

APPENDIX B

DESCRIPTION OF ANALYSIS PROCESS

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Description of Analysis Process

Introduction

This Supplemental Environmental Impact Statement (SEIS) responds to a March 2001 U.S. District Court Order that directed the Forest Service to prepare a SEIS that evaluates and considers roadless areas within the Tongass for recommendations as potential wilderness areas. This is discussed further in Chapter 1 of the main document. This SEIS is a supplement to the 1997 Tongass Land Management Plan Revision FEIS (USDA Forest Service, 1997). Appendix B of the 1997 FEIS discusses the analytical processes and models used in the Tongass National Forest planning process. This appendix updates the detailed discussion presented in Appendix B, as appropriate.

Evaluating and considering the roadless areas on the Tongass for recommendation as wilderness involved updating the inventory of roadless areas and analyzing their wilderness potential. This required use of a number of analytical techniques, as did evaluation of the eight alternatives that were developed as part of this analysis. The following discussion is divided into six main sections in general accordance with direction provided in the Forest Service Handbook (FSH 1909.12, Chapter 4). These sections are inventory data for information collection, allowable sale quantity calculations, economic efficiency analysis, social and economic impact analysis, analysis prior to development of the alternatives, and formulation of alternatives. Additional information and documents used in the analysis process have been compiled in the SEIS planning record, which is incorporated here by reference.

Inventory Data for Information Collection

As discussed in Appendix B of the 1997 FEIS (USDA Forest Service, 1997), the inventory step of the planning process consists of the collection, development, and documentation of data to address the needs of the project. Two basic types of information are needed to facilitate the analysis and development of alternatives. The first consists of information related to the classification of land into categories with unique properties. This type of information is tied directly to the map base, which in this case is the Forest-wide geographic information system (GIS) database that was updated for this analysis.

The second type of information is not directly tied to a map base but has more to do with how the land and associated resources will respond to certain management activities. This type of information comes from many sources, including research studies and available literature. The most applicable and up-to-date information available was used in this SEIS.

GIS Database

The Tongass National Forest developed a computerized GIS database for the revision of the Tongass Land and Resource Management Plan and that system continues to be built on and used by the Forest. This system makes it possible to conduct spatial analysis of alternatives and effects, and to rapidly display resource information in map format. The Tongass GIS is a large database that contains information on many of the resources on the Forest. Much of the data consists of map “layers” or “coverages”, each representing a particular resource or attribute, such as plant species, soil types, or recreation places. Numerical data are also stored, displayed, and analyzed. Computer technology and capability continues to improve and the Forest GIS database continues to be updated. Much additional information as well as improved information is now available for many resource areas. This SEIS takes advantage of the improved technological capability and information. Various GIS layers used in the 1997 FEIS analysis were reviewed and updated with better or newer information as part of the SEIS process. This improved and updated information was used for the existing condition information, as well as the analysis of alternatives in the SEIS.

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The baseline numbers used to describe the existing condition and project the effects of Alternative 1 do not always match Alternative 11 of the 1997 FEIS, which was the selected alternative. This is in part due to ongoing management activities on the Tongass, including changes in land ownership, changes in resource conditions resulting from timber harvest and road construction, and non-significant amendments to the Forest Plan. In addition, the use of newer computer mapping and measurement techniques that are more accurate than earlier methods also affect the numbers. In general, the relative differences between the 1997 FEIS-generated numbers and the baseline numbers used in this SEIS are small.

Some of the GIS layers or coverages frequently used in the 1997 FEIS analysis are summarized in Appendix B of that document (USDA Forest Service, 1997). These layers, many of which have been updated since the 1997 analysis, were also frequently used in this SEIS analysis.

