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# Tongass Land Management Plan Revision

# Final Supplemental Environmental Impact Statement

Roadless Area Evaluation  
for Wilderness Recommendations

**VOLUME I: Final SEIS  
Appendix A, B, D, E**

# Tongass Land Management Plan Revision

## Final Supplemental Environmental Impact Statement

February 2003

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Lead Agency: USDA Forest Service

Responsible Official: Dennis E. Bschor, Regional Forester  
USDA Forest Service, Alaska Region

For Further Information: Visit the SEIS Web site at: [www.tongass-seis.net](http://www.tongass-seis.net)

Or Contact:

Larry Lunde  
Project Team Leader  
Tongass National Forest  
Federal Building  
Ketchikan, AK 99901-6591  
(907) 228-6303

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### Abstract:

The Forest Service has evaluated roadless areas on the Tongass National Forest to consider them for recommendations as potential wilderness versus continued management of these areas as outlined in the current Forest Plan. This Final Supplemental Environmental Impact Statement describes the effects of seven action alternatives and one no-action alternative for future management of the roadless areas. The action alternatives include new wilderness recommendations for 0.7 to 9.6 million acres of roadless areas. Two key issues have been identified as the major issues driving the alternatives and the analysis: 1) additional wilderness designation would provide greater long-term protection of roadless areas and their values, and 2) additional wilderness designation would affect the social and economic well-being of communities in Southeast Alaska through the natural resource-based industries they depend on, by affecting transportation and utility projects, and by affecting the regional or local economies.

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# SUMMARY

# Summary

The purpose and need for this Supplemental Environmental Impact Statement (SEIS) is to respond to a March 2001 U.S. District Court Order for evaluating and considering roadless areas within the Tongass National Forest for recommendations as potential wilderness. The National Forest System Land and Resource Management Planning Regulations of September 30, 1982 (36 Code of Federal Regulations [CFR] 219.17) provide the manner in which roadless areas are to be evaluated for recommendations as potential wildernesses.

This Final SEIS analyzes eight alternatives in detail, including the No-Action Alternative, for wilderness recommendations with regard to the roadless areas of the Tongass National Forest. If the Regional Forester selects an alternative in the Record of Decision that recommends new wilderness, the 1997 Tongass Land and Resource Management Plan Revision (referred to as the 1997 Tongass Forest Plan in this document) will be amended to ensure that these areas are managed to maintain their wilderness eligibility. Any new wilderness recommendations are a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and, lastly, Congress. The amended 1997 Tongass Forest Plan would guide management of areas recommended for wilderness to preserve the option of wilderness designation until Congress acted on such recommendations or the 1997 Tongass Forest Plan is revised in the future.

## Purpose and Need

The purpose and need for this SEIS is to respond to the District Court's decision in *Sierra Club v. Lyons* by evaluating roadless areas of the Tongass National Forest for wilderness recommendations. In the roadless area evaluation process, the relative contribution to the National Wilderness Preservation System has been considered. Appendix C of this SEIS includes documentation of the analysis and evaluation for each inventoried roadless area as directed by the Analysis of the Management Situation (AMS) requirements pertinent to roadless areas for Forest planning. As a result, Appendix C provides an update to the AMS done in 1989 for the 1997 Tongass Forest Plan Revision, and also responds to the District Court's decision. The purpose and need for this SEIS is, therefore, narrow in focus and has been developed to specifically respond to the March 2001 Court order.

Since the preparation of the AMS in 1989, and especially during the last few years, there has been heightened national interest in the conservation of roadless areas. The Roadless Area Conservation Rule of January 12, 2001, is the subject of a number of lawsuits. While the Roadless Area Conservation Rule was being developed, the Forest Service was also developing a revised National Forest Transportation Policy that addressed road-related activities on National Forest System roadless lands. In 2001, the Secretary of Agriculture began a review of the roadless area rule and the Chief of the Forest Service undertook a review of the road management policy. These reviews have led the Forest Service to initiate several Interim Directives with the intent that the values associated with inventoried roadless areas are fully considered within the context of forest planning. One of the key elements of the interim directives continues to be that roadless values need to be incorporated into each Forest's planning efforts. The update of the AMS, which is incorporated into Appendix C of this Final SEIS, provides baseline information that reflects current conditions for incorporation of inventoried roadless areas into this SEIS.

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### What is a Wilderness?

Only Congress can create, modify, or eliminate wilderness. Wildernesses are federal land designated by Congress to “be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness” (*Wilderness Act of 1964, P.L. 88-577, Sec. 2. [a]*). Wilderness is further defined in the Act as:

an area of underdeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

### Prior Work on Wilderness Evaluation

Early in the 1997 Tongass Forest Plan Revision process, 110 inventoried roadless areas were examined for potential wilderness recommendations. Each of these roadless areas was analyzed and results were recorded in Appendix C of the AMS in 1989. For this SEIS, all roadless Tongass National Forest land was assessed in order to update Appendix C of the 1989 AMS to better reflect current conditions. The assessment included all inventoried roadless areas, as well as unroaded lands of less than 5,000 acres. The smaller areas were evaluated to determine if they were eligible for wilderness consideration (based on the Wilderness Act; see *What is a Wilderness?* above), and thus should be carried forth as inventoried roadless areas in the evaluation. The Draft SEIS included 115 inventoried roadless areas. The increase in number from 110 inventoried roadless areas primarily reflected inclusion of smaller individual roadless areas for review that are located within roaded areas that the 1997 Forest Plan considered as developed and/or marginally eligible for wilderness recommendation. These areas were analyzed in the roadless area analysis for the Draft SEIS primarily because of the high public interest in management of roadless areas on the Tongass.

As a result of the analysis in the Draft SEIS, 6 of the 115 roadless areas no longer qualify as inventoried roadless areas for the purpose of wilderness consideration because of their small size and heavy influence from adjacent development. Therefore, these areas are not included in the Final SEIS list of 109 inventoried roadless areas. The inventoried roadless areas are mapped collectively on a large Forest-scale map in the separate *Map Packet*, as well as in the *Map Section* of the SEIS CD-ROM (CD). They are also mapped individually at a larger scale in the *Map Section* of the SEIS CD. These maps are also available on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net). Descriptions of each inventoried roadless area are provided in Appendix C of the SEIS.

The 1997 Tongass Forest Plan is used as a baseline for land allocation and serves as the No-Action Alternative. This represents Alternative 11 in the 1997 Forest Plan Revision Final EIS, adjusted by the 1997 ROD and subsequent non-significant Forest Plan Amendments made by projects since 1997. A range of alternatives has been developed relative to wilderness recommendations for all inventoried roadless areas on the Tongass National Forest.

The Tongass National Forest contains approximately 16.8 million acres, of which about 6.6 million acres are Congressionally designated wilderness, National Monument, or LUD II lands occurring throughout the Forest. The 110 inventoried

### Issues

roadless areas in the 1997 Tongass Forest Plan Revision Final EIS covered about 9.4 million acres, including the LUD II lands described above. The 109 inventoried roadless areas analyzed in this Final SEIS cover approximately 9.6 million acres.

Identification of issues helps define or predict the resources or uses that could be most affected by the management of National Forest System lands. These issues are then used as a basis to formulate alternatives or to measure differences between alternatives.

The scope of this SEIS was initially determined by the Court in its ruling on the 1997 ROD. Additional information was analyzed to help clearly define the issues and for use in the development and analysis of alternatives. For the SEIS, comments and information from a wide variety of public inputs that were related to wilderness and management of roadless areas on the Tongass National Forest were evaluated. This record of public input on the management of the Tongass covers a period of more than 10 years. Extensive additional public involvement has occurred during the development of the SEIS.

### Key Issues

Any alternative that proposes new wilderness recommendations would create some change in effects and/or outputs in relation to the existing 1997 Tongass Forest Plan. Chapter 3 of the SEIS shows the effects for all relevant resources. Some of these changes are, however, more likely to influence the comparison between alternatives, and more emphasis and analysis is placed on these issues. Review of the public input received prior to and after publication of the Draft SEIS identified a number of issues of concern that can be grouped into two broad issue categories, which are referred to as key issues. These key issues are the major issues driving the alternatives and the analysis. In general, they represent two very different sets of strongly held values and viewpoints.

#### **Key Issue 1 – Additional wilderness designation will provide greater long-term protection of roadless areas on the Tongass National Forest than is provided by the 1997 Tongass Forest Plan.**

Approximately 6.6 million acres of Congressionally designated wilderness, National Monument, or LUD II lands occur throughout the Tongass National Forest. Aside from wilderness, there are approximately 9.6 million acres of inventoried roadless areas (including legislated LUD II) on the Tongass. The 1997 Tongass Forest Plan allocated 74 percent of the roadless areas to non-development LUDs; however, because that designation is not permanent (and may be subject to future Forest Plan amendments and revisions), some segments of the public would rather have permanent protection status. There is concern by some that the 1997 Tongass Forest Plan does not provide sufficient recognition of and long-term protection for Tongass roadless areas. Much of this concern is related to roadless area protection, rather than wilderness designation. Some hold the belief that many areas would be of more value to Americans as wilderness rather than as other LUDs. There is, however, no consensus on which areas should be recommended for wilderness.

The review of public input conducted for this SEIS indicated that concerns for additional wilderness protection primarily center around two themes. These can be generally characterized as the *symbolic, spiritual, and passive use* value of wilderness and the value of wilderness as a means for additional *ecological* protection, including protection of wildlife viability, biodiversity, and fish populations. These themes, which are discussed in the following paragraphs, are important to segments of the public in Southeast Alaska and across the nation, and possibly internationally.

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**Symbolic, Spiritual, and Passive Use Value of Wilderness** – In a world characterized by rapid change and complexity, the symbolic or spiritual value of wilderness may be increasingly important. Wilderness can be viewed as symbolic of the nation’s heritage. It may also be viewed as a symbol of restraint, a self-imposed limit on technological and economic development that reflects a wider awareness of environmental responsibility. The spiritual values associated with wilderness can be specific religious and cultural values attributed to particular places or types of landscapes. Alternatively, they may represent the feelings that people have for wild, natural landscapes that are often difficult to put into words. Although difficult to characterize or value in monetary terms, these types of values are very important for a lot of people.

Segments of the public place high value on the knowledge that wilderness exists, whether they use it or not. Economists often refer to these values as non-use or passive use values. Non-use or passive use values represent the value that individuals assign to a resource independent of their use of that resource and typically include existence, option, and bequest values. These values represent the value that individuals obtain from knowing that the wilderness exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it would be left for future generations to inherit. These values generally increase as more areas and larger areas are designated as wilderness. There is interest in preserving large portions of the Tongass because the majority of the Forest is in a natural condition, unlike most other national forests, and the Tongass represents a significant portion of the world’s remaining temperate rainforests. These types of values are difficult to quantify in monetary terms, but they are important for many people.

Indicators: Analysis relative to this issue compares the amount and proportion of land protected as wilderness and in other non-development LUDs. Also, the values of the lands protected are considered. Non-use or passive use values are discussed qualitatively, with examples provided from other studies.

**Ecological Values of Wilderness** – Many people believe that roadless areas should be allowed to evolve naturally through their own dynamic processes and should be afforded permanent protection to ensure that this will occur. The Tongass includes very large undeveloped land areas, with several portions of the Forest consisting of contiguous roadless areas that exceed one million acres and represent large, unfragmented blocks of wildlife habitat. This scale of habitat protection is not possible elsewhere in the National Forest System, except on the Chugach National Forest.

People have also expressed concerns about the services and benefits provided by healthy ecosystems. These services and benefits, often referred to as ecosystem services, include what some consider to be long-term life support benefits to society as a whole. Examples of ecosystem services include watershed services, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity.

Ecological and ecosystem service values can be protected through a number of forest management approaches, including wilderness designation. Wildlife population viability is addressed on the Tongass by a conservation strategy consisting of two key components of the 1997 Tongass Forest Plan: the Forest-wide system of reserves (including all non-development LUDs), and the standards and guidelines that apply in development LUDs. The 1997 Tongass Forest Plan Revision ROD concluded that the old-growth conservation strategy and specific species management prescriptions represent a balance of wildlife habitat conservation measures that consider the best available scientific information and, within an acceptable level of risk inherent in projecting management effects, will provide

sufficient fish and wildlife habitat to maintain well-distributed viable populations of vertebrate species in the planning area, and maintain the diversity of plants and animals on the Forest. Forest-wide standards and guidelines established in the 1997 Forest Plan protect and minimize potential effects to ecosystem services. Providing long-term protection for additional areas could further reduce these risks.

Indicators: Analysis relative to this issue compares the amount of productive old-growth forest and inventoried roadless areas that would be protected under each alternative, as well as the percentages of ecoregions and biogeographic provinces that would be protected in reserves.

### **Key Issue 2 – Additional wilderness designation will affect the social and economic well-being of the communities of Southeast Alaska.**

Many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, including wood products, commercial fishing and fish processing, recreation, tourism, mining, and mineral development. Many residents also depend on subsistence hunting and fishing to meet their basic needs. There is very little private land throughout the region to provide these resources. Some people are concerned that wilderness recommendations could negatively affect employment and income generated by natural resource-based industries, including wood products, mining, and recreation and tourism. Others have suggested that wilderness recommendations could have positive effects on some sectors of the recreation and tourism industry. The employment and income associated with natural resource-based industries is important to the economic and social well-being of many Southeast Alaskan communities. In addition, wilderness designation could affect transportation and utility projects that are considered by some as essential for continued economic development and well-being in the region.

This issue focuses on the social and economic effects of recommended wilderness designation on communities in Southeast Alaska. There are three central themes to this issue: natural resource-based industry, transportation and utility projects, and the regional economy and local communities.

### **Natural Resource-Based Industry**

**Wood Products** – Sawmills in Southeast Alaska are dependent on the availability of timber resources from the Tongass National Forest, which provided 92 percent of the volume processed in local mills in 2000 (USDA Forest Service, 2001a). Timber harvest would not be allowed in areas recommended for wilderness or LUD II and reductions in the supply of available timber could have short- and long-term effects on the wood products industry.

Indicators: The analysis of short-term effects on the wood products industry focuses on the existing Tongass timber sale volume under contract (i.e., National Forest timber sales that have been sold but not yet harvested) and proposed sales that are not yet under contract. The long-term effects analysis focuses on the number of acres suitable for timber production, as well as potential changes to the Allowable Sale Quantity (ASQ), which is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period.

**Mining** – The Tongass National Forest contains many important mineral resources, from precious metals to chemical-grade minerals. Except for designated wildernesses and other withdrawn areas, all Tongass National Forest lands are open to mineral exploration and development. Recommendations for additional wilderness may have an effect on the exploration and development of minerals.

## Summary

However, recommended areas would remain open to mineral exploration and development until Congress acted to designate areas as wilderness.

Indicators: Analysis related to the mining issue focuses on changes in the amounts of identified mineral tracts and undiscovered mineral areas that could be withdrawn from mineral production or made more costly to develop.

**Recreation and Tourism** – The recreation and tourism industry in Southeast Alaska has grown significantly over the past decade, with much of this growth associated with a dramatic increase in the number of cruise ship passengers visiting the region.

Changes in the land base available for tourism and recreation developments could affect this industry. Wilderness designation could provide long-term protection for undeveloped areas and specific places that are important to some sectors of the recreation and tourism industry. Potential use restrictions associated with wilderness designation could affect other sectors of this industry by limiting the size of commercially guided groups visiting particular locations.

Indicators: Analysis related to the recreation/tourism issue considers the effects of wilderness designation on Recreation Opportunity Spectrum (ROS) settings, outfitter/guide use, recreation places important for tourism, and the percent of the Forest available for tourism developments. The ROS system identifies the appropriate combination of activities, settings, and experience for different types of recreation experience, ranging from primitive to urban settings.

### **Transportation and Utility Projects**

Residents of the region are dependent on air and water transportation for travel between most communities. The 1999 Southeast Alaska Transportation Plan (Alaska Department of Transportation and Public Facilities, 1999) identified future investments in roads, ferry terminals, and ferries to develop a comprehensive regional transportation system. Similarly, proposals exist to develop a power grid to interconnect electrical generating facilities with most of the communities throughout Southeast Alaska. Full implementation of these plans would require construction of new roads and facilities within the National Forest.

Recommendations for additional wilderness may have an effect on the development of potential transportation or utility corridors or other land uses.

Indicators: Effects on transportation and utilities are analyzed by identifying the corridors that could be precluded or otherwise affected by the alternatives.

### **Regional Economy and Local Communities**

As noted above, many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, as well as subsistence hunting and fishing. Recreation opportunities associated with the Tongass also play an important role in the quality of life of many Southeast Alaskans. Many families have favorite places where they fish, hunt, beachcomb, or just go to get away.

### **Regional Employment and Income**

Wilderness recommendations could affect Southeast Alaskan communities and residents by affecting employment and income in natural resource-based industries. Wilderness recommendations may also restrict proposed transportation and utility projects and affect future economic development and associated employment

opportunities, as well as travel between communities and, in some cases, local power sources.

Indicators: This analysis focuses on the potential effects on wood products and recreation and tourism employment and income at the regional level. Short-term effects on wood products employment focus on the potential effects associated with reductions in the existing volume under contract. Long-term effects on wood products employment address the potential effects of changes in the ASQ. Changes in recreation and tourism employment are based on projected changes in Recreation Visitor Days (RVDs). The potential effects of restrictions on mining and transportation and utility projects are also considered.

### Local Communities

**Employment** - Timber and logging activities play an important role in at least 10 of Southeast Alaska's 32 communities. These communities would be affected by reductions in wood products employment.

**Subsistence** - For many rural Alaskans, subsistence means hunting, fishing, trapping, and gathering natural resources to provide needed food and supplement rural incomes. For Native Alaskans and other rural Alaskans, subsistence is that and more. It is a lifestyle that preserves customs and traditions reflecting deeply held attitudes, values, and beliefs. Concerns about subsistence include maintaining subsistence opportunities and protecting traditional subsistence areas. The alternatives considered here would result in the same or greater protection for subsistence resources; however, the effects are evaluated in Chapter 3 and by community.

**Recreation** - Resident recreation patterns may be affected by new wilderness recreation proposals, due to potential restrictions on recreation facility developments and numbers of visitors, as well as the long-term effects of maintaining areas in the primitive ROS.

Indicators: The discussion of community effects focuses on changes in jobs and income, subsistence, and recreation opportunities, and the associated effects on affected communities as a whole. The subsistence analysis is based on the subsistence analysis conducted for the 1997 Forest Plan Revision Final EIS, which used deer as the main "indicator" species for potential subsistence resource consequences. The percent change in the amount of productive old growth available after 120 years relative to the current (1997) Forest Plan is used as an indicator. The percent of the inventoried recreation places within 20 miles of one or more communities that would be in Wilderness or Recommended Wilderness is used as an indicator for recreation.

### Updated Information for the Draft and Final SEIS

Several areas of information were updated prior to publishing the Draft SEIS to better reflect current conditions on the Tongass as a whole and within roadless areas in particular. These updated areas also form the basis for the Final SEIS. In addition to these updated areas, a number of additional updates and changes were made to the Final SEIS in response to new information, to comments on the Draft SEIS, and to refinements in roadless area boundaries. All of these updates are summarized in Chapter 1.

### Alternatives

Each alternative for this SEIS is presented in the same format in Chapter 2. Each alternative description includes a framework; a list and description of areas recommended for new wilderness or LUD II designation; a table with the acreages allocated to each LUD; a map showing the distribution of development, natural setting, and wilderness LUDs; a map (included in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD-ROM version) showing locations of

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new wilderness and LUD II recommendations; and outputs and measures displayed numerically. The prescriptions of each LUD are included in the 1997 Tongass Forest Plan, as are the Forest-wide standards and guidelines applying to all alternatives. Prescriptions for the new LUDs are described in Appendix D to this SEIS. Details on the modeling of each alternative are included in Appendix B to this SEIS.

### Alternative 1

This is the No-Action Alternative. The framework is defined by the current Tongass Forest Plan, which is based on Alternative 11 from the 1997 Forest Plan Revision Final EIS, as adjusted by the 1997 ROD and subsequent non-significant Forest Plan Amendments. All existing LUD allocations would remain unchanged, including existing wilderness and LUD II areas. This alternative does not respond to Key Issue 1, but responds to Key Issue 2 at a high level by not recommending any additional wilderness. The theme for Alternative 11 was to provide a mix of National Forest uses and activities with an emphasis on fish and wildlife habitat protection and the karst and caves resource, and less emphasis on some resource uses contributing to the local and regional economies of Southeast Alaska, relative to the other alternatives of the 1997 Tongass Forest Plan Revision Final EIS.

