.