Allowable Sale Quantity Calculations

The process used to calculate the allowable sale quantity (ASQ) for each of the alternatives evaluated in this SEIS was based on the FORPLAN analysis conducted as part of the Forest Plan revision process that resulted in the 1997 Tongass Land and Resource Management Plan. A previously developed spreadsheet was refined to recreate the output of the FORPLAN models used in the original analysis. This approach was not able to incorporate the large number of variables that a linear programming model, such as FORPLAN, could, but that type of complex tool was not necessary for this supplemental analysis. The objective of these spreadsheets in this context is primarily to provide a tool to compare the various alternatives against one other. The FORPLAN analysis used in the Forest Plan revision process is described in some detail in Appendix B to the 1997 FEIS.

The refined spreadsheet establishes a baseline based on the information used in the 1997 Tongass Land and Resource Management Plan Record of Decision (ROD) and supporting analysis. The rate of old-growth harvest is a constant in all alternatives. The only variation is in the total acres available for harvest by alternative. This rate was set based on the original outputs from the FORPLAN runs.

The rate of harvest for young growth forest (second growth) was also based on the original outputs from FORPLAN runs. Planning on the Tongass has generally assumed an average 100-year rotation age. FORPLAN uses a much more complex formula that based the rotation on site class and other variables. This meant that young growth was actually being harvested in a wide range of ages starting at 70 years of age.

The percentage of young growth harvested at each age class was calculated and used in the formulas for this spreadsheet. The existing condition spreadsheet required no modification of the percentages, but some of the other alternatives did require minor changes. Some harvest of young growth was delayed slightly from the original FORPLAN projections after 2050 in order to meet the guideline of non-declining even-flow. In the context of calculating an ASQ, the non-declining even-flow guideline requires that the volume produced over time from the available acres increase or stay level, but not decline. Some alternatives that remove extensive unharvested areas from the available acres, have many acres of young growth from past harvest, ready for subsequent harvest with a much reduced projected acres of young growth. In order to restore a balance and even-flow in these alternatives minor amounts of young growth harvest were delayed for one to two decades. Commercial thinning was not incorporated in any alternative and would increase the volume in every alt if included.

Model Implementation Reduction Factors (MIRF)

As discussed in Appendix B of the 1997 FEIS, an ASQ is calculated using Forest, area, and VCU-wide information and the level of accuracy and spatial specificity of these inputs varies based on the amount of available information. As a result, the inputs to models and anticipated effects are often estimates and averages. In addition, reductions to estimated sale quantities are likely to occur as a result of unforeseen land characteristics under all alternatives. As a result, factors were established to adjust the ASQ estimates to a level that is more likely to represent what would be found during implementation. These factors, referred to as Modeled Implementation Reduction Factors (MIRF), were included in the 1997 FEIS analysis. MIRF was also applied to the alternatives developed for this SEIS. The MIRF used for

old-growth was .68. This was used in the 1997 FEIS analysis. The MIRF used for young growth was .9, which was derived from a review of the existing data.

MIRF is applied to address potential reductions in lands available for timber harvest due to:

- ◆ Land selections (transfers to the State or Native Corporations)
- ◆ Karst/caves (moderate vulnerability)
- ◆ Unmapped Class III streams
- ◆ Deer Standards and Guidelines
- ◆ Unmapped Bald Eagle/Osprey nests
- ◆ 600-foot landscape linkages
- ◆ Goshawk nests
- ◆ Murrelet nests (600 feet)
- ◆ 600-foot buffer around active wolf dens
- ◆ Important mountain goat winter habitat and travel corridors
- ◆ Cost efficiency (low volume, difficult operability, isolated operability)
- ◆ Unmapped Class I and II stream buffers
- ◆ Unproductive forestland (mapped as productive)
- ◆ Unmapped extreme high hazard soils
- ◆ Inoperable isolated stands created by Class III stream buffers

There are other factors that may also contribute to differences between ASQ and actual timber sale volume that are not included in the MIRF. These may include market fluctuations, timber demand, Forest Service budgets, and legal challenges. The potential effects of other factors not included in the MIRF reducing the actual volume relative to the ASQ are discussed qualitatively in the main text of this document, as applicable.