No new wilderness or LUD II areas are recommended under this alternative. The 5.8 million acres of existing wilderness and the 0.7 million acres of existing LUD II areas, as well as all other current LUDs, would remain unchanged (see the Alternative 1 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version).

### Alternative 2

Alternative 2 would recommend approximately 721,000 acres for new wilderness designation. It would result in the conversion of all existing LUD II areas to the Recommended Wilderness LUD. As such, it responds to Key Issue 1 at a low level by recommending some new wilderness. It responds to Key Issue 2 at a high level by not affecting areas in development LUDs. In 1990, the Tongass Timber Reform Act established five new wildernesses, as well as 12 permanent LUD II areas. Under this alternative, the LUD II areas would be recommended for re-designation as wilderness. There would be no change to existing wilderness, and all other existing LUD allocations would remain unchanged.

This alternative would result in the conversion of 12 areas, totaling approximately 721,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in 6.5 million acres of wilderness. No areas of LUD II designation would remain. If designated, the 12 Recommended Wildernesses would result in eight new wildernesses and four wilderness additions. The Alternative 2 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 12 areas.

### Alternative 3

Alternative 3 would recommend approximately 1,075,000 acres for new wilderness designation. It would result in the conversion of areas to the Recommended Wilderness LUD that have a relatively high score in the Wilderness Attribute Rating System (WARS), along with relatively high public interest and/or high relative contribution to the National Wilderness Preservation System. Areas were considered for inclusion only if they had a WARS score of at least 25 out of 28 possible points. This alternative responds to Key Issue 1 at a moderate level by recommending a group of high-value roadless areas for wilderness protection. It

responds to Key Issue 2 also at a moderate level by only slightly reducing the area of development LUDs. Under this alternative, there would be no change to existing wilderness and LUD II areas.

This alternative would result in the conversion of seven areas, totaling approximately 1,075,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in a total of 6.8 million acres of wilderness. The 0.7 million acres of existing LUD II areas would remain. If designated, the seven Recommended Wildernesses would result in two new wildernesses and five wilderness additions. The Alternative 3 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the seven areas.

### Alternative 4

Alternative 4 would recommend approximately 736,000 acres for new wilderness designation. It would result in the conversion of non-development LUD portions of areas that have a relatively high score in the Wilderness Attribute Rating System (WARS), along with relatively high public interest and/or high relative contribution to the National Wilderness Preservation System. Areas were considered for inclusion only if they had a WARS score of at least 25 out of 28 possible points. This alternative responds to Key Issue 1 at a low to moderate level by recommending a small group of high-value roadless areas for wilderness protection. It responds to Key Issue 2 at a high level by not reducing the area of development LUDs. Under this alternative, there would be no change to existing wilderness and LUD II areas.

This alternative would result in the conversion of six areas, totaling approximately 736,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in a total of 6.5 million acres of wilderness. The 0.7 million acres of LUD II areas would be unchanged. If designated, the six Recommended Wildernesses would result in three new wildernesses and three wilderness additions. The Alternative 4 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the six areas.

### Alternative 5

Alternative 5 would recommend approximately 2,005,000 acres for new wilderness designation. It would result in the conversion of all portions of the 23 areas proposed for wilderness by HR 987 that are not already in wilderness, along with any additional areas identified by the 1999 Forest Plan Revision ROD as Areas of Special Interest, to the Recommended Wilderness LUD. There is substantial overlap in these two groups of areas. This alternative responds to Key Issue 1 at a moderate to high level by recommending areas of high public interest for long-term protection of fish, wildlife, scenic, and recreation values. It responds to Key Issue 2 at a low to moderate level by moderately reducing the area of development LUDs. Under this alternative, most existing LUD II areas would be converted to wilderness and there would be no change to existing wildernesses.

HR 987, which was introduced and passed in the U.S. House of Representatives in 1989, represented an alternative to the bill actually passed by both houses of Congress and signed into law as the Tongass Timber Reform Act. Included in this Bill was the proposed designation of 23 areas as wilderness. In TTRA, portions of these areas were designated as wilderness, portions were designated as LUD II, and portions were left undesignated. The lands recommended for wilderness in HR 987 included lands recommended for permanent protection by SEACC, the Alaska Department of Fish and Game, the United Fishermen of Alaska, the Sealaska

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Corporation, the Southeast Conference, the Governor of Alaska, and 11 Southeast Alaska communities. Protection of these areas was considered important by these entities for a variety of reasons, mostly for protection of fish, wildlife, scenic, and recreation values.

In the 1999 ROD, 18 Areas of Special Interest were identified where development LUDs would have been changed to mostly natural LUDs. These areas were identified by the public in comments and appeals on the Tongass Forest Plan EIS as having particularly high value for a number of resources. Because the 1999 ROD was vacated by court ruling in March 2001, the LUDs of these areas have not been changed from the 1997 Tongass Forest Plan.

This alternative would result in the creation of 26 Recommended Wildernesses totaling approximately 2,005,000 acres. If designated by Congress, this would ultimately result in 7.8 million acres of wilderness. Approximately 45,000 acres of areas with LUD II designations would also remain. If designated, the 26 Recommended Wildernesses would result in 16 new wildernesses and 10 wilderness additions. The Alternative 5 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 26 areas.

### Alternative 6

Alternative 6 would recommend approximately 3,203,000 acres for new wilderness designation and 5,680,000 acres for new LUD II designation. It would result in the conversion of all areas recommended for wilderness or LUD II by HR 2908 to Recommended Wilderness and Recommended LUD II, respectively. It responds to Key Issue 1 at a high level by recommending most roadless areas for long-term protection of resource values. It responds to Key Issue 2 at a low level because, although it substantially reduces the area of development LUDs, the majority of the conversions are to Recommended LUD II, which is less restrictive than Recommended Wilderness. Three existing LUD II areas (Berners Bay, Trap Bay, and Kadashan) would be converted to wilderness; there would be no change to existing wildernesses.

HR 2908 is referred to as the Alaska Rainforest Conservation Act of 2001 and was introduced in the U.S. House of Representatives in 2001. This Bill was intended to provide additional protections for National Forest System lands in Alaska (it includes both the Tongass and the Chugach National Forests) through the designation of wilderness, wilderness study areas, LUD II management areas, restoration areas, special management areas, and additional components of the national Wild and Scenic Rivers System. Alternative 6 includes only the wilderness and LUD II components of the Bill.

This alternative would result in the creation of approximately 18 Recommended Wildernesses, totaling approximately 3,203,000 acres, as well as 5,680,000 acres of Recommended LUD II. If designated by Congress, this would ultimately result in a total of 9.0 million acres of wilderness and 6.3 million acres of LUD II areas. If designated, the 18 Recommended Wildernesses would result in 5 new wildernesses and 13 wilderness additions. Virtually all other roadless areas in the Tongass would be converted to Recommended LUD II. The Alternative 6 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the Recommended Wildernesses, as well as the Recommended LUD II areas.

### Alternative 7

Alternative 7 would recommend approximately 4,638,000 acres for new wilderness designation. It would result in the conversion of all areas recommended for wilderness under Alternatives 4, 5, and 6 to Recommended Wilderness. This alternative responds to Key Issue 1 at a moderate to high level by recommending for long-term protection a combination of the areas on the Tongass with the highest public interests and other values. It responds to Key Issue 2 at a low to moderate level by moderately reducing the area of development LUDs. Virtually all existing LUD II areas would be converted to wilderness.

This alternative would result in the creation of 32 Recommended Wildernesses totaling approximately 4,638,000 acres. If designated by Congress, this would ultimately result in 10.4 million acres of wilderness. Approximately 44,000 acres of areas with LUD II designations would also remain. If designated, the 32 Recommended Wildernesses would result in 18 new wildernesses and 14 wilderness additions. The Alternative 7 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 32 areas.

### Alternative 8

Alternative 8 would recommend approximately 9,601,000 acres for new wilderness designation. It would result in the conversion of all inventoried roadless areas in the current roadless inventory to Recommended Wilderness. This alternative responds to Key Issue 1 at a very high level by recommending almost all roadless lands for long-term protection of resource values. It does not respond to Key Issue 2. Virtually all acres of LUD II would be included in this conversion. Under this alternative, there would be no change to existing wilderness.

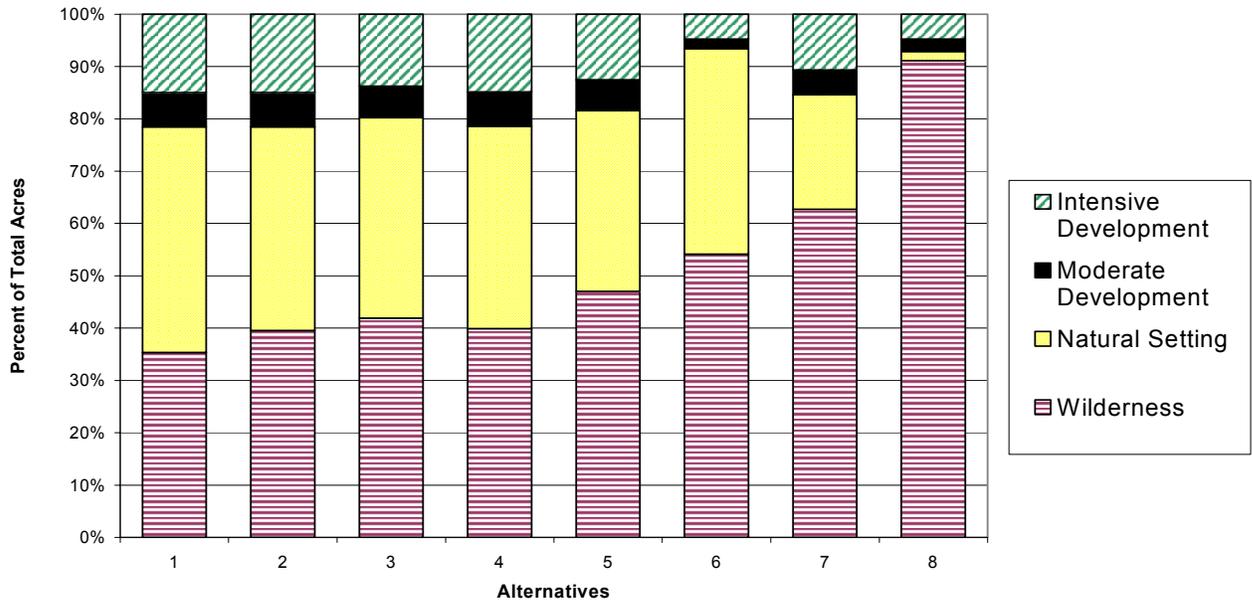
This alternative would result in the creation of large tracts of land consisting of almost continuous wilderness and Recommended Wilderness across each of the islands and the mainland of the Tongass National Forest. If designated by Congress, this would result in 15.4 million acres of wilderness. Approximately 10,000 acres of LUD II areas (outside of current roadless areas) would remain. If designated, the Recommended Wildernesses would result in 22 new wilderness groupings. The Alternative 8 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the areas.

## Comparison of the Alternatives

This section briefly compares the environmental consequences of the eight alternatives with respect to the key issues described in Chapter 1. This comparison is based on the effects analysis presented in Chapter 3. Figure S-1 summarizes the LUD allocations of the alternatives using LUD Group combinations. The four LUD Groups combine the individual LUDs in terms of similarities in management and/or potential effects as described in the *Introduction* to Chapter 3. Table S-1 displays some of the key indicators or measures that are used to quantitatively compare the alternatives relative to the key issues.

In addition to Figure S-1 and Table S-1, which focus on the indicators and measures most closely related to the key issues, Table 2-26, located at the end of Chapter 2, represents a "Summary of Effects Matrix." This table allows the reader to compare the effects of the alternatives on essentially all resource areas simultaneously, so that a cumulative picture of the net effect can be obtained. This table presents many quantitative measures, but it uses qualitative comparisons where quantitative measures are not feasible. This table may be used to help consider the net public benefits associated with each alternative.

**Figure S-1  
Land Use Designation Group Comparison by Alternative (percent)**



**Key Issue 1 – Additional wilderness designation will provide greater long-term protection of roadless areas on the Tongass National Forest than is provided by the 1997 Forest Plan.**

The review of public input conducted for this SEIS indicated that concerns for additional wilderness protection primarily center around two broad themes. These can be generally characterized as the *symbolic, spiritual, and passive use* value of wilderness and the value of wilderness as a means for additional *ecological* protection, including protection of wildlife viability, biodiversity, and fish populations. The indicators of this key issue area are associated with quantifying the amount of additional protection, describing the values protected by additional wilderness designation, and assessing how well the ecoregions, biogeographic provinces, and ecological subsections of the Tongass are represented by wilderness and other forms of long-term protection. The indicators are discussed in the following paragraphs.

**Amount of Wilderness and LUD II Areas on the Tongass**

Approximately 5.9 million acres of Congressionally designated wilderness and National Monument lands occur throughout the Forest. In addition to these lands, there are approximately 9.6 million acres of inventoried roadless areas (including designated LUD II areas) on the Tongass. The 1997 (current) Forest Plan allocated 74 percent of the roadless areas to non-development LUDs. However, that designation is not permanent (and may be subject to future Forest Plan amendments and revisions); some segments of the public would rather have permanent protection status. Some hold the belief that many areas would be of more value to Americans as wilderness than as other LUDs.

**Table S-1  
Comparison of Alternatives**

Resource/Category	Alternative							
	1	2	3	4	5	6	7	8
<b>Key Issue 1—Additional Wilderness Designation for Long-Term Protection of Roadless Areas</b>								
<b>Amount of Wilderness and LUD II Protection</b>								
Recommended Wilderness plus Current Wilderness and National Monument <sup>1</sup>	5.9	6.6	7.0	6.7	7.9	9.1	10.6	15.4
Recommended LUD II plus Current LUD II	0.7	0.0	0.7	0.7	<0.1	6.3	<0.1	<0.1
Percent of Inventoried Roadless Areas in LUD II, National Monument, Recommended Wilderness, or Recommended LUD II	9	9	20	17	23	100	50	100
Percent of Inventoried Roadless Areas in Natural Setting LUDs, Recommended Wilderness, or Recommended LUD II	74	74	76	74	80	100	85	100
<b>Ecological Values of Wilderness</b>								
Productive Old Growth after 120 Years	4.51	4.51	4.55	4.51	4.59	4.82	4.66	4.81
Percentage of Original (1954) Productive Old Growth Remaining by the Year 2120	83	83	84	83	85	89	86	89
<b>Ecoregions, Biogeographic Provinces, and Ecological Subsections</b>								
Percent of Ecoregion Protected in Reserves								
Northern Pacific Coastal Forest	19	19	23	21	26	50	33	50
Pacific Coastal Mountain Tundra and Ice Fields	37	37	38	38	38	49	43	49
Number of Biogeographic Provinces with Greater than 12 Percent Protected (out of 21)	18	18	19	19	21	21	21	21
Number of Ecological Subsections with No Representation in Wilderness, LUD II, or National Monument (out of 73 on the Tongass)	17	17	12	12	11	0	8	0
<b>Key Issue 2—Social and Economic Well-Being of Southeast Alaskan Communities</b>								
<b>Natural Resource-Based Industry</b>								
<b>Wood Products</b>								
<b>Short-Term Effects (2003 to 2005)</b>								
Percent of Volume Under Contract Affected	0	0	2	0	2	64	8	58
Percent of Other Timber Sales in the 10-year Plan Affected	0	0	4	0	6	60	19	57
<b>Long-Term Effects (First Decade)</b>								
Percent Change in Suitable Acres	0	0	-7	0	-11	-48	-22	-47
ASQ (average annual over the first decade)	259	259	236	259	209	92	174	96
NIC I Component of the ASQ	212	212	194	212	171	75	143	79

**Table S-1 (continued)  
Comparison of Alternatives**

Resource/Category	Alternative							
	1	2	3	4	5	6	7	8
<b>Mining</b>								
Mineral Areas/Tracts Withdrawn or Potentially Withdrawn								
Identified Mineral Tracts	25	31	31	27	37	43	53	90
Undiscovered Mineral Areas	35	38	40	39	47	59	66	92
<b>Recreation and Tourism</b>								
Recreation Opportunity Spectrum Classes after 150 Years								
Primitive and Semi-primitive Non-motorized	11.8	11.8	12.0	11.9	12.2	13.4	12.6	13.4
Semi-primitive Motorized	1.2	1.2	1.3	1.3	1.3	1.4	1.3	1.4
Roaded Natural and Roaded Modified	3.7	3.7	3.5	3.7	3.3	2.1	2.9	2.0
Recreation Places Important for Tourism in Wilderness or Recommended Wilderness	46	54	49	48	62	58	71	93
Tongass Acres Available for Tourism Developments	20	20	16	16	18	1	11	1
<b>Regional Economy and Local Communities</b>								
<b>Short-Term Effects (2003 to 2006)</b>								
<b>Employment</b>								
Sawmill and Logging Employment	1,154	1,154	1,129	1,154	1,129	423	1,060	486
Net Change from Alternative 1	0	0	-25	0	-25	-731	-94	-668
<b>Income</b>								
Sawmill and Logging Income	51.2	51.2	50.7	51.2	50.1	18.8	47.0	20.2
Net Change from Alternative 1	0.0	0.0	-1.1	0.0	-1.1	-32.4	-4.2	-30.9
<b>Employment and Income Percent Change from Alternative 1</b>								
<b>Long-Term Effects (First Decade)</b>								
<b>Direct Employment</b>								
Wood Products	1,021	1,021	950	1,021	858	476	747	492
Recreation/Tourism	5,013	5,013	5,014	5,013	5,014	5,020	5,016	5,020
<b>Total</b>	6,034	6,034	5,963	6,034	5,873	5,497	5,763	5,512
<b>Subsistence</b>								
Change in Amount of Productive Old Growth Available after 120 Years Relative to the Current Forest Plan	0	0	1	0	2	6	3	6
<b>Recreation</b>								
Home Range Recreation Places in Wilderness	22	30	27	26	39	34	47	81

<sup>1</sup>Includes both Wilderness and Nonwilderness National Monument.

Alternative 1 would not change the 5.9 million acres allocated to the Wilderness LUD Group or the 74 percent of the remaining roadless lands allocated to non-development LUDs under the current Forest Plan (Table S-1, Figure S-1). Under Alternatives 2, 3, and 4, from 6.6 to 7.0 million acres would be allocated to the Wilderness LUD Group, and the percentage of roadless lands allocated to non-development LUDs would range from 74 to 77. Alternative 5 would result in 7.9 million acres in the Wilderness LUD Group and 80 percent of the remaining roadless lands would be allocated to non-development LUDs. Alternative 6 would increase the area in the Wilderness LUD Group to 9.1 million acres and would protect essentially 100 percent of the remaining roadless lands in non-development LUDs, mostly consisting of Recommended LUD II areas. Under Alternative 7, 10.6 million acres would be allocated to the Wilderness LUD Group and 86 percent of the remaining roadless lands would be allocated to non-development LUDs. Alternative 8 would allocate 15.4 million acres to the Wilderness LUD Group, which would include all roadless lands.

A consistent theme with respect to protecting roadless areas on the Tongass is the idea that the Tongass represents the last relatively intact temperate rainforest on earth and should be maintained in a wilderness condition. The action alternatives would increase the net area of the Tongass allocated to wilderness; they would also result in combinations of new and existing wilderness that would result in extensive contiguous areas of mainland being preserved. On the north end of the Forest, new wilderness on the Tongass would connect the Glacier Bay National Park and Preserve with the Wrangell-St. Elias National Park and Preserve, creating a contiguous wilderness covering 12 or 13 million acres, depending on the alternative. Much of this area would be comprised of the existing Wrangell-St. Elias National Park and Preserve, which is currently approximately 9.7 million acres in size. Alternatives 2, 5, 6, 7, and 8 would connect the Glacier Bay and Wrangell-St. Elias National Parks and Preserves. Alternatives 1, 3, and 4 would also connect these National Parks and Preserves if LUD II areas are considered.

Alternatives 3, 4, 6, 7, and 8 would connect the existing Tracy Arm-Fords Terror and Stikine-LeConte Wildernesses, creating a contiguous wilderness ranging from 1.6 to 2.3 million acres in size, depending on the alternative. Alternative 8 would also connect these two areas with the Misty Fjords National Monument Wilderness to the south, forming a contiguous mainland wilderness over 7 million acres in size.

### **Productive Old-Growth Forest**

Productive old growth provides essentially all of the highly important habitats and the preponderance of the moderately important habitats for the wildlife species of concern on the Tongass (including the management indicator species and those with viability concerns). In 1954, when commercial logging was initiated on the Tongass, the Forest contained approximately 5.4 million acres of productive old growth. Today, there are 5.0 million acres left (92 percent of the original acres). Based on implementing the current Forest Plan, there would be 4.5 million acres remaining after 120 years, when all productive old growth considered suitable for timber management by the Forest Plan is expected to have been harvested.

Under Alternatives 1, 2, and 4, the minimum amount of productive old growth that would remain after all suitable lands are harvested would be the same (4.5 million acres) as under the 1997 (current) Forest Plan (Table S-1). Under Alternatives 3 and 5, this acreage would increase slightly to 4.6 million acres. Alternative 7 would result in 4.7 million acres, and Alternatives 6 and 8 would result in 4.8 million acres after all suitable lands have been harvested. These amounts represent between 83 percent and 89 percent of the original (1954) acreage of productive old growth (Table S-1).

### **Wildlife Species Viability**

Alternative 11 was the Selected Alternative in the 1997 Tongass Forest Plan Revision Final EIS. With some modification, it is being implemented as the current Forest Plan. All SEIS alternatives are being analyzed using the current Forest Plan as the baseline. Alternative 11 from the 1997 Final EIS was the Selected Alternative for the 1997 Forest Plan Revision because it represented an explicit attempt to address general, as well as specific, issues related to wildlife viability and conservation planning. Specifically, this alternative met the conservation planning measures considered important to sustain viable populations of the Alexander Archipelago wolf and Queen Charlotte goshawk as identified in interagency conservation assessments. The 1997 Final EIS Record of Decision concluded that because of its Forest-wide old-growth conservation strategy and Forest-wide standards and guidelines, Alternative 11 would provide an amount and distribution of habitat adequate to maintain viable populations of vertebrate species across the Tongass and to maintain the diversity of plant and animal communities.

Under the SEIS alternatives, the level of protection would be the same or improved, relative to Alternative 11 and the current Forest Plan. Based on the number of acres recommended for long-term protection as wilderness or LUD II designations, Alternatives 1, 2, and 4 are essentially the same as the current Forest Plan. Alternatives 3, 5, 7, 8, and 6, in order of increasing amount of acres protected for the long-term (Table S-1 and Figure S-1), would result in an even higher likelihood of maintaining viable well-distributed populations of old growth-associated species across the Tongass National Forest.

### **Ecoregion, Biogeographic Province, and Ecological Subsection Representation**

Two ecoregions cover the Tongass National Forest: the Northern Pacific Coastal Forest and the Pacific Coastal Mountain Tundra and Ice Fields (Ricketts et al., 1999). These two ecoregions extend from eastern Kodiak Island to the southern end of the Alaska panhandle. Approximately 19 percent of the Northern Pacific Coastal Forest and 37 percent of the Pacific Coastal Mountain Tundra and Ice Fields ecoregion are presently in reserves (DeVelice and Martin, 2001). The portions of both of these areas protected in wilderness are well above the 12 percent threshold considered by some authorities (e.g., Conservation of Arctic Flora and Fauna, 1994; World Commission on Environment and Development, 1987) as the minimum area for representation (DeVelice and Martin, 2001). Under the SEIS alternatives, the portion of these ecoregions protected in wilderness would remain the same or would increase.

Alternatives 1 and 2 are essentially the same as the current Forest Plan in terms of amount of area in reserves. Alternatives 3, 4, and 5 would increase the percentage in reserves to 23, 21, and 26 percent, respectively, for the Northern Pacific Coastal Forest and to 38 percent for the Pacific Coastal Mountain Tundra and Ice Fields ecoregion (Table S-1). Alternative 7 would result in these percentages increasing to 33 and 43 percent, respectively. Alternatives 6 and 8 would protect 50 and 49 percent of these ecoregions in reserves, respectively.

The Tongass National Forest can also be subdivided into 21 biogeographic provinces, characterized by similar species composition, similar patterns of distribution for many species, similar geologic barriers and historic events (such as glaciation), and similar climatic conditions. Using the 12 percent threshold identified above as a benchmark for evaluation, 18 of the 21 biogeographic provinces on the Tongass presently have more than 12 percent of their area protected in wilderness, wilderness national monument, or LUD II. Under the SEIS alternatives, the portion of

these areas protected in wilderness would remain the same or would increase. The number of biogeographic provinces with more than 12 percent of their total area protected in wilderness, wilderness national monument, or LUD II would be 18 under Alternatives 1 and 2, 19 under Alternatives 3 and 4, and all 21 under Alternatives 5 through 8 (Table S-1).

The ecosystems of the Tongass can be examined on a finer scale by subdividing the Tongass into 73 ecological subsections (Nowacki et al., 2001). Ecological subsections are delineated based on surficial geology, lithology, geomorphic process, soil groups, subregional climate, and potential natural communities (climax vegetation). Currently, 56 of the 73 ecological subsections have some degree of representation in wilderness, national monument, or LUD II areas. This proportion would continue under Alternatives 1 and 2. The number of ecological subsections having some level of Congressional protection would increase to 61 under Alternatives 3 and 4, 62 under Alternative 5, 65 under Alternative 7, and all 73 under Alternatives 6 and 8.

### **Key Issue 2 – Additional wilderness designation will affect the social and economic well-being of the communities of Southeast Alaska.**

The communities of Southeast Alaska depend on the Tongass National Forest in various ways, including employment in natural resource-based industries, as well as subsistence hunting and fishing. Natural amenities and recreation opportunities associated with the Tongass also play an important role in the quality of life of many Southeast Alaskans.

This issue focuses on the social and economic effects of recommended wilderness designation on communities in Southeast Alaska. There are three central themes to this issue: natural resource-based industry, transportation and utility projects, and the regional economy and local communities.

### **Natural Resource-Based Industry**

#### ***Wood Products***

The wood products analysis is divided into short- and long-term effects. The short-term effects analysis focuses on the existing Tongass timber sale volume under contract (i.e., National Forest timber sales that have been sold but not yet harvested) and proposed sales that are not yet under contract. The long-term effects analysis focuses on potential changes to the Allowable Sale Quantity (ASQ), which is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period.

**Short-term Effects.** The Forest Service had approximately 295 MMBF of timber under contract in September 2002. Existing volumes under contract likely represent the vast majority of, if not the entire, short-term timber supply for the sawmills located in Southeast Alaska. Alternatives 1, 2, and 4 would have no effect on these sales. Alternatives 3 and 5 would both affect approximately 2 percent (6 MMBF), while Alternative 7 would affect approximately 8 percent (23 MMBF). Alternatives 6 and 8 would affect 61 percent (188 MMBF) and 58 percent (172 MMBF) of the total volume under contract, respectively (Table S-1).

The effects on proposed sales that are not yet under contract would be similar. Alternatives 1, 2, and 4 would have no effect on the proposed sale area, and Alternatives 6 and 8 would affect the largest area, approximately 60 percent (912 MMBF) and 57 percent (868 MMBF), respectively (Table S-1).

## Summary

The effects on these sales go beyond the loss of acres volume. Sales are designed to constitute an economic package. When portions of a sale are removed, it may not be economically feasible to harvest the remaining portions. Also, portions of sales not located in a roadless area allocated to a non-development LUD may not be available for harvest because the road that would access that timber may go through the roadless area, or because the planned log transfer facility may be in the roadless area.

**Long-term Effects.** Suitable acres would vary from approximately 664,000 under Alternatives 1, 2, and 4 to 344,000 acres and 351,000 acres under Alternatives 6 and 8, respectively (Table S-1). The percent reductions in suitable acres on individual ranger districts would vary substantially by alternative. Relative effects under Alternatives 6 and 8 would be most pronounced on the Juneau Ranger District (89 percent reduction), but would also be high in the Craig, Sitka, Petersburg, Ketchikan, Hoonah, Wrangell, and Yakutat Ranger Districts (46 to 60 percent reductions). The largest absolute reduction (-87,000 acres) would occur on the Petersburg Ranger District.

The average annual ASQ over the first decade would range from 259 MMBF under Alternatives 1, 2, and 4, to 92 and 96 MMBF under Alternatives 6 and 8, respectively (Table S-1). The ASQ (which is not a target, but a ceiling on how much timber may be sold) is divided into two non-interchangeable components (NICs) based on harvest economics and available technology. The NIC I portion is the amount considered likely to be economically viable over the next decade. The NIC I ASQ for each of the alternatives would range from 100 percent of the current Forest Plan level under Alternatives 1, 2, and 4, to a low of 35 percent of the current Forest Plan level under Alternative 6. The NIC I component of the ASQ is presented for each alternative in Table S-1.

### ***Mining***

Approximately 148 locatable mineral resource deposits have been identified on the Tongass and grouped into 52 identified mineral activity tracts. The percentage of these areas that are located in wilderness and other restrictive LUDs would range from 25 percent under Alternative 1 to 90 percent under Alternative 8. The percentage of areas that are believed to have undiscovered mineral resources that would be located in wilderness and other restrictive LUDs ranges from 35 percent under Alternative 1 to 92 percent under Alternative 8 (Table S-1).

Allocating areas to Recommended Wilderness would not prohibit existing or proposed mining activities, but may make minerals more costly to develop. If recommended areas are designated as wilderness by Congress, then these areas would be closed to mineral entry, subject to valid existing mineral rights.

### ***Recreation and Tourism***

The Forest Service's Recreation Opportunity Spectrum (ROS) system is intended to identify the appropriate combination of activities, settings, and experiences for different types of recreation experience, ranging from primitive to urban settings. Viewed in terms of total Forest-wide acres over a 150-year planning horizon, Alternatives 6 and 8 would provide the greatest amount of primitive and semi-primitive opportunities, with little change occurring from the existing condition. They would result in approximately 12 percent of the Tongass in roaded ROS settings after 150 years. Alternatives 1, 2, and 4 would result in the greatest shift from the existing condition to roaded opportunities; roaded settings would represent approximately 22 percent of the ROS settings on the Tongass after 150 years. Alternatives 3, 5, and 7 would be intermediate, resulting in 17 to 21 percent of the Tongass in roaded ROS settings after 150 years, respectively (Table S-1).

Commercial recreation businesses serving large numbers of clients (more than 12 persons) could be negatively affected if one or more of the areas they regularly use is ultimately designated as wilderness. Outfitter/guides serving groups with more than 12 persons currently account for a large number of visitors to the Forest, but this use tends to be concentrated in a relatively few locations. Businesses with these types of operations in areas designated wilderness could either be displaced to other areas or forced to change their operations. Displacing large guided tours from one location to another could also negatively affect users at other locations. Potential effects would be largest under Alternative 8, which would allocate all inventoried roadless areas to Recommended Wilderness. Limiting the size of groups could, however, benefit other, smaller outfitter/guide businesses that consider high concentrations of other recreationists, particularly group sizes over 50, as detrimental to their business.

The existing wilderness and other wildland areas are expected to continue to offer a wide range of opportunities for commercial recreation businesses under all alternatives.

The percent of existing recreation place acres important for tourism that would be located in wilderness would range from 46 percent under Alternative 1 to 93 percent under Alternative 8. The percent of Tongass acres compatible with major tourism developments would range from 20 percent under Alternatives 1 and 2 to 1 percent under Alternatives 6 and 8 (Table S-1).

### **Transportation and Utility Projects**

Alternatives 1 through 7 would have relatively little effect on the implementation of the 1999 Southeast Alaska Transportation Plan (SATP, as amended) because most planned developments would take place in existing developed areas. Alternative 8 could, however, affect development of the proposed South Wrangell ferry terminal, as well as new road construction along all the potential transportation corridors identified in the SATP. Alternatives 3, 5, and 7 would limit the potential for highway construction through the Cleveland Peninsula corridor, and Alternatives 2, 5, 6, and 7 would affect the East Lynn Canal route connecting Juneau with Skagway.

Reclassifying land to Recommended Wilderness and eventual designation as wilderness could also affect opportunities for other potential regional transportation developments that are not included in the SATP. Alternatives 6 and 7 would restrict the potential for a road connection along the west side of Lynn Canal, as would Alternative 8. Alternatives 3, 5, 6, 7, and 8 would also affect development of a road connection between Kake and Petersburg via Duncan Canal. Alternative 8 would also affect a number of other potential transportation routes in Southeast Alaska, including two Juneau-to-Canada routes along Taku Inlet; the East Bradfield River corridor connection to the Cassiar Highway, and several other road corridors near Wrangell; a coastal alignment connecting Thorne Bay and Coffman Cove; a road connecting North Whale Pass and the East Prince of Wales road; a road to the southeastern tip of the Kasaan Peninsula; a potential route connecting Hoonah and Tenakee Springs; and a short connector route between the Chatham and Corner Bay road systems.

Alternatives 1 through 4 would affect relatively few potential power transmission line development opportunities. Alternatives 5, 6, 7, and 8 would, however, restrict a number of potential future projects; Alternative 8 would have the greatest potential effect. Alternative 8 is the only alternative that could potentially restrict the development of the Swan Lake-Lake Tyee Intertie Project.

## Regional Economy and Local Communities

### **Regional Employment and Income**

**Short-Term Effects.** Reductions in the volume under contract would affect both sawmill and logging employment. A potential loss of mill jobs would, for the most part, be concentrated in the community where the mill is located because the majority of mill workers reside close to their place of work. Potential reductions in logging employment are more difficult to tie to specific communities due to the mobility of sales and mobility of operations. There would be no effect on the areas containing timber volume under contract under Alternatives 1, 2, and 4. Potential reductions in direct employment under the other alternatives would range from approximately 25 job-years under Alternatives 3 and 5 to approximately 731 job-years under Alternative 6. Projected overall direct job losses under Alternatives 7 and 8 would be 94 and 668 job-years, respectively (Table S-1).

Estimated changes in short-term sawmill and logging employment are presented in job-years; each job-year is the equivalent of one job lasting for 1 year. This potential employment loss would not all occur in 1 year, and estimated job totals do not directly translate into estimated numbers of affected workers.

The preceding discussion implicitly assumes a linear relationship between reductions in the volume under contract and sawmill employment, with a 1 percent decline in harvest resulting in a 1 percent decline in sawmill employment. This type of relationship is also assumed with respect to logging employment. There are a number of factors that suggest that this type of direct relationship rarely exists. There is a possibility that the short-term supply reductions projected under the more restrictive alternatives could, in conjunction with current market conditions, result in the closure of one or more of the remaining sawmills in the region. If all remaining sawmills closed, approximately 431 and 413 direct sawmill and logging jobs would be lost, respectively. These estimates are based on the assumption that 212 MMBF is being harvested (the projected NIC I level under the No-Action Alternative). Total job loss (direct, indirect, and induced) would be approximately 1,694 jobs. This represents a worst-case scenario that assumes all projected Tongass-related sawmill and logging jobs would be lost.

**Long-term Effects.** Long-term effects for the purposes of this analysis are considered to be those effects that would occur over the next 10 years. Direct employment in the wood products and recreation and tourism industries are estimated to range from 5,497 jobs under Alternative 6 to 6,034 jobs under Alternatives 1, 2, and 4 (Table S-1). Most of the difference between these two values (537 jobs) is caused by differences in timber-related employment. Recreation and tourism employment shows much less variation across the alternatives, with a difference between high and low employment levels of less than 10 direct jobs. Direct earnings follow a similar pattern, as do total employment and earnings. Total wood products and recreation and tourism employment (direct, indirect, and induced) would range from 7,015 jobs under Alternative 6 to 8,100 jobs under Alternatives 1, 2, and 4.

The employment and income estimates for the wood products sector assume that the entire NIC I component volume projected for each alternative for the first decade following implementation would be harvested. It would, however, take unprecedented conditions for the entire NIC I component of the ASQ to be sold and harvested. Realistically, approximately 70 percent of the estimated NIC I volume can be expected to be sold and harvested. Recreation and tourism employment and income estimates are for nonresident recreation and tourism activity only. The recreation and tourism analysis is based on the future supply of and demand for recreation opportunities by setting. Differences in projected levels of recreation use

between alternatives are small because the Semi-primitive Motorized ROS setting is the only setting where demand exceeds supply in the first decade of this analysis, and the effects related to harvest activity have had little time to accumulate.

Projected recreation and tourism employment is expected to increase by approximately 17 percent from 2000 levels under all of the alternatives. The majority of this projected increase is due to the projected change in non-Tongass, nonresident, recreation-related employment, which does not vary by alternative. Changes in projected wood products employment range from a loss of approximately 52 and 50 percent of total 2000 employment under Alternatives 6 and 8, respectively, to a gain of about 6 percent under Alternatives 1, 2, and 4.

Congressional wilderness designation would not affect mining claims with existing rights, but designated areas would be withdrawn from future mineral exploration and development. Future mining employment and income could be reduced accordingly, depending on whether the affected resources would be economical to develop in the future.

Wilderness designation could affect regional transportation projects, which could, in turn, restrict transportation access to affected communities and the region as a whole. These restrictions could indirectly affect employment and income by limiting community and regional economic development opportunities. Restrictions on power transmission corridors could also affect future community development, as well as potentially limiting the provision of basic services to existing community residents and businesses.

### **Local Communities**

**Employment.** Timber and logging activities play an important role in at least 10 of Southeast Alaska's 32 communities. The majority of these communities are located on Prince of Wales Island, including Coffman Cove, Craig, Hollis, Klawock, Naukati Bay, Thorne Bay, and Whale Pass. Other communities with a relatively heavy reliance on wood products employment include Wrangell, Ketchikan, and Saxman.

These communities would be affected by reductions in wood products employment. Under the worst-case, short-term scenario that would result in closure of the region's remaining larger mills and a partial reduction or complete halt in Tongass-related logging activity, these communities would likely be significantly affected. In some cases, this could result in relatively large numbers of residents moving elsewhere to look for work. Communities with relatively high concentrations of employment in the wood products sector would also be negatively affected by reductions in long-term harvest.

**Subsistence.** The subsistence analysis conducted for the 1997 Forest Plan Revision Final EIS used deer as the main "indicator" species for potential subsistence resource consequences. This analysis indicated that deer harvest capabilities in certain portions of the Tongass may not be adequate to sustain current levels of harvest, and that implementation of any Forest Plan alternative possibly could significantly restrict hunting.

Under the alternatives analyzed in this SEIS, the possibility of a significant restriction, resulting from a change in abundance or distribution, would be the same as, or less than, the possibility under Alternative 11 (Selected Alternative) of the 1997 Forest Plan Revision Final EIS. In the short term, the risk of a significant restriction would be about the same under any of the SEIS alternatives. This is because the effects of past harvest would override the effects of new harvest during the next 10 years. In the long term, those alternatives that reduce areas available for future timber harvesting the most would result in the largest reduction in risk. Alternatives 1, 2, and

## Summary

4 would result in the same possibility of a significant restriction relative to Alternative 11 of the 1997 Final EIS because they would not produce a change in old-growth harvest rates. Alternatives 3, 5, and 7 would reduce the possibility of a significant restriction with reductions in development LUD acreage of 7, 16, and 31 percent, respectively. Alternatives 6 and 8 would result in a larger reduction in the possibility of a significant restriction with reductions in development LUD acreage of 70 and 69 percent, respectively.

None of the alternatives would directly limit the use of public lands for subsistence purposes. Historical access (by foot, boat, and floatplane) would be available under all alternatives for present and proposed foreseeable future activities.

**Recreation.** Designating areas wilderness would have little immediate effect on resident recreationists, but could limit the types of recreation that may be pursued in the future. Wilderness designation would limit types of facility and trail development, which could affect the type of future recreation opportunities available to those communities located close to wildernesses. Wilderness designation could limit the development of commercial recreation facilities and restrict use by outfitter/guides that serve large groups of clients. Conversely, designating areas wilderness would retain their natural and wild character, a major attraction to the region for residents and visitors. This designation would also protect areas from being developed and benefit certain groups of recreationists and outfitter/guides.

Almost half of the inventoried recreation places on the Tongass are located within 20 miles of one or more communities. The proportion of these areas that would be Recommended Wilderness or wilderness would range from 22 percent under Alternative 1 to 81 percent under Alternative 8 (Table S-1). This designation would affect future management of these areas and may be viewed positively or negatively, depending on the place and user group.