Regulation Classes

The regulation class concept was developed to model the components of managing the timber resource. All available lands were divided into Regulation Classes 1, 2, or 3 for this analysis. These classes group lands that allow similar harvest unit size, visual disturbance, and re-entry times. The 1997 FEIS Appendix B describes how these regulation classes were developed and how the lands are divided among the classes. All Regulation Class 1 and 2 lands were treated using the information presented above. Regulation Class 3 lands, which are areas such as suitable lands allocated to the Scenic Viewshed LUD, were treated differently. These lands are automatically on a longer rotation of approximately 170 years and are treated separately in the refined spreadsheet used for the SEIS analysis.

Economic Efficiency Analysis

The economic efficiency analysis conducted for this SEIS is discussed in the *Regional Economy* section of the main text of this document. The discussion in the main text defines present net value (PNV) and explains the major assumptions and discount rate used in the analysis.

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Social and Economic Impact Analysis

The social and economic impact analysis developed for this SEIS examines the effects of the alternatives on the people and communities in and around the Tongass National Forest. These potential effects are addressed at the regional and local scale. The regional analysis addresses the potential effects of the alternatives on employment and income in Southeast Alaska and focuses on the wood products and recreation and tourism industries. Potential effects to the mining industry and potential transportation and utility projects are discussed qualitatively. The analysis addresses both short- and long-term potential effects on the wood products industry. The short-term effects analysis addresses the potential effects of the alternatives upon National Forest timber sales presently under contract (i.e., sales that have been sold but not yet harvested). The long-term wood products effects analysis addresses the potential effects of the alternatives on the future supply of National Forest timber based on the ASQ calculated for each alternative.

The local analysis addresses the potential effects of the alternatives at the community and community group level. This analysis identifies changes in the land uses designations in each community's use area, qualitatively discusses potential changes in natural resource-based employment by community, and the effects that the alternatives would have upon subsistence use for each community. This analysis also addresses environmental justice issues in the context of this SEIS.

The data used in this analysis were compiled from numerous different sources, including various publications by the Forest Service, including the 1997 FEIS (USDA Forest Service, 1997), the Alaska Department of Labor, and the U.S. Census Bureau. Detailed references are provided in the *Economic and Social Environment* section of this SEIS. The *Economic and Social Environment* section also provides a detailed discussion of the economic and social impacts of the alternatives.

Analysis Prior to the Development of Alternatives

The analysis conducted prior to the development of the SEIS alternatives includes the forest planning process that resulted in the 1997 Tongass Land and Resource Management Plan. The first step in this SEIS process was to update the inventory of roadless areas on the Tongass. This involved identifying all the developed areas on the Tongass through a comprehensive update of the inventory of existing roads, timber harvest units, and land ownership on the Forest. All National Forest System lands outside of the areas defined as developed, were identified as roadless. A total of 115 roadless areas were identified through this process and evaluated for this SEIS. Each inventoried roadless area was evaluated with respect to the key wilderness characteristics of capability, availability, and need (FSH 1909.12, Chapter 7 - Wilderness Evaluation). This process is described in more detail in the introduction to Appendix C of this document.

Formulation of Alternatives

The alternatives evaluated in this SEIS are described in Chapter 2 of the main text. This SEIS was developed in response to a March 2001 U.S. District Court Order that directed the Forest Service to prepare a SEIS that evaluates and considers roadless areas within the Tongass for recommendations as potential wilderness areas. As a result the alternatives evaluated in this SEIS focus specifically on new wilderness and, in the case of Alternative 6, new LUD II recommendations.

Alternative 1, the No Action alternative for this analysis, is essentially the selected alternative (Alternative 11) from the 1997 FEIS (USDA Forest Service, 1997). The action alternative formulation process was initiated by identifying and considering various specific proposals that have been made in the past for wilderness and other forms of protection. The roadless area evaluations and relative rankings were also used in the development of alternatives. The formulation of alternatives, including the alternatives eliminated from detailed study and the alternatives considered in detail, are discussed in Chapter 2.