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## ACRONYMS AND ABBREVIATIONS

ACMP	Alaska Coastal Management Program
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AFHA	Anadromous Fisheries Habitat Assessment
AHRS	Alaska Heritage Resource Survey
AMS	Analysis of the Management Situation
ANCSA	Alaska Native Claims Settlement Act of 1971
ANILCA	Alaska National Interest Lands Conservation Act of 1980
APC	Alaska Pulp Company
ASQ	allowable sale quantity
AVSP	Alaska Visitor Statistics Program
BIA	U.S. Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
CA	census area
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
DCBD	Division of Community and Business Development
DGC	Division of Governmental Coordination
DOL	Department of Labor
EA	environmental assessment
EFH	Essential Fish Habitat
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EVC	existing visual condition
°F	degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
F.I.R.E.	finance, insurance, and real estate
FSH	Forest Service Handbook
FY	fiscal year
GIS	geographic information system
GMU	Game Management Unit
H.R.	[introduced in the] U.S. House of Representatives
km	kilometer
KPC	Ketchikan Pulp Company
kV	kilovolt
LTF	log transfer facility
LTSY	long-term sustained yield
LUD	Land Use Designation
LWD	large woody debris
MBF	thousand board feet

## Contents

### ACRONYMS AND ABBREVIATIONS (continued)

MIRF	Model Implementation Reduction Factor
MIS	Management Indicator Species
MMBF	million board feet
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act of 1976
NIC	non-interchangeable component
NMFS	National Marine Fisheries Service
NFS	National Forest System
NPS	National Park Service
NVUM	National Visitor Use Monitoring
OGR	old-growth reserve
OHV	off-highway vehicle
ORV	off-road vehicle
P	Primitive
PNV	Present Net Value
POW	Prince of Wales
PPI	Producer Price Index
ppm	parts per million
RARE	Roadless Area Review and Evaluation
RM	Roaded Modified
RN	Roaded Natural
RNA	Research Natural Area
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RPA	Resources Planning Act of 1974
RVD	Recreation Visitor Day
SEACC	Southeast Alaska Conservation Council
SEIS	Supplemental Environmental Impact Statement
SPM	Semi-Primitive Motorized
SPNM	Semi-Primitive Non-Motorized
TES	threatened, endangered, and sensitive
TRUCS	Tongass Resource Use Cooperative Survey
TTRA	Tongass Timber Reform Act of 1990
U	Urban
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCU	Value Comparison Unit
VQO	Visual Quality Objective
WARS	Wilderness Attribute Rating System
WTP	willingness to pay

# CHAPTER 1

## PURPOSE AND NEED

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# Purpose and Need

## Introduction

The purpose and need for this Supplemental Environmental Impact Statement (SEIS) is to respond to a March 2001 U.S. District Court Order for evaluating and considering roadless areas within the Tongass National Forest for recommendations as potential wilderness. The National Forest System Land and Resource Management Planning Regulations of September 30, 1982 (36 Code of Federal Regulations [CFR] 219.17) provide the manner in which roadless areas are to be evaluated for recommendations as potential wildernesses.

This Final SEIS analyzes eight alternatives in detail, including the No-Action Alternative, for wilderness recommendations with regard to the roadless areas of the Tongass National Forest. If the Regional Forester selects an alternative in the Record of Decision that recommends new wilderness, the 1997 Tongass Land and Resource Management Plan Revision (referred to as the 1997 Tongass Forest Plan in this document) will be amended to ensure that these areas are managed to maintain their wilderness eligibility. Any new wilderness recommendations are a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and, lastly, Congress. The amended 1997 Tongass Forest Plan would guide management of areas recommended for wilderness to preserve the option of wilderness designation until Congress acted on such recommendations or the 1997 Tongass Forest Plan is revised in the future.

## Forest Plan History on the Tongass National Forest

**LUD II Area:** A special land use designation identified by TTRA for areas to be permanently managed in a roadless state to retain their wildland characteristics. Unlike wilderness, limited development is permitted under certain circumstances (including water and power, mining, habitat, and transportation developments).

The original Tongass National Forest Land and Resource Management Plan (1979 Tongass Forest Plan) was completed in April 1979 and recommended ten areas for wilderness totaling 5.4 million acres. The Alaska National Interest Lands Conservation Act (ANILCA) passed December 2, 1980, and made these ten areas, with some minor boundary adjustments, part of the National Wilderness Preservation System. The 1979 Tongass Forest Plan was amended in 1986. The Tongass Forest Plan Revision process began in 1987 and a Draft Environmental Impact Statement (EIS) was published in June 1990. That Draft EIS had two alternatives that included wilderness recommendations. In November 1990, the Tongass Timber Reform Act (TTRA) was passed. This Act added five new wildernesses and one wilderness addition for a total of 296,000 acres. In addition, it added 12 legislated Land Use Designation (LUD) II areas totaling 727,000 acres to retain their roadless and wildland character. The Tongass Forest Plan was amended in February 1991 to incorporate the TTRA changes. The Revision process continued with a Supplement to the Draft EIS published in September 1991 to incorporate all changes required by TTRA and to evaluate a new set of alternatives. Because Congress had just acted on the wilderness issue following the June 1990 Draft EIS, the Forest Service did not reconsider roadless areas for potential wilderness recommendation. The Forest Service prepared a Final EIS in the fall of 1992 but did not publish a Record of Decision (ROD). The Regional Forester found that there likely was new information that should be collected to respond to 36 CFR 219.19. That process took several years, leading to the eventual 1997 Final EIS and Forest Plan Revision ROD.

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## Completion of the 1997 Tongass Forest Plan Revision

### Roadless Area Terms

Roadless Area: For purposes of this SEIS, this is a generic term that includes inventoried roadless areas and unroaded areas.

Inventoried Roadless Area: An undeveloped area typically exceeding 5,000 acres that meets the minimum criteria for wilderness consideration under the Wilderness Act.

Unroaded Area: An undeveloped area typically less than 5,000 acres, but of a size and configuration sufficient to protect the inherent characteristics associated with its roadless condition.

The 1982 forest planning regulations provided guidance on evaluating roadless areas for potential wilderness recommendation. Therefore, the Forest Service has chosen to complete this SEIS under the 1982 regulations for this court-ordered process.

The mix of land uses and associated activity planned for in the 1997 Tongass Forest Plan was the result of significant collaborative efforts throughout Southeast Alaska, the state, and across the nation. Additionally, the 1997 Tongass Forest Plan used the best available science and scientists to ensure that the Forest Plan was physically, biologically, economically, and socially sound.

The 1997 Tongass Forest Plan did not include wilderness recommendations in the Final EIS. It did, however, offer for analysis and public comment alternatives that would manage large portions of the Tongass roadless areas in non-development LUDs. Roadless values were analyzed and incorporated in the mix of LUDs, and in appropriate standards and guidelines used for implementing the Forest Plan.

The 1997 Tongass Forest Plan was the subject of 33 separate appeals by organizations and individuals. In 1999, the Under Secretary of Agriculture affirmed the Regional Forester's decision regarding all 33 appeals, based on the 1997 Tongass Forest Plan Revision Final EIS and planning record. The Under Secretary also issued a new Record of Decision (1999 ROD) for the 1997 Tongass Forest Plan.

Two lawsuits challenged the 1997 and 1999 RODs in the U.S. District Court for the District of Alaska. The Alaska Forest Association and some Southeast Alaska communities challenged many aspects of the 1997 Tongass Forest Plan and the process by which the 1999 ROD was issued. The Sierra Club and other environmental groups challenged the lack of consideration of wilderness recommendations in the 1997 Tongass Forest Plan Revision Final EIS and ROD. The Court issued one opinion for both cases in March 2001.

In the Alaska Forest Association case (*Alaska Forest Ass'n v. United States Dep't of Agric.* No. J99-0013 CV [JKS] [D. Alaska]), the Court upheld the 1997 ROD against all of the challenges, but it also held that the 1999 ROD was not properly adopted. The Court vacated the 1999 ROD and enjoined the Forest Service from implementing it unless an SEIS was prepared addressing the changes from the 1997 Tongass Forest Plan. Because of the extensive public involvement and scientific review in the 1997 ROD, and its thorough policy and legal review in the administrative appeal process and by District Court, the Forest Service does not intend to propose changes to the 1997 ROD similar to those that were enjoined by the District Court. The Sierra Club has intervened in the Alaska Forest Association case and appealed the decision vacating the 1999 ROD to the U.S. Court of Appeals for the Ninth Circuit.

In the Sierra Club challenge of the 1997 Tongass Forest Plan Revision Final EIS (*Sierra Club v. Lyons*, No. J00-0009 CV [JKS] [D. Alaska]), the Court found that the 1997 Tongass Forest Plan should have considered making wilderness recommendations in the Final EIS. The Court ordered the Forest Service to prepare an SEIS evaluating wilderness recommendations for roadless areas on the Tongass and to provide the relative contribution to the National Wilderness Preservation System in its Analysis of the Management Situation as follows:

The Court finds that the Forest Service violated NFMA [National Forest Management Act] and NEPA [National Environmental Policy Act] in the revised TLMP by failing to consider any alternatives with new wilderness recommendations, and hereby enjoins the Forest Service from taking any action to change the wilderness character of any eligible roadless area until the

Forest Service complies with NEPA and NFMA. To that end, the Forest Service shall prepare a SEIS that evaluates and considers roadless areas within the Tongass for recommendations as potential wilderness areas. The Forest Service shall also provide the relative contribution to the National Wilderness Preservation System in its analysis of the management situation (*Sierra Club, et al. v. Lyons, J00-0009 CV [JKS]*).

On May 23, 2001, the Court suspended the injunction against actions in roadless areas, and subsequently undertook additional legal briefing and an evidentiary hearing on February 13-15, 2002, to determine an appropriate remedy for the decision. On April 26, 2002, the Court reinstated the injunction, but did not include the Swan Lake-Lake Tyee Intertie, nor timber sale EISs published in the Federal Register prior to April 13, 1999.

## Forest Location and Description

The 16.8-million acre Tongass National Forest occupies about 7 percent of the area of Alaska. The Tongass is located in Southeast Alaska, the area commonly called the panhandle of Alaska, and extends from Dixon Entrance in the south to Yakutat in the north; it is bordered on the east by Canada and on the west by the Gulf of Alaska. The Tongass National Forest extends approximately 500 miles north to south, and approximately 120 miles east to west at its widest point. Figure 1-1 is a vicinity map of the Tongass National Forest.

The Tongass includes a narrow mainland strip of steep, rugged mountains and icefields, and more than 1,000 offshore islands known as the Alexander Archipelago. Together, the islands and mainland have nearly 11,000 miles of meandering shoreline, with numerous bays and coves. A system of seaways separates the many islands and provides a protected waterway called the Inside Passage. Federal lands comprise about 95 percent of Southeast Alaska, with about 80 percent in the Tongass National Forest (and most of the rest in Glacier Bay National Park and Preserve). The remaining land is held in State, Native corporation, and other private ownerships.

Most of the area of the Tongass is wild and undeveloped. Approximately 73,000 people inhabit Southeast Alaska, most living in 32 communities located on island or mainland coasts. Only eight of the communities have populations greater than 1,000 persons. Most of these communities are surrounded by, or adjacent to, National Forest System land. Only three towns are connected to other parts of the mainland by road: Haines and Skagway to the north, and Hyder to the south.

The economies of Southeast Alaska's communities rely on the Tongass National Forest to provide natural resources for uses such as fishing, timber harvesting, recreation, tourism, mining, and subsistence. Maintaining the abundant natural resources of the Forest, while also providing opportunities for their use, is a major concern of Southeast Alaska residents.

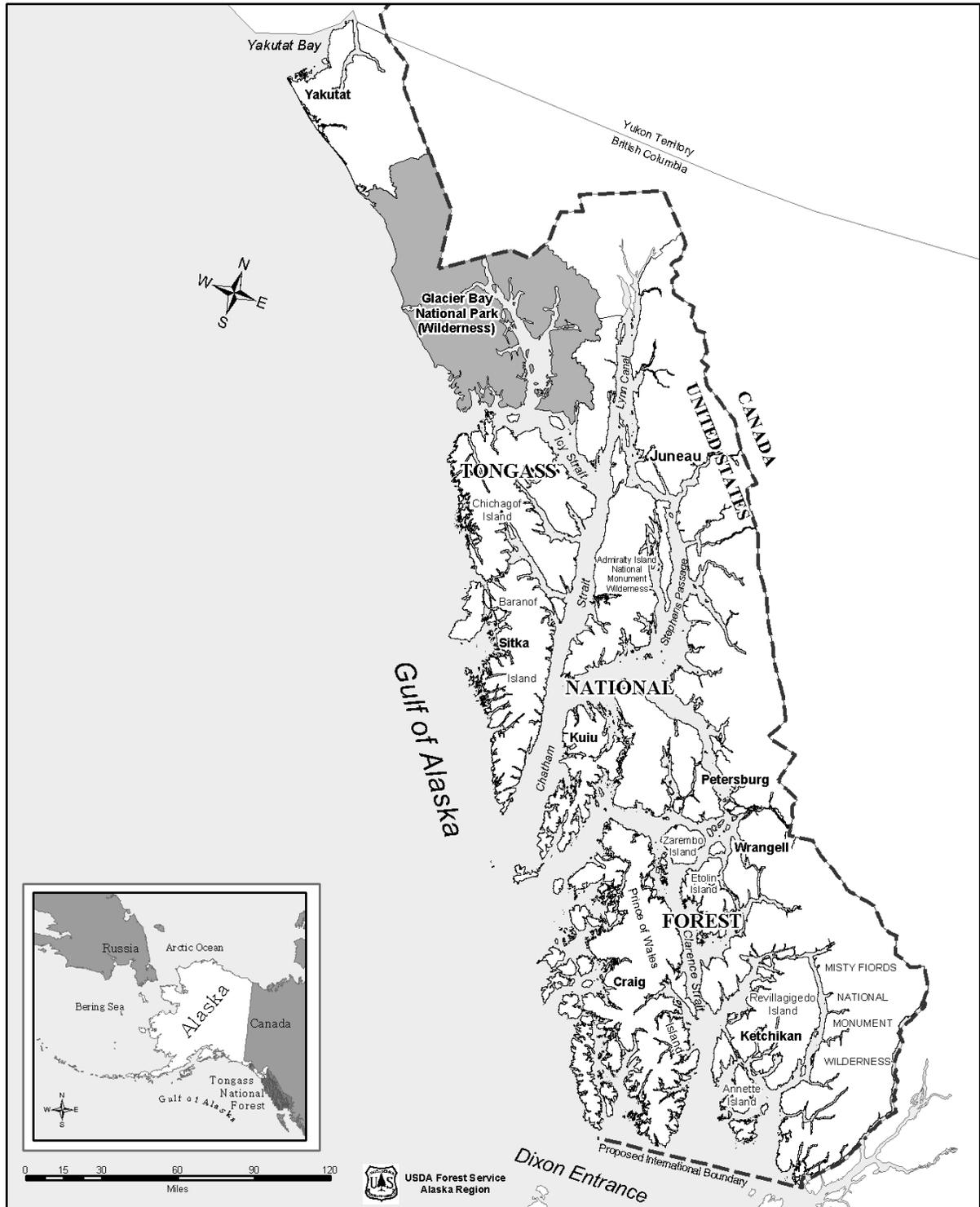
Ranger District offices on the Tongass National Forest are located in Yakutat, Juneau, Hoonah, Sitka, Petersburg, Wrangell, Thorne Bay, Craig, and Ketchikan. There are also two National Monuments (Admiralty Island and Misty Fjords) with offices in Juneau and Ketchikan (see Figure 1-1).

## Purpose and Need

The purpose and need for this SEIS is to respond to the District Court's decision in *Sierra Club v. Lyons* by evaluating roadless areas of the Tongass National Forest for wilderness recommendations. In the roadless area evaluation process, the relative contribution to the National Wilderness Preservation System has been considered. Appendix C of this SEIS includes documentation of the analysis and evaluation for each inventoried roadless area as directed by the Analysis of the Management Situation (AMS) requirements pertinent to roadless areas for Forest planning. As a result, Appendix C provides an update to the AMS done in 1989 for

# 1 Purpose and Need

Figure 1-1  
Tongass National Forest Vicinity Map



the 1997 Tongass Forest Plan Revision, and also responds to the District Court's decision. The purpose and need for this SEIS is, therefore, narrow in focus and has been developed to specifically respond to the March 2001 Court order.

Since the preparation of the AMS in 1989, and especially during the last few years, there has been heightened national interest in the conservation of roadless areas. The Roadless Area Conservation Rule of January 12, 2001, is the subject of a number of lawsuits. While the Roadless Area Conservation Rule was being developed, the Forest Service was also developing a revised National Forest Transportation Policy that addressed road-related activities on National Forest System roadless lands. In 2001, the Secretary of Agriculture began a review of the roadless area rule and the Chief of the Forest Service undertook a review of the road management policy. These reviews have led the Forest Service to initiate several Interim Directives with the intent that the values associated with inventoried roadless areas are fully considered within the context of forest planning. One of the key elements of the interim directives continues to be that roadless values need to be incorporated into each Forest's planning efforts. The update of the AMS, which is incorporated into Appendix C of this Final SEIS, provides baseline information that reflects current conditions for incorporation of inventoried roadless areas into this SEIS.

## What is a Wilderness?

Only Congress can create, modify, or eliminate wilderness. Wildernesses are federal land designated by Congress to "be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness" (*Wilderness Act of 1964, P.L. 88-577, Sec. 2. [a]*). Wilderness is further defined in the Act as:

an area of underdeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

## Past Congressional Actions

With the passage of ANILCA and TTRA, Congress designated wildernesses on the Tongass National Forest and included special provisions to recognize the unique conditions found in Southeast Alaska. These provisions include recreation developments relative to safety and continued use of motorized access, such as boats and floatplanes.

### Alaska National Interest Lands Conservation Act

Congress has twice acted to designate wildernesses on the Tongass National Forest. ANILCA was enacted in 1980 and included as Section 703 (a) the establishment of ten wildernesses totaling 5.4 million acres within the Tongass. Two of the areas, Admiralty Island and Misty Fjords, were also designated as National Monuments. ANILCA also had several provisions relating to future wilderness considerations:

**Sec. 101 (d)** - *This Act provides sufficient protection for the national interest in the scenic, natural, cultural, and environmental values on the public lands in Alaska, and at*

# 1 Purpose and Need

*the same time provides adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people; accordingly, the designation and disposition of the public lands in Alaska pursuant to this Act are found to represent a proper balance between the reservation of national conservation system units and those public lands necessary and appropriate for more intensive use and disposition, and thus Congress believes that the need for future legislation designating new conservation system units, new conservation areas, or new national recreation areas, has been obviated thereby.*

**Sec. 708(b) (3)** - *areas reviewed in such Final Environmental Statement and not designated as wilderness or for study by this Act or remaining in further planning upon enactment of this Act need not be managed for the purpose of protecting their suitability for wilderness designation pending revision of the initial plans; and*

**(4)** - *unless expressly authorized by Congress the Department of Agriculture shall not conduct any further statewide roadless area review and evaluation of National Forest System lands in the State of Alaska for the purpose of determining their suitability for inclusion in the National Wilderness Preservation System.*

**Sec. 1326 (b)** - *No further studies of Federal lands in the State of Alaska for the single purpose of considering the establishment of a conservation system unit, national recreation area, national conservation area, or for related or similar purposes shall be conducted unless authorized by this Act or further Act of Congress.*

This SEIS and consideration of recommending wilderness is part of the Forest Plan Revision Final EIS and is consistent with ANILCA §708(b)(4) because the 1997 Forest Plan Revision is a forest-specific evaluation and not a statewide evaluation. This SEIS is also consistent with ANILCA §1326 (b) because the 1997 Forest Plan Revision is a general land management plan and not a single purpose study. Section 101 of ANILCA provides important congressional determinations, findings, and information relating to additional wilderness in Alaska and will be considered in making the recommendation for additional wilderness.

## **Tongass Timber Reform Act**

In November 1990, TTRA amended ANILCA and designated five new wildernesses and one wilderness addition totaling 296,080 acres. The Act also designated 12 permanent LUD II areas totaling 727,765 acres. Congressionally designated LUD II areas are to be managed in a roadless state to retain their wildland characteristics; however, they are less restrictive on access and activities than wilderness, primarily to accommodate recreation and subsistence activities and to provide vital Forest transportation and utility system linkages, if necessary.

The 18 areas designated as wilderness or LUD II in TTRA included all or portions of 17 of the 23 areas included in the US House of Representatives Bill HR 987: 1.02 million out of 1.82 million acres. After the passage of TTRA, further wilderness recommendations were not considered in detail during the 1997 Tongass Forest Plan Revision process.

## **Prior Work on Wilderness Evaluation**

Early in the 1997 Tongass Forest Plan Revision process, 110 inventoried roadless areas were examined for potential wilderness recommendations. Each of these roadless areas was analyzed and results were recorded in Appendix C of the AMS in 1989. For this SEIS, all roadless Tongass National Forest land was assessed in order to update Appendix C of the 1989 AMS to better reflect current conditions. The assessment included all inventoried roadless areas, as well as unroaded lands

of less than 5,000 acres. The smaller areas were evaluated to determine if they were eligible for wilderness consideration (based on the Wilderness Act; see *What is a Wilderness?* above), and thus should be carried forth as inventoried roadless areas in the evaluation. The Draft SEIS included 115 inventoried roadless areas. The increase in number from 110 inventoried roadless areas primarily reflected inclusion of smaller individual roadless areas for review that are located within roaded areas that the 1997 Forest Plan considered as developed and/or marginally eligible for wilderness recommendation. These areas were analyzed in the roadless area analysis for the Draft SEIS primarily because of the high public interest in management of roadless areas on the Tongass. As a result of the analysis in the Draft SEIS, 6 of the 115 roadless areas no longer qualify as inventoried roadless areas for the purpose of wilderness consideration. Therefore, these areas are not included in the Final SEIS list of 109 inventoried roadless areas. The inventoried roadless areas are mapped collectively on a large Forest-scale map in the separate *Map Packet*, as well as in the *Map Section* of the SEIS CD-ROM (CD). They are also mapped individually at a larger scale in the *Map Section* of the SEIS CD. These maps are also available on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net). Descriptions of each inventoried roadless area are provided in Appendix C of the SEIS.

The 1997 Tongass Forest Plan is used as a baseline for land allocation and serves as the No-Action Alternative. This represents Alternative 11 in the 1997 Forest Plan Revision Final EIS, adjusted by the 1997 ROD and subsequent non-significant Forest Plan Amendments made by projects since 1997. A range of alternatives has been developed relative to wilderness recommendations for all inventoried roadless areas on the Tongass National Forest.

The Tongass National Forest contains approximately 16.8 million acres, of which about 6.6 million acres are Congressionally designated wilderness, National Monument, or LUD II lands occurring throughout the Forest. The 110 inventoried roadless areas in the 1997 Tongass Forest Plan Revision Final EIS covered about 9.4 million acres, including the LUD II lands described above. The 109 inventoried roadless areas analyzed in this Final SEIS cover approximately 9.6 million acres.

Six types of decision are made in forest plans. The following briefly describes the decisions already made in the 1997 ROD, along with how this SEIS could affect each category of decision.

## Forest Plan Decisions

- A. Recommendations on Special Management Areas.** The primary purpose of this SEIS is to consider recommendations for new wildernesses on the Tongass National Forest. The 1997 Tongass Forest Plan Revision ROD included two types of recommendations on special management areas: 1) new Research Natural Areas and 2) additions of rivers to the Wild and Scenic Rivers System.
- B. Land Suitable for Timber Production.** Under the 1997 Tongass Forest Plan Revision Final EIS, lands were made available for a variety of uses, including timber production. The methodology for determining the location of suitable lands for timber production (the “suitable” land base) was revised under the 1997 Tongass Forest Plan. No further changes are being proposed to the methodology for determining forest land suitability; however, the amount and distribution of land suitable for timber production may vary with the alternatives analyzed in the SEIS.
- C. Allowable Sale Quantity.** The 1997 Tongass Forest Plan established an allowable sale quantity (ASQ) (a decadal ceiling on the amount of timber that can be supplied, expressed on an annual basis) at 267 million board feet (MMBF) per year. The ASQ reflects the maximum quantity of timber available that can be removed from suitable forest lands in perpetuity and on a sustained-yield basis.

# 1 Purpose and Need

This quantity was also determined to be sufficient to provide a supply to help meet market demands in Southeast Alaska, and to provide a significant contribution to Southeast Alaska's employment and local community stability while meeting multiple-use resource goals. Potential changes to the ASQ are analyzed for the different alternatives presented in this SEIS.

- D. Multiple-use goals and objectives.** The goals and objectives of the 1997 Tongass Forest Plan Revision Final EIS provide a balanced approach to multiple resource needs and conditions. These goals and objectives are still valid, and no changes are proposed in this SEIS.
- E. Management prescriptions.** The 1997 Tongass Forest Plan Revision Final EIS uses 19 LUDs with a range of management objectives. Four broad groups of LUDs, similar in management direction and environmental effects, have been identified:
- 1) Wilderness and National Monument (5.9 million acres),
  - 2) Natural Setting (7.2 million acres),
  - 3) Moderate Development (1.1 million acres), and
  - 4) Intensive Development (2.5 million acres).

Management prescriptions consist largely of standards and guidelines. The SEIS creates two new management prescriptions to delineate "Recommended Wilderness" and "Recommended LUD II" areas. The Recommended Wilderness prescription falls into LUD group 1 and the Recommended LUD II falls into LUD group 2. The SEIS considers reallocation of lands from LUD groups 2, 3, and 4, under the 1997 Forest Plan, to groups 1 and 2.

- F. Monitoring and Evaluation.** The 1997 Tongass Forest Plan provides direction for monitoring and evaluation. The SEIS proposes no changes to the existing monitoring and evaluation program.

## Issues

Identification of issues helps define or predict the resources or uses that could be most affected by the management of National Forest System lands. These issues are then used as a basis to formulate alternatives or to measure differences between alternatives. Ten public issues were originally identified in 1988 for the Forest Plan Revision. These original issues included scenic quality, recreation, fish habitat, wildlife habitat, subsistence, timber harvest, roads, minerals, roadless areas, and local economy. The 1991 Forest Plan Revision Supplemental Draft EIS (SDEIS) added an additional concern, identifying and considering for recommendation potential wild, scenic, and recreational rivers.

After the release of the 1991 SDEIS, considerable new information pertaining to the 1997 Tongass Forest Plan Revision Final EIS became accessible. Out of this information emerged five additional issues, determined by the Regional Forester to need more study and evaluation before a final revised Forest Plan could be adopted. Some of these issues were aspects or extensions of the ten public issues previously considered; others were new as issues or had not been considered as issues in themselves. The five issues were wildlife viability, fish habitat, karst and caves, alternatives to clearcutting, and socioeconomic considerations. These issues were assessed in the 1996 Revised SDEIS and the 1997 Tongass Forest Plan Revision Final EIS.

## Public Input

The scope of this SEIS was initially determined by the Court in its ruling on the 1997 ROD. Additional information was analyzed to help clearly define the issues and for use in the development and analysis of alternatives. For this Final SEIS, comments

and information from a wide variety of public inputs that were related to wilderness and management of roadless areas on the Tongass National Forest were evaluated. Sections reviewed included:

- public comments that were generated during the 1997 Tongass Forest Plan Revision process that related to wilderness and roadless area issues;
- Tongass Forest Plan Revision appeals;
- public input on the Forest Service's 2001 National Roadless Area Conservation Rule that was specific to the Tongass National Forest;
- congressional proposals for wilderness that have been developed recently and during the 1997 Tongass Forest Plan Revision process;
- public input related to roadless areas, expressed during project-level EIS analyses over approximately the past 10 years; and
- public input on the National Forest Transportation Rule and Policy that was specific to the Tongass National Forest.

This record of public input on the management of the Tongass covers a period of more than 10 years. Of special note are the public meetings on roadless area issues that were conducted for the National Roadless Area Conservation EIS. This project involved extensive meetings in Southeast Alaska and covered similar issues.

In addition to the above, public involvement has occurred during the development of the SEIS. Public involvement activities that have taken place during this time frame include the following:

- The Notice of Intent was published in the Federal Register in September 2001.
- A notification letter was sent in November 2001 to a mailing list of approximately 550.
- An SEIS Web site was developed in November 2001 and has been maintained to inform and engage the public since then. It is updated as new information is developed or published and provides a mechanism for public input. A number of comments and questions have been received through the Web site.
- A working interdisciplinary team meeting that was open to the public was held in November 2001 regarding the definition of issues and alternatives (specific public input was received at this meeting regarding these topics).
- A project update (newsletter) was sent in January 2002 to a mailing list of approximately 600.
- In response to the above items, a number of letters have been received containing comments regarding the issues and alternatives (these have included letters from environmental organizations, the timber industry, Southeast Alaska community organizations, and a number of individuals from Southeast Alaska and across the nation).
- A number of group-specific meetings have also occurred with various organizations (including Alaska Native groups).
- In May 2002, a Notice of Availability was published in the Federal Register and the Draft SEIS was sent out to a mailing list containing slightly more than 700 addresses.

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- A national news release and news teleconference was held at the release of the Draft SEIS.
- Between June 18 and August 6, 2002, open houses and public hearings were held in 17 communities across Alaska, including Juneau, Wrangell, Yakutat, Petersburg, Angoon, Kake, Ketchikan, Craig, Skagway, Tenakee Springs, Thorne Bay, Haines, Port Protection, Sitka, Hoonah, Gustavus, and Anchorage. In addition to SEIS comments, the hearings provided an opportunity to hear concerns related to subsistence and Alaska Native issues.
- On July 8, 2002, an open house and public hearing was held on the internet, in order to solicit public comment in an open forum from individuals living anywhere in the world.
- Counting individual letters, form letters, and hearing testimony, a total of approximately 177,000 individual responses were received. Approximately 3,000 of these responses were non-form letters and 174,000 were form letters (defined as five or more separate responses that contain identical text). Responses were received from all 50 states and 11 foreign countries. Approximately 41 percent of the non-form letter responses were from Alaskan addresses.

The input received prior to issuance of the Draft SEIS was reviewed and synthesized into a Supplemental Scoping Report that is maintained in the planning record. A summary of this synthesis is presented as Appendix A (Issue Identification). Input received after issuance of the Draft SEIS was reviewed and summarized into comments, and responses were prepared; these comments and responses are presented in Appendix F.

## Key Issues

Any alternative that proposes new wilderness recommendations would create some change in effects and/or outputs in relation to the existing 1997 Tongass Forest Plan. Chapter 3 of the SEIS shows the effects for all relevant resources. Some of these changes are, however, more likely to influence the comparison between alternatives, and more emphasis and analysis is placed on these issues. Review of the public input received prior to and after publication of the Draft SEIS identified a number of issues of concern that can be grouped into two broad issue categories, which are referred to as key issues. These key issues are the major issues driving the alternatives and the analysis. In general, they represent two very different sets of strongly held values and viewpoints.

### **Key Issue 1 – Additional wilderness designation will provide greater long-term protection of roadless areas on the Tongass National Forest than is provided by the 1997 Tongass Forest Plan.**

Approximately 6.6 million acres of Congressionally designated wilderness, National Monument, or LUD II lands occur throughout the Tongass National Forest. Aside from wilderness, there are approximately 9.6 million acres of inventoried roadless areas (including legislated LUD II) on the Tongass. The 1997 Tongass Forest Plan allocated 74 percent of the roadless areas to non-development LUDs; however, because that designation is not permanent (and may be subject to future Forest Plan amendments and revisions), some segments of the public would rather have permanent protection status. There is concern by some that the 1997 Tongass Forest Plan does not provide sufficient recognition of and long-term protection for Tongass roadless areas. Much of this concern is related to roadless area protection, rather than wilderness designation. Some hold the belief that many areas would be

of more value to Americans as wilderness rather than as other LUDs. There is, however, no consensus on which areas should be recommended for wilderness.

The review of public input conducted for this SEIS indicated that concerns for additional wilderness protection primarily center around two themes. These can be generally characterized as the *symbolic, spiritual, and passive use* value of wilderness and the value of wilderness as a means for additional *ecological* protection, including protection of wildlife viability, biodiversity, and fish populations. These themes, which are discussed in the following paragraphs, are important to segments of the public in Southeast Alaska and across the nation, and possibly internationally.

**Symbolic, Spiritual, and Passive Use Value of Wilderness** – In a world characterized by rapid change and complexity, the symbolic or spiritual value of wilderness may be increasingly important. Wilderness can be viewed as symbolic of the nation's heritage. It may also be viewed as a symbol of restraint, a self-imposed limit on technological and economic development that reflects a wider awareness of environmental responsibility. The spiritual values associated with wilderness can be specific religious and cultural values attributed to particular places or types of landscapes. Alternatively, they may represent the feelings that people have for wild, natural landscapes that are often difficult to put into words. Although difficult to characterize or value in monetary terms, these types of values are very important for a lot of people.

Segments of the public place high value on the knowledge that wilderness exists, whether they use it or not. Economists often refer to these values as non-use or passive use values. Non-use or passive use values represent the value that individuals assign to a resource independent of their use of that resource and typically include existence, option, and bequest values. These values represent the value that individuals obtain from knowing that the wilderness exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it would be left for future generations to inherit. These values generally increase as more areas and larger areas are designated. There is interest in preserving large portions of the Tongass because the majority of the Forest is in a natural condition, unlike most other national forests, and the Tongass represents a significant portion of the world's remaining temperate rainforests. These types of values are difficult to quantify in monetary terms, but they are important for many people.

Indicators: Analysis relative to this issue compares the amount and proportion of land protected as wilderness and in other non-development LUDs. Also, the values of the lands protected are considered. Non-use or passive use values are discussed qualitatively, with examples provided from other studies.

**Ecological Values of Wilderness** – Many people believe that roadless areas should be allowed to evolve naturally through their own dynamic processes and should be afforded permanent protection to ensure that this will occur. The Tongass includes very large undeveloped land areas, with several portions of the Forest consisting of contiguous roadless areas that exceed one million acres and represent large, unfragmented blocks of wildlife habitat. This scale of habitat protection is not possible elsewhere in the National Forest System, except on the Chugach National Forest.

People have also expressed concerns about the services and benefits provided by healthy ecosystems. These services and benefits, often referred to as ecosystem services, include what some consider to be long-term life support benefits to society as a whole. Examples of ecosystem services include watershed services, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity.

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Ecological and ecosystem service values can be protected through a number of forest management approaches, including wilderness designation. Wildlife population viability is addressed on the Tongass by a conservation strategy consisting of two key components of the 1997 Tongass Forest Plan: the Forest-wide system of reserves (including all non-development LUDs), and the standards and guidelines that apply in development LUDs. The 1997 Tongass Forest Plan Revision ROD concluded that the old-growth conservation strategy and specific species management prescriptions represent a balance of wildlife habitat conservation measures that consider the best available scientific information and, within an acceptable level of risk inherent in projecting management effects, will provide sufficient fish and wildlife habitat to maintain well-distributed viable populations of vertebrate species in the planning area, and maintain the diversity of plants and animals on the Forest. Forest-wide standards and guidelines established in the 1997 Forest Plan protect and minimize potential effects to ecosystem services. Providing long-term protection for additional areas could further reduce these risks.

Indicators: Analysis relative to this issue compares the amount of productive old-growth forest and inventoried roadless areas that would be protected under each alternative, as well as the percentages of ecoregions and biogeographic provinces that would be protected in reserves.

## **Key Issue 2 – Additional wilderness designation will affect the social and economic well-being of the communities of Southeast Alaska.**

Many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, including wood products, commercial fishing and fish processing, recreation, tourism, mining, and mineral development. Many residents also depend on subsistence hunting and fishing to meet their basic needs. There is very little private land throughout the region to provide these resources. Some people are concerned that wilderness recommendations could negatively affect employment and income generated by natural resource-based industries, including wood products, mining, and recreation and tourism. Others have suggested that wilderness recommendations could have positive effects on some sectors of the recreation and tourism industry. The employment and income associated with natural resource-based industries is important to the economic and social well-being of many Southeast Alaskan communities. In addition, wilderness designation could affect transportation and utility projects that are considered by some as essential for continued economic development and well-being in the region.

This issue focuses on the social and economic effects of recommended wilderness designation on communities in Southeast Alaska. There are three central themes to this issue: natural resource-based industry, transportation and utility projects, and the regional economy and local communities.

### **Natural Resource-Based Industry**

**Wood Products** – Sawmills in Southeast Alaska are dependent on the availability of timber resources from the Tongass National Forest, which provided 92 percent of the volume processed in local mills in 2000 (USDA Forest Service, 2001a). Timber harvest would not be allowed in areas recommended for wilderness or LUD II and reductions in the supply of available timber could have short- and long-term effects on the wood products industry.

Indicators: The analysis of short-term effects on the wood products industry focuses on the existing Tongass timber sale volume under contract (i.e., National Forest timber sales that have been sold but not yet harvested) and proposed sales that are

not yet under contract. The long-term effects analysis focuses on the number of acres suitable for timber production, as well as potential changes to the Allowable Sale Quantity (ASQ), which is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period.

**Mining** – The Tongass National Forest contains many important mineral resources, from precious metals to chemical-grade minerals. Except for designated wildernesses and other withdrawn areas, all Tongass National Forest lands are open to mineral exploration and development. Recommendations for additional wilderness may have an effect on the exploration and development of minerals. However, recommended areas would remain open to mineral exploration and development until Congress acted to designate areas as wilderness.

Indicators: Analysis related to the mining issue focuses on changes in the amounts of identified mineral tracts and undiscovered mineral areas that could be withdrawn from mineral production or made more costly to develop.

**Recreation and Tourism** – The recreation and tourism industry in Southeast Alaska has grown significantly over the past decade, with much of this growth associated with a dramatic increase in the number of cruise ship passengers visiting the region.

Changes in the land base available for tourism and recreation developments could affect this industry. Wilderness designation could provide long-term protection for undeveloped areas and specific places that are important to some sectors of the recreation and tourism industry. Potential use restrictions associated with wilderness designation could affect other sectors of this industry by limiting the size of commercially guided groups visiting particular locations.

Indicators: Analysis related to the recreation/tourism issue considers the effects of wilderness designation on Recreation Opportunity Spectrum (ROS) settings, outfitter/guide use, recreation places important for tourism, and the percent of the Forest available for tourism developments. The ROS system identifies the appropriate combination of activities, settings, and experience for different types of recreation experience, ranging from primitive to urban settings.

## Transportation and Utility Projects

Residents of the region are dependent on air and water transportation for travel between most communities. The 1999 Southeast Alaska Transportation Plan (Alaska Department of Transportation and Public Facilities, 1999) identified future investments in roads, ferry terminals, and ferries to develop a comprehensive regional transportation system. Similarly, proposals exist to develop a power grid to interconnect electrical generating facilities with most of the communities throughout Southeast Alaska. Full implementation of these plans would require construction of new roads and facilities within the National Forest.

Recommendations for additional wilderness may have an effect on the development of potential transportation or utility corridors or other land uses.

Indicators: Effects on transportation and utilities are analyzed by identifying the corridors that could be precluded or otherwise affected by the alternatives.

## Regional Economy and Local Communities

As noted above, many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, as well as subsistence hunting and fishing. Recreation opportunities associated with the Tongass also play an important role in the quality of life of many Southeast

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Alaskans. Many families have favorite places where they fish, hunt, beachcomb, or just go to get away.

## Regional Employment and Income

Wilderness recommendations could affect Southeast Alaskan communities and residents by affecting employment and income in natural resource-based industries. Wilderness recommendations may also restrict proposed transportation and utility projects and affect future economic development and associated employment opportunities, as well as travel between communities and, in some cases, local power sources.

Indicators: This analysis focuses on the potential effects on wood products and recreation and tourism employment and income at the regional level. Short-term effects on wood products employment focus on the potential effects associated with reductions in the existing volume under contract. Long-term effects on wood products employment address the potential effects of changes in the ASQ. Changes in recreation and tourism employment are based on projected changes in Recreation Visitor Days (RVDs). The potential effects of restrictions on mining and transportation and utility projects are also considered.

## Local Communities

**Employment** - Timber and logging activities play an important role in at least 10 of Southeast Alaska's 32 communities. These communities would be affected by reductions in wood products employment.

**Subsistence** - For many rural Alaskans, subsistence means hunting, fishing, trapping, and gathering natural resources to provide needed food and supplement rural incomes. For Native Alaskans and other rural Alaskans, subsistence is that and more. It is a lifestyle that preserves customs and traditions reflecting deeply held attitudes, values, and beliefs. Concerns about subsistence include maintaining subsistence opportunities and protecting traditional subsistence areas. The alternatives considered here would result in the same or greater protection for subsistence resources; however, the effects are evaluated in Chapter 3 and by community.

**Recreation** - Resident recreation patterns may be affected by new wilderness recreation proposals, due to potential restrictions on recreation facility developments and numbers of visitors, as well as the long-term effects of maintaining areas in the primitive ROS.

Indicators: The discussion of community effects focuses on changes in jobs and income, subsistence, and recreation opportunities, and the associated effects on affected communities as a whole. The subsistence analysis is based on the subsistence analysis conducted for the 1997 Forest Plan Revision Final EIS, which used deer as the main "indicator" species for potential subsistence resource consequences. The percent change in the amount of productive old growth available after 120 years relative to the current (1997) Forest Plan is used as an indicator. The percent of the inventoried recreation places within 20 miles of one or more communities that would be in Wilderness or Recommended Wilderness is used as an indicator for recreation.

## Updated Information for Both the Draft and Final SEIS

Several areas of information were updated prior to publishing the Draft SEIS to better reflect current conditions on the Tongass as a whole and within roadless areas in particular. These updated areas also form the basis for the Final SEIS.

- The 1996 Roadless Inventory Map used in the 1997 Forest Plan Revision Final EIS has been updated to reflect the most current land ownership information and new developments (roads, timber harvests, powerlines, etc.) implemented since 1996.
- The individual roadless area descriptions from the 1989 Analysis of the Management Situation (Appendix C) have been updated to reflect current conditions and to describe the various resources and uses associated with each area, including the relative contribution of each area to the National Wilderness Preservation System.
- In addition to updating roads, harvest areas, and ownership (as identified above), a variety of other resource databases were updated, including the existing productive old growth, suitable timber, LUD, and certain visual and recreation information.
- Updated information that has become available since the 1997 Tongass Forest Plan Revision Final EIS has been incorporated into the affected environment descriptions and the effects analyses for each resource area in Chapter 3. These updates are relatively extensive in the *Economic and Social Environment* section.

## Changes Between the Draft and Final SEIS

In addition to the updated areas identified above, a number of additional updates and changes were made to the Final SEIS in response to new information, to comments on the Draft SEIS, and to refinements in roadless area boundaries. The main areas of change are described below:

- Further refinements were made to base Geographic Information System (GIS) coverages such as ownership, harvest, roads, and LUDs to reflect updates due to changes in the existing condition and corrections.
- As noted above, inventoried roadless area boundaries were reviewed and were further refined, based on these reviews as well as on updated information, to more closely reflect Forest Service Handbook inventory criteria.
- Because of refinements made to the boundaries of the inventoried roadless areas and the base GIS coverages, the acreages and mileages associated with the existing condition and the alternatives changed slightly in many cases, and these were updated throughout the document.
- The comparison of effects presented in Chapter 2 was expanded to evaluate and compare the effects of the alternatives in greater detail, especially with regard to net overall effects.
- New references and studies were incorporated in a number of locations in the document.
- In response to comments, new sections were added on Karst and Caves and Heritage Resources.
- A new system of classifying the ecosystems of the Tongass into Ecological Sections and Subsections under the National Hierarchical Ecological Framework was evaluated relative to the degree that Ecological Sections and Subsections are represented in existing wilderness and the degree to which the roadless

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areas include them. This classification was also used for evaluating the Forest-wide distribution of old growth.

- In response to comments on the Draft SEIS, the acreage of high-volume, coarse-canopy old growth on the Tongass as a whole and in each roadless area was measured and discussed.
- The Roadless Areas and Wilderness sections were updated and expanded.
- The short-term wood products effects sections in the *Timber* and *Economic and Social Environment* sections were updated to reflect changes in conditions since completion of the Draft SEIS.
- A new summary section titled Alaska in Transition that provides a concise overview of recent changes in Southeast Alaska was added to the beginning of the Economic and Social Environment section. The portions of the *Economic and Social Environment* section that characterize local communities and the regional economy were updated to include state and federal data that have been published since completion of the Draft SEIS.
- The Economic Efficiency Analysis was revised and expanded in response to public comments.
- Appendix C was extensively revised as follows: 1) most of the numbers (e.g., acreages, mileages) were changed to reflect the refinements that were made to roadless area boundaries; 2) the Ecological Sections and Subsections of each roadless area were described and the current degree of representation of each Ecological Section and Subsection in wilderness and other protective LUDs was described; 3) the acreage of high-volume, coarse-canopy old growth in each roadless area was measured and discussed; 4) each area was reviewed to determine if specific portions of the area should be considered separately and, if so, they were evaluated separately in a number of areas including application of the Wilderness Attribute Rating System (WARS); 5) the sections on relative contribution to the National Wilderness Preservation System were expanded; and 6) public input that was specific to each roadless area and that was collected during the Draft SEIS review process was summarized.
- A new Appendix F was developed that summarizes the comments received on the Draft SEIS along with Forest Service responses, and prints copies of the letters received from agencies and elected officials, including tribal governments.

## Organization of the Document

This SEIS is organized into seven chapters and six appendices. Chapter 1, Purpose and Need, describes the reasons for proposing and completing the SEIS. Chapter 2, Alternatives, describes the process used to develop alternatives, discusses alternatives not considered in detail, and then describes in detail a No-Action Alternative and seven other alternatives. Chapter 2 also includes comparisons of these alternatives based on the issues and significant environmental effects and identifies the Preferred Alternative.

The discussions on the affected environment and the environmental consequences are combined in Chapter 3, Environment and Effects. The environmental consequences (effects) of the alternatives on forest resources, and the background information needed to understand these consequences, are discussed together for each resource. The focus is on significant effects, with the analysis centered on the public issues related to recommendations for wilderness.

Chapter 3 begins with an introductory section that discusses the analysis and lays the groundwork for the sections that follow, including a general description of the

Tongass National Forest. The remainder of Chapter 3 is divided into three parts. First, the resources that make up the Physical and Biological Environment are described and the effects of the alternatives are analyzed. This part sets the stage for the next part—the evaluation of Human Uses and Land Management. Finally, both of these parts set the stage for the final part—the Economic and Social Environment.

The general outline of Chapter 3 is as follows:

- Introduction
- Physical and Biological Environment
  - Soils
  - Water
  - Karst and Caves
  - Fish
  - Biodiversity
  - Wildlife
  - Threatened, Endangered, and Sensitive Species
- Human Uses and Land Management
  - Timber
  - Minerals
  - Transportation and Utilities
  - Lands
  - Recreation and Tourism
  - Scenery
  - Subsistence
  - Heritage Resources
  - Roadless Areas
  - Wilderness
  - Other Special Land Use Designations
- Economic and Social Environment
  - Regional Economy
  - Subregional Overview and Communities

This Final SEIS also includes a list of preparers; a list of agencies, organizations and persons receiving copies of the document; cited literature; and a glossary (Chapters 4 through 7, respectively), as well as an index. Appendix A summarizes information on the issue identification process, Appendix B describes the modeling and analysis process used to support the analyses in the SEIS, and Appendix C provides detailed descriptions of the inventoried roadless areas. Appendix C is divided into two parts (Part 1 and Part 2) and is contained in two separate volumes (Volume II and Volume III). Descriptions of the new LUDs proposed in this SEIS (see Chapter 2) are presented in Appendix D. Appendix E includes detailed employment data by community group. Finally, Appendix F provides a synthesis of the comments received on the Draft SEIS, provides responses to these comments, and includes copies of the letters received from agencies and elected officials, including tribal governments.

Additional information, maps, and reference documents used in the SEIS are contained in the planning record. The planning record, in its entirety, is incorporated here by reference and is located at the Tongass National Forest Supervisor's Office in Ketchikan, Alaska. This SEIS also incorporates, by reference, the 1997 Tongass Forest Plan Revision Final EIS, the 1997 ROD, the 1997 Tongass Forest Plan, and all associated published documents, as well as the planning record associated with these documents.

# CHAPTER 2

## ALTERNATIVES

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# Alternatives

## Introduction

Chapter 2 is divided into four parts:

1. A discussion of how alternatives were developed and of what constitutes an alternative
2. A discussion of alternatives considered but eliminated from detailed study
3. A full description of the alternatives that are considered in detail
4. A comparison of the alternatives considered in detail

A large-scale map for each of the eight alternatives considered in detail is included in the *Map Packet* accompanying this document, as well as in the *Map Section* of the CD version of the SEIS. These maps are also available on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net). Each alternative map shows the locations of the existing and Recommended Wilderness and existing and Recommended LUD II areas, as well as other features.

## Alternative Development Process

### What a Forest Plan Includes

*Land management planning* may be compared to city, county, or borough zoning. Just as areas in a community are zoned as commercial (allowing business uses), industrial (allowing factories), or residential (allowing only homes, schools, etc.), the forest is also zoned to allow, or not allow, various uses and activities. Land management (forest plan) zoning is done through the use of Land Use Designations (LUDs).

*Land Use Designations* specify ways of managing an area of land and the resources it contains. LUDs may emphasize certain resources (such as remote recreation or old-growth wildlife habitat) or combinations of resources (such as providing for scenic quality in combination with timber harvesting). Each LUD has a detailed management prescription, which includes standards and guidelines.

*Prescriptions* are specific actions or treatments used in the management of forest resources, such as two-age timber harvest methods. Each management prescription specifies what is allowed to be considered for site-specific project proposals, and under what conditions. *Standards and guidelines* impose limitations on how, where, and when management activities are carried out, usually for specific resource protection purposes. No changes in standards and guidelines are proposed under any alternatives in this Supplemental Environmental Impact Statement (SEIS).

LUDs are assigned, or allocated, to specified areas of land. Under any one alternative, a given area of land will generally have only one LUD assigned to it or, in the case of the Minerals and Transportation and Utility Systems LUDs, only one LUD in use at one time. In some cases, two LUDs may apply to the same area, such as a Wild River within a Wilderness. In these cases, the more restrictive direction always applies. Some LUDs, such as Wilderness and LUD II, are Congressionally designated and represent permanent allocations.

Forest resource use opportunities, such as timber harvesting or recreation, can be made available in different amounts. What lands to make available for timber harvest or how much of a particular kind of recreation opportunity to provide are questions that land management planning must also address. It is not always

## 2 Alternatives

possible to provide all the resource use opportunities in necessarily the amounts desired.

The alternatives themselves are usually designed around a “theme” or “framework” that emphasizes a particular issue or a group of compatible issues, such as scenic quality and wildlife habitat. The SEIS alternatives are directly related to the issues described in Chapter 1. How alternatives were developed to address the issues is discussed below. The *Comparison of Alternatives* section at the end of this chapter also discusses ways in which the alternatives address the issues.

### How Alternatives are Described

Each alternative for this SEIS is presented in the same format. This includes the following components:

- ◆ **Framework.** The basis for alternative design.
- ◆ **Recommended Wilderness or LUD II Areas.** A description of the areas recommended for new wilderness and LUD II designation.
- ◆ **Land Use Designations.** The acreages allocated to each Land Use Designation.
- ◆ **Selected Outputs and Measure.** A summary of predicted outputs and measures associated with each alternative.

### Land Use Designations

The alternatives are constructed using the LUD allocations defined by the 1997 Tongass Forest Plan as the base. This base represents the current Tongass Forest Plan and consists of Alternative 11 in the 1997 Tongass Forest Plan Revision Final EIS, adjusted by the 1997 Record of Decision (ROD) and subsequent non-significant Forest Plan Amendments made for projects since 1997.

The LUD allocations of the current Tongass Forest Plan define the No-Action Alternative. Each of the action alternatives incorporate the current Tongass Forest Plan LUD allocations, except in areas where new wilderness or new LUD II designations are recommended. In these areas, the existing LUD allocations would be replaced by one of two new LUDs that have been created for this SEIS: Recommended Wilderness and Recommended LUD II. Brief descriptions of these new LUDs are presented in the following paragraphs, and more detailed descriptions are presented in Appendix D.

- ◆ **Recommended Wilderness** – Maintain and enhance the essentially natural biophysical and ecological conditions and provide opportunities for solitude, primitive recreation, and scientific and educational uses consistent with the Alaska National Interest Lands Conservation Act (ANILCA), the Wilderness Act, and the Tongass Timber Reform Act (TTRA), which qualify the area to be considered for wilderness designation. Roads are normally not permitted and use of mechanical transport and motorized equipment is limited. Exploration and development of mining claims is allowed under the General Mining Law unless the area is withdrawn from entry, which typically occurs at the time of designation as Wilderness. Even if the area is withdrawn, mining may proceed on valid claims pre-dating the withdrawal.
- ◆ **Recommended LUD II** – Maintain these areas in a roadless state to retain their wildland character, which qualify the area to be considered for congressional LUD II designation. Wildlife and fish habitat improvement and

primitive recreational facility development may be permitted. Timber harvesting is limited to insect and disease control. Roads will not be built except to serve mining and other authorized activities and vital Forest transportation and utility system linkages.

While the potential allocation of areas to different LUDs can vary by alternative, the management prescriptions for each specific LUD do not change. Chapter 3 of the 1997 Forest Plan describes the full set of management prescriptions for each LUD. Brief descriptions of the general intent of the 19 Land Use Designations included in the current Tongass Forest Plan are provided below. The Current Land Use Designation Map in the separate *Map Packet* and in the *Map Section* of the SEIS CD displays the distribution of LUDs across the Tongass National Forest.

- ◆ **Wilderness** – Manage for the protection and perpetuation of essentially natural biophysical and ecological conditions and provide outstanding opportunities for solitude, primitive recreation, and scientific and educational uses, consistent with ANILCA, the Wilderness Act, and TTRA. Roads are normally not permitted and use of mechanical transport and motorized equipment is limited.
- ◆ **Wilderness National Monument** – Manage the Wilderness portions of Admiralty Island and Misty Fiords National Monuments to provide outstanding opportunities for solitude and primitive recreation and to protect objects of ecological, cultural, geological, historical, prehistorical, and scientific interest, consistent with ANILCA and the Wilderness Act. Roads are not normally permitted and use of mechanical transport and motorized equipment is limited.
- ◆ **Nonwilderness National Monument** – Manage the nonwilderness portions of Admiralty Island and Misty Fiords National Monuments to facilitate development of significant mineral resources and to ensure that mining activities are compatible, to the maximum extent feasible, with the purposes for which the Monument was established.
- ◆ **Research Natural Area** – Manage forest resources for research and education and/or to maintain natural diversity. Current natural conditions are maintained insofar as possible. No timber harvest is allowed.
- ◆ **Remote Recreation** – Provide recreation opportunities and experiences outside Wilderness in unmodified natural environments where interaction with other visitors is infrequent, and the opportunity for independence and self-reliance is high. Timber harvesting is limited to insect and disease control. Roads are generally absent.
- ◆ **Enacted Municipal Watershed** – Manage enacted municipal watersheds to meet State Water Quality Standards for domestic use. Timber harvest is limited to insect and disease control; however, timber may be removed under conditions that safeguard the quantity and quality of water. Roads are generally limited to those needed to administer the municipal watersheds.
- ◆ **Old-growth Habitat** – Maintain a diversity of old-growth conifer habitats in their natural condition to favor old-growth associated fish and wildlife species. No timber harvesting will be scheduled and roads will be located outside the area when possible.
- ◆ **Semi-remote Recreation** – Provide motorized and non-motorized recreation opportunities in natural and natural-appearing environments where interaction with others is low and the opportunity for independence and self-reliance is moderate to high. Allow occasional concentrated recreation and

## 2 Alternatives

tourism facilities in a natural-appearing setting. When present, roads are few and used primarily to expand and improve access to recreation opportunities or to permit access to other parts of the Forest and other ownerships. Timber harvest is limited to salvage of catastrophic events or beach log recovery.

- ◆ **LUD II** – Manage these Congressionally designated areas in a roadless state to retain the wildland character. Wildlife and fish habitat improvement and primitive recreational facility development may be permitted. Timber harvesting is limited to insect and disease control. Roads will not be built except to serve mining and other authorized activities and vital Forest transportation and utility system linkages. (These areas are sometimes referred to as “legislated LUD II.”)
- ◆ **Experimental Forest** – Manage to provide a variety of long-term opportunities for Forest research and demonstration areas. Timber harvesting will occur only for these purposes. Roads may be developed to facilitate ongoing research.
- ◆ **Scenic Viewshed** – Management activities are not visually apparent to the casual observer in the near distance from visual priority travel routes and use areas. In the middle to background distance, activities are subordinate to the landscape character of the area. Timber harvest is allowed and roads are permitted.
- ◆ **Modified Landscape** – Manage for a variety of uses. Management activities are subordinate to scenic quality as seen in the near distance. In the middle to background distance, activities may dominate but are designed to be compatible with features found in the characteristic landscape. Timber harvest is allowed and roads are permitted.
- ◆ **Timber Production** – Manage the area to maintain and promote industrial wood production. These lands will be managed to advance conditions favorable for the timber resource and for long-term timber production. Roads are permitted.
- ◆ **Minerals** – Encourage the exploration and development of mineral resources in areas having high potential for mineral commodities, including nationally designated strategic and critical minerals. Until mineral activities are initiated, the area will be managed according to the underlying LUD.
- ◆ **Special Interest Area** – Provide for the inventory, maintenance, protection, and interpretation of areas with unique archeological, historical, recreational, scenic, geological, botanical, zoological, or paleontological features. No timber harvest is scheduled. Roads are normally not permitted unless compatible with interpretive objectives.
- ◆ **Wild River** – Maintain and enhance the outstandingly remarkable values of river segments that qualify the river to be classified a Wild River and recommended in the 1997 Tongass Forest Plan ROD. Shorelines are primitive and undeveloped. Timber harvesting is limited to insect and disease control. Roads are generally not present. Access is by trail, airplane, or boat.
- ◆ **Scenic River** – Maintain and enhance the outstandingly remarkable values of river segments which qualify the river to be classified a Scenic River and recommended in the 1997 Tongass Forest Plan ROD. Shorelines are largely undeveloped but may be accessible in places by roads. Timber

harvesting is limited by the ability of the landscape to visually absorb the activity. Roads are designed to be compatible with the landscape.

- ◆ **Recreational River** – Maintain and enhance the outstandingly remarkable values of river segments that qualify the river to be classified a Recreational River and recommended in the 1997 Tongass Forest Plan ROD. Shoreline development may occur and the river may be readily accessible by road. Timber harvesting is allowed with priority to maintain existing and proposed recreation sites within the corridor. Roads are permitted.
- ◆ **Transportation and Utility Systems** – Emphasize existing and potential state-identified major public transportation and utility systems. Until transportation or utility systems are constructed, the area will be managed according to the underlying LUD.

### Update of Roadless Area Inventory

#### Road Types

Classified roads: Roads wholly or partially on National Forest System (NFS) land that are determined to be needed for motor vehicle use and are intended to be maintained for the long-term.

Unclassified roads: Roads on NFS land that are not needed for, and not managed as part of, the forest transportation system.

Temporary roads: Roads authorized for short-term use and not intended to be part of the forest transportation system.

The first step in the development of alternatives was to update the inventory of roadless areas that are available for consideration for wilderness or LUD II recommendations. This process began with a comprehensive effort to update the inventory of existing roads, harvest units, and land ownership on the Tongass National Forest.

The inventory of existing roads includes all classified roads and most unclassified roads, some of which have been decommissioned. Next, developed areas were identified by buffering existing roads and harvest units. All areas within 1,200 feet of an existing road and within 600 feet of an existing harvest unit were considered developed (rationale for these definitions was based on the definition for the Semi-primitive Motorized Recreation Opportunity Spectrum [ROS]). In order to be more inclusive, isolated beach-logged and helicopter-yarded harvest units were not identified as developed areas. Narrow stringers of land between developed areas were also included as developed. All National Forest System land outside of areas defined as developed were identified as roadless.

For the Draft SEIS, these roadless areas were stratified into two groups: areas greater than 5,000 acres and areas less than 5,000 acres. Inventoried roadless areas were identified as all roadless areas greater than 5,000 acres; 109 inventoried roadless areas were defined in this way. In addition, all other areas less than 5,000 acres in size were evaluated to determine if they were eligible for wilderness consideration (based on the Wilderness Act, see Chapter 1) and should be identified as inventoried roadless areas. Based on this evaluation, six additional inventoried roadless areas were identified that are less than 5,000 acres. The small roadless areas were stratified into two groups: those between 1,000 and 5,000 acres in size, and those less than 1,000 acres in size. The 115 inventoried roadless areas and the small unroaded areas, defined in this way, were analyzed in the Draft SEIS.

After the Draft SEIS was published, the roadless area inventory was circulated to all ranger districts on the Tongass National Forest for review and comment on the delineation of roadless areas. These comments and the comments received during the public comment period were then considered and the inventoried roadless area boundaries were refined by giving more emphasis to their manageability, as defined in Chapter 7 of Forest Service Handbook 1909.12. In addition, changes were made because of limited road construction, powerline construction, and timber harvest that occurred since the Draft SEIS. As a result, six roadless areas were not carried forward to the final inventory due to their small size and heavy influence from adjacent development (see Introduction to Appendix C). The final inventory now includes 109 inventoried roadless areas covering 9.6 million acres. This is the

## 2 Alternatives

inventory that was analyzed in the Final SEIS, along with the small unroaded areas described above.

All 109 inventoried roadless areas on the Tongass and all small unroaded areas are shown on a roadless inventory map and on each of the alternative maps provided in the *Map Packet* and in the *Map Section* of the SEIS CD. Larger scale maps of each inventoried roadless area are also available in the *Map Section* of the SEIS CD and on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net).

In addition, detailed descriptions of each inventoried roadless area were developed that include an overview and a description of the capability, availability, and need for each area to be designated as wilderness. The descriptions reflect current conditions and Forest Service Manual and Handbook direction. They also include an updated rating for each roadless area called the Wilderness Attribute Rating System (WARS), as well as a description of how each individual roadless area could contribute to the National Wilderness Preservation System. These descriptions were extensively updated for the Draft SEIS and were updated again for the Final SEIS based on public comment, to incorporate new information, and to reflect modified roadless area boundaries. These inventoried roadless area descriptions are included as Appendix C to this SEIS.

### Development of Potential Alternatives

As indicated by the U.S. District Court for Alaska, there is a need to evaluate roadless areas in the Tongass National Forest and consider them for wilderness recommendations; therefore, this SEIS focuses on new wilderness recommendations. The alternatives discussed below reflect this focus. The SEIS does not consider land allocation options, such as changing current non-development LUDs to development LUDs. Also, it does not explore new biodiversity or conservation biology strategies, nor represent a totally new Forest Plan Revision. Issues that could be related to these and other non-wilderness subjects can be considered during future Forest planning efforts, which include a scheduled mid-plan review and a review at about year 10 of the 1997 Tongass Forest Plan.

The development of potential alternatives was initiated by identifying and considering various specific proposals that have been made for wilderness and other forms of protection. Many of the proposals considered did not specifically recommend areas for wilderness designation, but rather for some type of protection. Consideration was also given to various methods of ranking the roadless areas to define alternatives. Based on this process, 17 different approaches were identified. Eight of these approaches, which capture the full range of alternatives, were identified as alternatives to be analyzed in detail, and nine of the approaches were eliminated from detailed study. Two additional approaches were also considered between the Draft SEIS and the Final SEIS, but these approaches were also dropped from detailed consideration. The 19 approaches considered are described below in their respective sections.

### Alternatives Eliminated from Detailed Study

#### Southeast Conference Recommendation

In 1989, the Southeast Conference adopted an official position on management and access to the Tongass National Forest. The policy statement recommended 12 areas for protection because of the high values of fish and wildlife production and community use of those areas. This alternative was not considered in detail because the 12 recommended areas were designated as either LUD II or wilderness under TTRA. Furthermore, the alternative of converting these existing LUD II areas to wilderness is evaluated in Alternative 2.

### **Alaska Loggers Association Recommendation**

In 1989, the Alaska Loggers Association (predecessor of the Alaska Forest Association) proposed that only six areas should be considered to be removed from multiple-use management. These areas were included among the 12 areas recommended for protection by the Southeast Conference. This alternative was not considered in detail because the six areas were designated as either LUD II or wilderness under TTRA and the conversion of existing LUD II areas to wilderness is considered in Alternative 2.

### **Alaska Department of Fish and Game Highest Value Community Use Areas**

The Alaska Department of Fish and Game (ADF&G) has prepared a document identifying the highest value community use areas and other areas important for fish and wildlife on the Tongass (ADF&G, 1998). This document ranks the Value Comparison Units (VCUs) of the Tongass according to a number of criteria. Different ways of using these rankings were considered to formulate specific alternatives. Based on this evaluation, it was concluded that the rankings did not, by themselves, form a good basis for designing wilderness proposals. Rather, they provide important resource value information that is used in the individual roadless area descriptions and in the effects assessment. A specific alternative was therefore not designed around this source of information.

### **Southeast Alaska Conservation Council “Special Areas” and Other Lists of Areas**

During the Forest Plan Revision process, a variety of lists of areas were recommended for protection by various groups and individuals. In their comments on the 1990 Draft EIS, the 1991 Supplement, and the 1996 Revised Supplement, the Southeast Alaska Conservation Council (SEACC) provided various lists of areas that they recommended for special management attention, special management protection, or LUD II or similar protection. In addition, many individuals submitted lists of areas that they recommended for protection (but not specifically for wilderness) in response to articles and newsletters from SEACC, National Wildlife Federation, Wilderness Society, Sierra Club, and Greenpeace. A summary of these recommendations is found on pages L-219 through L-221 of Appendix L of the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a). These lists of areas represent a wide array of combinations of areas and were considered for use in developing wilderness alternatives. The alternatives considered in detail in this Draft SEIS represent various combinations of these areas and capture all of the lists in one or more alternative. Therefore, these individual lists were not specifically used to develop alternatives to be analyzed in detail.

### **U.S. House of Representatives Bill (HR) 987**

HR 987, which was introduced and passed in the House of Representatives in 1989, represented an alternative to the bill actually passed by both houses of Congress and signed into law as TTRA. Included in this Bill was the proposed designation of 23 areas as wilderness. The lands recommended for wilderness in HR 987 included lands recommended for permanent protection by SEACC, ADF&G, the United Fishermen of Alaska, the Sealaska Corporation, the Southeast Conference, the Governor of Alaska, and 11 Southeast Alaska communities. Protection of these areas was considered important for a variety of reasons, mostly for protection of fish, wildlife, scenic, and recreation values. Alternatives 5, 7, and 8 recommend for wilderness all areas identified in HR 987 that were not designated as wilderness in

## 2 Alternatives

TTRA. This alternative overlaps substantially with the alternative identified as the 1999 ROD Areas of Special Interest Alternative (see below). Because of the extent of overlap, these two alternatives were combined to produce the framework for Alternative 5 and were not considered as separate alternatives.

### **1999 ROD Areas of Special Interest**

In the 1999 Tongass Forest Plan Revision ROD, 18 Areas of Special Interest were identified where development LUDs would have been changed to mostly natural LUDs. These areas were identified by the public in comments and appeals on the 1997 Tongass Forest Plan Revision EIS as having particularly high value for a number of resources. Because the 1999 ROD was vacated by court ruling in March 2001, the LUDs of these areas have not been changed from the 1997 Tongass Forest Plan. Alternatives 5, 7, and 8 recommend all of the 18 Areas of Special Interest for Wilderness designation. This alternative overlaps substantially with the HR 987 Alternative (see above). Because of the extent of overlap, these two alternatives were combined to produce the framework for Alternative 5 in the SEIS and were not considered as separate alternatives.

### **Highest Wilderness Attribute Ratings**

The Wilderness Attribute Rating System (WARS) was developed by the Forest Service and public interest groups as a means to evaluate the wilderness characteristics of inventoried roadless areas during the second Roadless Area Review and Evaluation process (referred to as RARE II). It is used to rate individual roadless areas based on the natural integrity of the area, its apparent naturalness as viewed by a visitor, opportunities for solitude, and primitive recreation opportunities. The rating system allows up to 7 points for each of the above four categories and a maximum rating of 28. The majority of individual roadless areas on the Tongass score in the 20+ range. Only those areas that are the most remote and have little to no facilities or developments score at or near 28. In general, relatively little public interest in recommending these areas as wilderness has been expressed. Several groupings of WARS ratings (i.e., scores of 22 and higher, and 25 and higher) were reviewed to see if they would form logical alternatives. By themselves, these groupings did not seem to provide reasonable alternatives, or they were similar to other alternatives that were more expressive of public interest and, therefore, were not used solely to create an alternative. Alternatives 3 and 4 did, however, use WARS ratings of 25 and higher as part of their framework.

### **HR 2908 – Wilderness Only**

HR 2908, referred to as the Alaska Rainforest Conservation Act of 2001, was introduced in the U.S. House of Representatives in 2001. This Bill was intended to provide additional protections for National Forest System land in Alaska (it includes both the Tongass and the Chugach National Forests) through the designation of wilderness, wilderness study areas, LUD II management areas, restoration areas, special management areas, and additional components of the national Wild and Scenic Rivers System. The wilderness and LUD II proposals in HR 2908 represent Alternative 6, which is considered in detail in this SEIS. Another potential alternative would be to consider only the wilderness recommendations of the Bill. Because these areas are included under Alternative 7, as well as other alternatives considered in detail, they are not considered separately.

### HR 2908 – Full Proposal

Another option associated with HR 2908 would be to evaluate the entire proposal, including lands that would be given other designations in addition to wilderness and LUD II. This alternative would go well beyond the purpose and need of this SEIS and was, therefore, not considered in detail.

### High Qualitative Wilderness Attributes

Between the Draft SEIS and the Final SEIS, the ID Team developed an additional alternative for potential consideration in the SEIS. This alternative was based on a qualitative assessment by staff and consisted of those roadless areas which exhibited a combination of high public interest and high wilderness value. It considered areas that were most often identified in the public comment process for the Draft SEIS, considered ways to reduce the potential economic effects, and considered ways to strengthen the conservation strategy. It included 14 different areas, each consisting of portions of one or more roadless areas. These areas were considered for wilderness or LUD II recommendations. After further review, it was determined that this alternative fell well within the range of the alternatives being considered in detail and was similar in many respects to Alternatives 5 and 7. In addition, selection of any of the areas included in the potential alternative was already available to the Decision Maker from the current range of alternatives. Therefore, it was not considered in detail in the Final SEIS.

### Ecological Subsection Representation

Between the Draft SEIS and the Final SEIS, another potential alternative was considered. This alternative examined how well the ecological sections and subsections (Nowacki et al., 2001) of the Tongass were represented in Wilderness and Natural Setting LUD Groups. It was determined that all of the major ecological sections and most of the 73 ecological subsections of the Tongass were already represented in wilderness, National Monument, or LUD II areas, and that all of them were represented in Natural Setting LUDs. There were also concerns relating to the quality and manageability of areas if they were based on ecological representation alone. It was determined that the existing alternatives captured a range of additional representation while addressing other issues at the same time. Therefore, basing an additional alternative on ecological sections and/or subsections was not warranted.

### Alternatives Considered in Detail

The following section defines terminology and presents information regarding several aspects of the alternatives. The alternatives considered in detail are presented afterward.

#### The Allowable Sale Quantity

The amount of timber that could be sold under a Forest Plan is expressed as an Allowable Sale Quantity (ASQ). The ASQ is the maximum amount of timber that may be sold from the area of suitable land contained under the Forest Plan within a given decade (although it is usually expressed in average annual terms). It is neither a targeted amount, nor is it a required amount (it is a ceiling). The amount of timber offered for sale in any year can exceed the annual average as long as the total decade's ASQ is not exceeded, and can also be anywhere below the annual average; the amount offered for sale over a decade can be below the decadal ASQ. Many factors can result in timber sale offerings that are below the average annual ASQ, including lack of program funding, new resource issues that need to be

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addressed, changes in timber markets, sales delayed by appeals or lawsuits, or other factors that reduce actual volume offered below that which was planned.

### Non-interchangeable Components (NIC)

Economics is an important consideration in determining what land can be harvested; however, economic conditions can fluctuate greatly from year to year, shifting specific forest stands from being economic to uneconomic to harvest. As a result, the Tongass National Forest uses the concept of non-interchangeable components (NIC) to consider economics. NICs allow the separation of ASQ into discrete, individually accountable categories. Chargeable timber volume from one NIC cannot be substituted for the achievement of the volume limit of another NIC, nor can the limits on the sale of chargeable timber volume associated with each NIC be exceeded. All eight alternatives have an ASQ for the first decade made up of two NICs:

**NIC I.** Normal operable volume scheduled from suitable lands that are available for harvest using standard logging systems. This is the most economically operable ground and is typically where the Tongass National Forest has been offering most sales.

**NIC II.** Non-standard (difficult and isolated) operable volume scheduled from suitable lands that are available for harvest using logging systems not in common use. These lands are currently considered economically and technologically marginal. In the past, this land has rarely been economical to harvest.

### Standards and Guidelines and Mitigation

The Forest-wide standards and guidelines in Chapter 4 of the 1997 Tongass Forest Plan (USDA Forest Service, 1997b) apply to all alternatives in this SEIS and are not repeated here. No changes in Forest-wide standards and guidelines are proposed for any of the alternatives considered in this SEIS.

Applicable Land Use Designation management prescriptions and Forest-wide standards and guidelines are discussed throughout the environmental consequences sections of Chapter 3 because they serve as the basic mitigation measures for individual projects under the Forest Plan. The Forest-wide standards and guidelines, and the standards and guidelines for each LUD management prescription, are the full set of mitigation measures for each alternative.

Management prescriptions and Forest-wide standards and guidelines for wilderness and LUD II are included in the 1997 Tongass Forest Plan. Management prescriptions and standards and guidelines for the new LUDs (i.e., Recommended Wilderness and Recommended LUD II) will be very similar to corresponding LUDs in the Forest Plan (see Appendix D to this SEIS). Note that the Forest Plan LUDs for Wild, Scenic, and Recreation Rivers represent recommendations to Congress and are designed to maintain conditions that make those rivers eligible. If an alternative is selected in the SEIS that adds one or more of the new LUDs, a similar approach to applying management prescriptions and standards and guidelines is anticipated.

### Descriptions of the Alternatives

Each alternative description includes a framework; a list and description of areas recommended for new wilderness or LUD II designation; a table with the acreages allocated to each LUD; a map showing the distribution of development, natural setting, and wilderness LUDs; a map (included in the *Map Packet* accompanying the

SEIS hard copy or in the *Map Section* of the CD version) showing locations of new wilderness and LUD II recommendations; and outputs and measures displayed numerically. The prescriptions (i.e., LUD-specific standards and guidelines) of each LUD are included in the 1997 Tongass Forest Plan, as are the Forest-wide standards and guidelines applying to all alternatives. Prescriptions for the new LUDs are described in Appendix D to this SEIS. Details on the modeling of each alternative are included in Appendix B to this SEIS.

In the LUD tables for each alternative, described in the following sections, the changes from existing acreages represent the differences between the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended, and the SEIS alternatives. Except as they may be modified by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II areas, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

Because all alternatives are based on the prescriptions for each LUD and the Forest-wide standards and guidelines defined in the current Tongass Forest Plan (with the exception of areas allocated to the two new LUDs), the multiple-use goals are the same for all alternatives. The degree to which these goals are achieved will, however, vary by alternative. In addition, the Tongass Timber Reform Act (Section 101) direction for the Tongass to “seek to provide a supply of timber which 1) meets the annual market demand for timber from such forest and 2) meets the market demand from such forest for each planning cycle” will be followed by each alternative “to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources,” as determined by that alternative, and subject to appropriations and applicable law.

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### Alternative 1

#### Framework

This is the No-Action Alternative. The framework is defined by the current Tongass Forest Plan, which is based on Alternative 11 from the 1997 Forest Plan Revision Final EIS, as adjusted by the 1997 ROD and subsequent non-significant Forest Plan Amendments. All existing LUD allocations would remain unchanged, including existing wilderness and LUD II areas. This alternative does not respond to Key Issue 1, but responds to Key Issue 2 at a high level by not recommending any additional wilderness (see Chapter 1 for descriptions of Key Issues). The theme for Alternative 11 was to provide a mix of National Forest uses and activities with an emphasis on fish and wildlife habitat protection and the karst and caves resource, and less emphasis on some resource uses contributing to the local and regional economies of Southeast Alaska, relative to the other alternatives of the 1997 Tongass Forest Plan Revision Final EIS.

#### New Wilderness or LUD II Areas

No new wilderness or LUD II areas are recommended under this alternative. The 5.8 million acres of existing wilderness and the 0.7 million acres of existing LUD II areas, as well as all other current LUDs, would remain unchanged (see the Alternative 1 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version).

#### Land Use Designations

If Alternative 1 is selected, the LUD allocation acres shown in Table 2-1 would result. Figure 2-1 shows the distribution of LUDs across the Tongass under Alternative 1 according to three LUD groups (see Table 2-1 for definitions of the LUD groups). Table 2-2 displays selected outputs and other measures associated with this alternative.

**Table 2-1  
Land Use Designations for Alternative 1<sup>1</sup>**

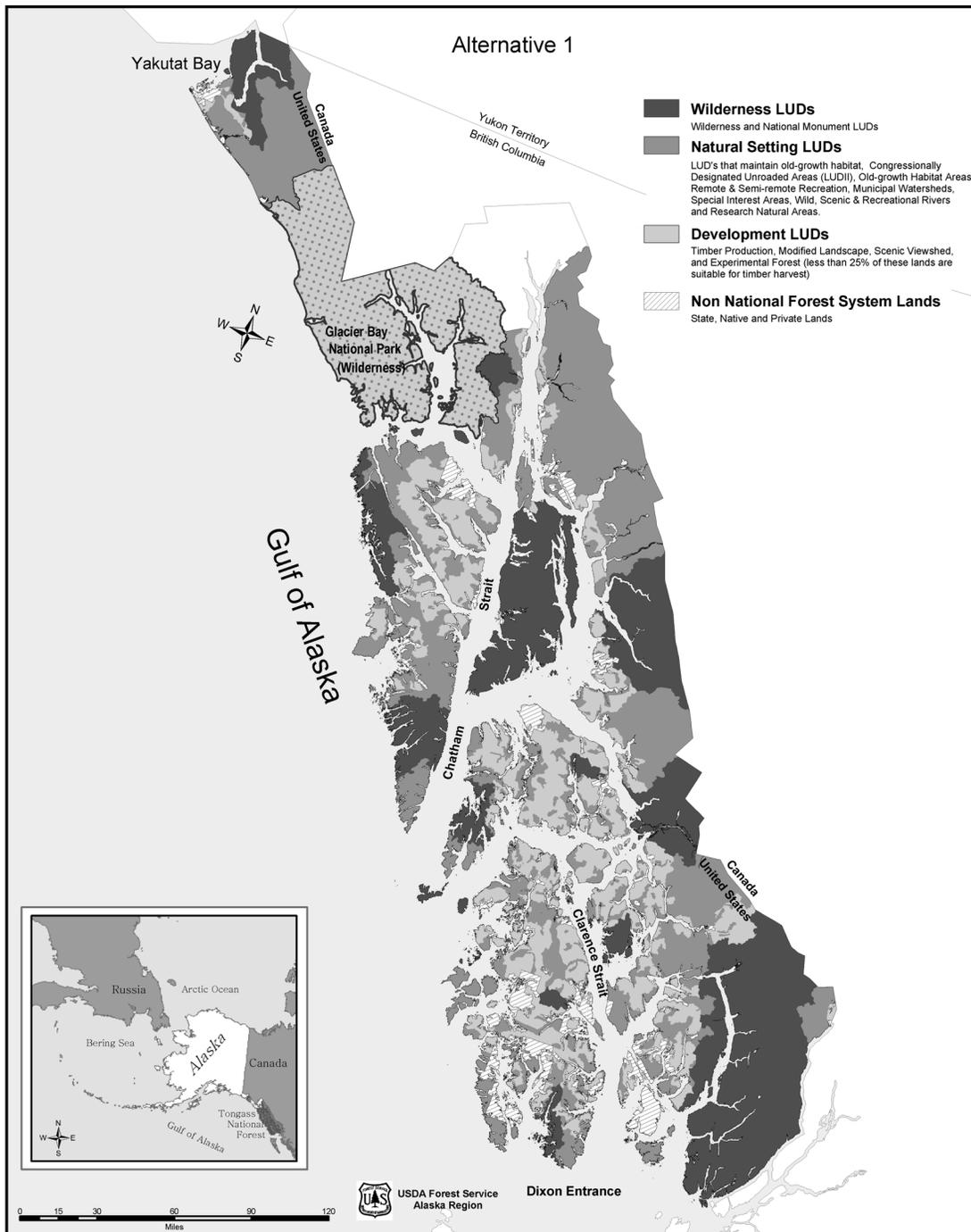
Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	0	0
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>5,914,268</b>	<b>0</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	26,020	0
Special Interest Area	174,233	0
Remote Recreation	2,133,301	0
Enacted Municipal Watershed	45,272	0
Old-Growth Habitat	1,176,196	0
Semi-Remote Recreation	2,850,918	0
Recommended LUD II	0	0
LUD II	721,181	0
Wild, Scenic, Recreational River	119,641	0
<b>Total for Natural Setting LUD Group</b>	<b>7,246,762</b>	<b>0</b>
<b>Development LUD Group</b>		
Experimental Forest	17,106	0
Scenic Viewshed	484,355	0
Modified Landscape	612,876	0
Timber Production	2,525,610	0
<b>Total for Development LUD Group</b>	<b>3,639,947</b>	<b>0</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 172,018; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

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**Figure 2-1  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest under Alternative 1**



**Table 2-2  
Selected Outputs and Measures Associated with Alternative 1<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	5.9
Recommended LUD II plus Current LUD II	0.7
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	19%
Pacific Coastal Mountain Tundra and Ice Fields	37%
Productive Old-growth after 120 Years (millions of acres)	4.51
Estimated Land Suitable for Timber Production (acres) <sup>2</sup>	664,000
Allowable Sale Quantity (millions of board feet) <sup>2,3</sup>	
Non-interchangeable component I	212
Non-interchangeable component II	47
Total	259
Annual Road Construction during 1st Decade, based on the ASQ (miles)	106
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	8,900
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	0%
Percent of Proposed Timber Sales (10-year plan) Affected	0%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	25%
Percent of Undiscovered Mineral Areas	35%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	11.8
Semi-primitive Motorized	1.2
Roaded Natural and Roaded Modified	3.7

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> Slight differences in suitable acres and ASQ between Alternative 1 (shown above) and Alternative 11 of the 1997 Final EIS are caused by: 1) changes in ownership, 2) changes in LUDs, and 3) the use of different estimation methods.

<sup>3</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

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### Alternative 2

#### Framework

Alternative 2 would recommend approximately 721,000 acres for new wilderness designation. It would result in the conversion of all existing LUD II areas to the Recommended Wilderness LUD. As such, it responds to Key Issue 1 at a low level by recommending some new wilderness. It responds to Key Issue 2 at a high level by not affecting areas in development LUDs. In 1990, the Tongass Timber Reform Act established five new wildernesses, as well as 12 permanent LUD II areas. Under this alternative, the LUD II areas would be recommended for re-designation as wilderness. There would be no change to existing wilderness, and all other existing LUD allocations would remain unchanged.

#### New Wilderness or LUD II Areas

This alternative would result in the conversion of 12 areas, totaling approximately 721,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in 6.5 million acres of wilderness. No areas of LUD II designation would remain. If designated, the 12 Recommended Wildernesses would result in eight new wildernesses and four wilderness additions. The 12 areas are described in Table 2-3. The Alternative 2 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 12 areas.

**Table 2-3  
New Wilderness Recommendations for Alternative 2**

<b>Area Recommended for Wilderness</b>	<b>National Forest System Acres</b>	<b>Wilderness Name or Addition</b>
Yakutat LUD II Area	137,246	Addition to Russell Fiord Wilderness
Berners Bay LUD II Area	42,926	New Berners Bay Wilderness
Anan LUD II Area	38,592	New Anan Wilderness
Kadashan LUD II Area	34,324	New Kadashan Wilderness
Lisianski/Upper Hoonah LUD II Area	146,662	Addition to West Chichagof – Yakobi Wilderness
Mt. Calder – Holbrook LUD II Area	60,242	New Mt. Calder – Holbrook Wilderness
Nutkwa LUD II Area	21,455	Addition to South Prince of Wales Wilderness
Outside Islands LUD II Area	74,205	New Outside Islands Wilderness
Trap Bay LUD II Area	6,408	New Trap Bay Wilderness
Pt. Adolphus/Mud Bay LUD II Area	116,322	Addition to West Chichagof – Yakobi Wilderness
Naha LUD II Area	31,490	New Naha Wilderness
Salmon Bay LUD II Area	11,308	New Salmon Bay Wilderness

**Land Use Designations**

If Alternative 2 is selected, the LUD allocation acres shown in Table 2-4 would result. Figure 2-2 shows the distribution of LUDs across the Tongass under Alternative 2 according to three LUD groups (see Table 2-4 for definitions of the LUD groups). Table 2-5 displays selected outputs and other measures associated with this alternative.

**Table 2-4  
Land Use Designations for Alternative 2<sup>1</sup>**

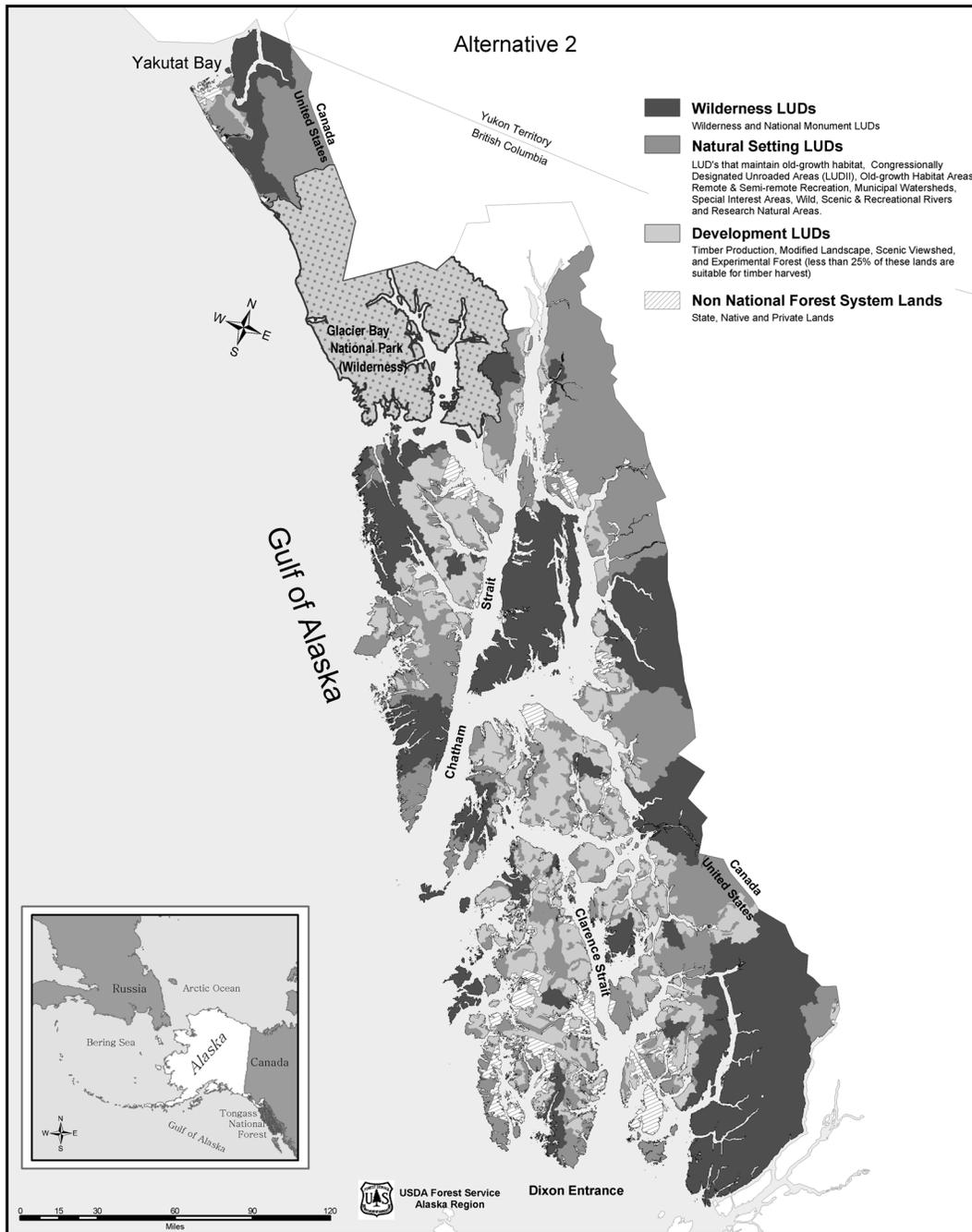
Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	721,181	+ 721,181
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>6,635,450</b>	<b>+ 721,181</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	26,020	0
Special Interest Area	174,233	0
Remote Recreation	2,133,301	0
Enacted Municipal Watershed	45,272	0
Old-growth Habitat	1,176,196	0
Semi-remote Recreation	2,850,918	0
Recommended LUD II	0	0
LUD II	0	- 721,181
Wild, Scenic, Recreational River	119,641	0
<b>Total for Natural Setting LUD Group</b>	<b>6,525,581</b>	<b>- 721,181</b>
<b>Development LUD Group</b>		
Experimental Forest	17,106	0
Scenic Viewshed	484,355	0
Modified Landscape	612,876	0
Timber Production	2,525,610	0
<b>Total for Development LUD Group</b>	<b>3,639,947</b>	<b>0</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 171,995; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

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**Figure 2-2  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest  
under Alternative 2**



**Table 2-5  
Selected Outputs and Measures Associated with Alternative 2<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	6.6
Recommended LUD II plus Current LUD II	0
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	19%
Pacific Coastal Mountain Tundra and Ice Fields	37%
Productive Old-growth after 120 Years (millions of acres)	4.51
Estimated Land Suitable for Timber Production (acres)	664,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	212
Non-interchangeable component II	47
Total	259
Annual Road Construction during 1st Decade, based on the ASQ (miles)	106
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	8,900
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	0%
Percent of Proposed Timber Sales (10-year plan) Affected	0%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	31%
Percent of Undiscovered Mineral Areas	38%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	11.8
Semi-primitive Motorized	1.2
Roaded Natural and Roaded Modified	3.7

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

## 2 Alternatives

### Alternative 3

#### Framework

Alternative 3 would recommend approximately 1,075,000 acres for new wilderness designation. It would result in the conversion of areas to the Recommended Wilderness LUD that have a relatively high score in the Wilderness Attribute Rating System (WARS), along with relatively high public interest and/or high relative contribution to the National Wilderness Preservation System. Areas were considered for inclusion only if they had a WARS score of at least 25 out of 28 possible points. This alternative responds to Key Issue 1 at a moderate level by recommending a group of high-value roadless areas for wilderness protection. It responds to Key Issue 2 also at a moderate level by only slightly reducing the area of development LUDs. Under this alternative, there would be no change to existing wilderness and LUD II areas.

#### New Wilderness or LUD II Areas

This alternative would result in the conversion of seven areas, totaling approximately 1,075,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in a total of 6.8 million acres of wilderness. The 0.7 million acres of existing LUD II areas would remain. If designated, the seven Recommended Wildernesses would result in two new wildernesses and five wilderness additions. The seven areas are described in Table 2-6. The Alternative 3 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the seven areas.

**Table 2-6  
New Wilderness Recommendations for Alternative 3**

Area Recommended	National Forest System Acres	Wilderness Name or Addition
Roadless Area 328 (Hoonah Sound)	43,665	Addition to West Chichagof – Yakobi Wilderness
Roadless Area 202 (Spires)	500,035	Addition to and Connection Between Tracy Arm-Fords Terror and Stikine-LeConte Wilderness
Parts of Roadless Areas 214 (South Kupreanof) and 215 (Castle)	105,662	Addition to the Petersburg Creek – Duncan Salt Chuck Wilderness
Parts of Roadless Areas 214 (South Kupreanof), 242 (Camden) and 243 (Rocky Pass)	101,058	New Rocky Pass Wilderness
Part of Roadless Area 244 (Bay of Pillars) and Roadless Area 245 (East Kuiu)	69,676	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 246 (South Kuiu)	63,063	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 528 (Cleveland)	191,477	New Cleveland Peninsula Wilderness

**Land Use Designations**

If Alternative 3 is selected, the LUD allocation acres shown in Table 2-7 would result. Figure 2-3 shows the distribution of LUDs across the Tongass under Alternative 3 according to three LUD groups (see Table 2-7 for definitions of the LUD groups). Table 2-8 displays selected outputs and other measures associated with this alternative.

**Table 2-7  
Land Use Designations for Alternative 3<sup>1</sup>**

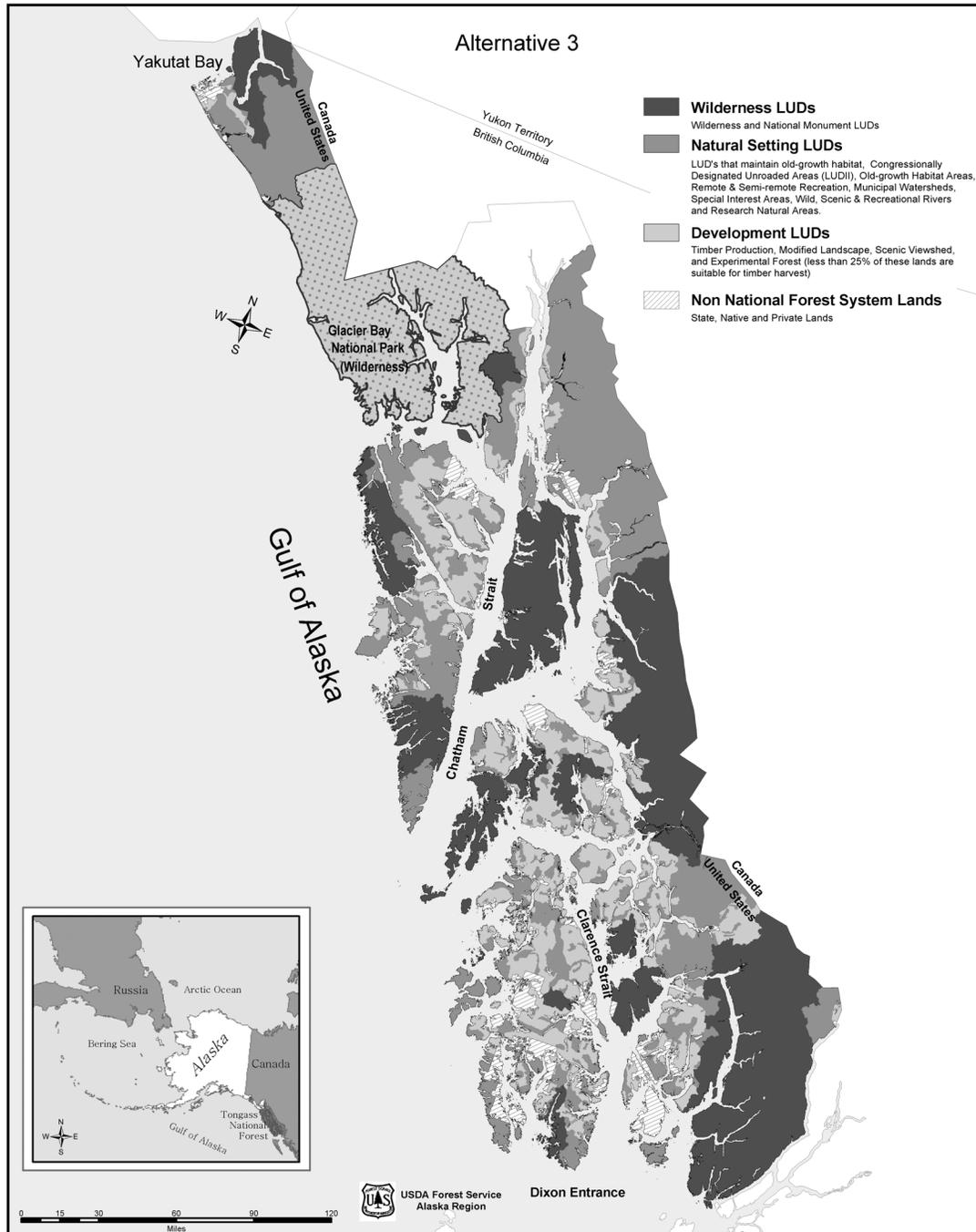
Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	1,074,636	+1,074,636
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>6,988,904</b>	<b>+1,074,636</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	26,020	0
Special Interest Area	161,963	-12,270
Remote Recreation	2,073,647	-59,654
Enacted Municipal Watershed	45,272	0
Old-growth Habitat	1,095,303	-80,893
Semi-remote Recreation	2,207,457	-643,461
Recommended LUD II	0	0
LUD II	718,106	-3,075
Wild, Scenic, Recreational River	105,559	-14,082
<b>Total for Natural Setting LUD Group</b>	<b>6,433,327</b>	<b>-813,435</b>
<b>Development LUD Group</b>		
Experimental Forest	17,106	0
Scenic Viewshed	467,629	-16,726
Modified Landscape	557,773	-55,103
Timber Production	2,336,237	-189,373
<b>Total for Development LUD Group</b>	<b>3,378,746</b>	<b>-261,201</b>

<sup>1</sup> When more than one Land Use Designation is applied to the same area (such as a Special Interest Area within Wilderness), only the acreage of the more-restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 154,556; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

## 2 Alternatives

**Figure 2-3**  
**Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest**  
**under Alternative 3**



**Table 2-8  
Selected Outputs and Measures Associated with Alternative 3<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	7.0
Recommended LUD II plus Current LUD II	0.7
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	23%
Pacific Coastal Mountain Tundra and Ice Fields	38%
Productive Old-growth after 150 Years (millions of acres)	4.55
Estimated Land Suitable for Timber Production (acres)	620,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	194
Non-interchangeable component II	42
Total	236
Annual Road Construction during 1st Decade, based on the ASQ (miles)	95
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	8,100
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	2%
Percent of Proposed Timber Sales (10-year plan) Affected	4%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	28%
Percent of Undiscovered Mineral Areas	40%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	12.0
Semi-primitive Motorized	1.3
Roaded Natural and Roaded Modified	3.5

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

## 2 Alternatives

### Alternative 4

#### Framework

Alternative 4 would recommend approximately 736,000 acres for new wilderness designation. It would result in the conversion of non-development LUD portions of areas that have a relatively high score in the Wilderness Attribute Rating System (WARS), along with relatively high public interest and/or high relative contribution to the National Wilderness Preservation System. Areas were considered for inclusion only if they had a WARS score of at least 25 out of 28 possible points. This alternative responds to Key Issue 1 at a low to moderate level by recommending a small group of high-value roadless areas for wilderness protection. It responds to Key Issue 2 at a high level by not reducing the area of development LUDs. Under this alternative, there would be no change to existing wilderness and LUD II areas.

#### New Wilderness or LUD II Areas

This alternative would result in the conversion of six areas, totaling approximately 736,000 acres, to the Recommended Wilderness LUD. If designated by Congress, this would ultimately result in a total of 6.5 million acres of wilderness. The 0.7 million acres of LUD II areas would be unchanged. If designated, the six Recommended Wildernesses would result in three new wildernesses and three wilderness additions. The six areas are described in Table 2-9. The Alternative 4 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the six areas.

**Table 2-9  
New Wilderness Recommendations for Alternative 4**

Area Recommended	National Forest Service Acres	Wilderness Name or Addition
Part of Roadless Area 202 (Spires)	482,760	Addition to and Connection Between Tracy Arm-Fords Terror and Stikine-LeConte Wilderness
Part of Roadless Area 215 (Castle)	18,530	New Castle River Wilderness
Part of Roadless Area 243 (Rocky Pass)	70,219	New Rocky Pass Wilderness
Part of Roadless Area 244 (Bay of Pillars)	20,927	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 246 (South Kuiu)	63,063	Addition to Tebenkof Bay – Kuiu Wilderness
Part of Roadless Area 528 (Cleveland)	80,831	New Cleveland Peninsula Wilderness

**Land Use Designations**

If Alternative 4 is selected, the LUD allocation acres shown in Table 2-10 would result. Figure 2-4 shows the distribution of LUDs across the Tongass under Alternative 4 according to three LUD groups (see Table 2-10 for definitions of the LUD groups). Table 2-11 displays selected outputs and other measures associated with this alternative.

**Table 2-10  
Land Use Designations for Alternative 4<sup>1</sup>**

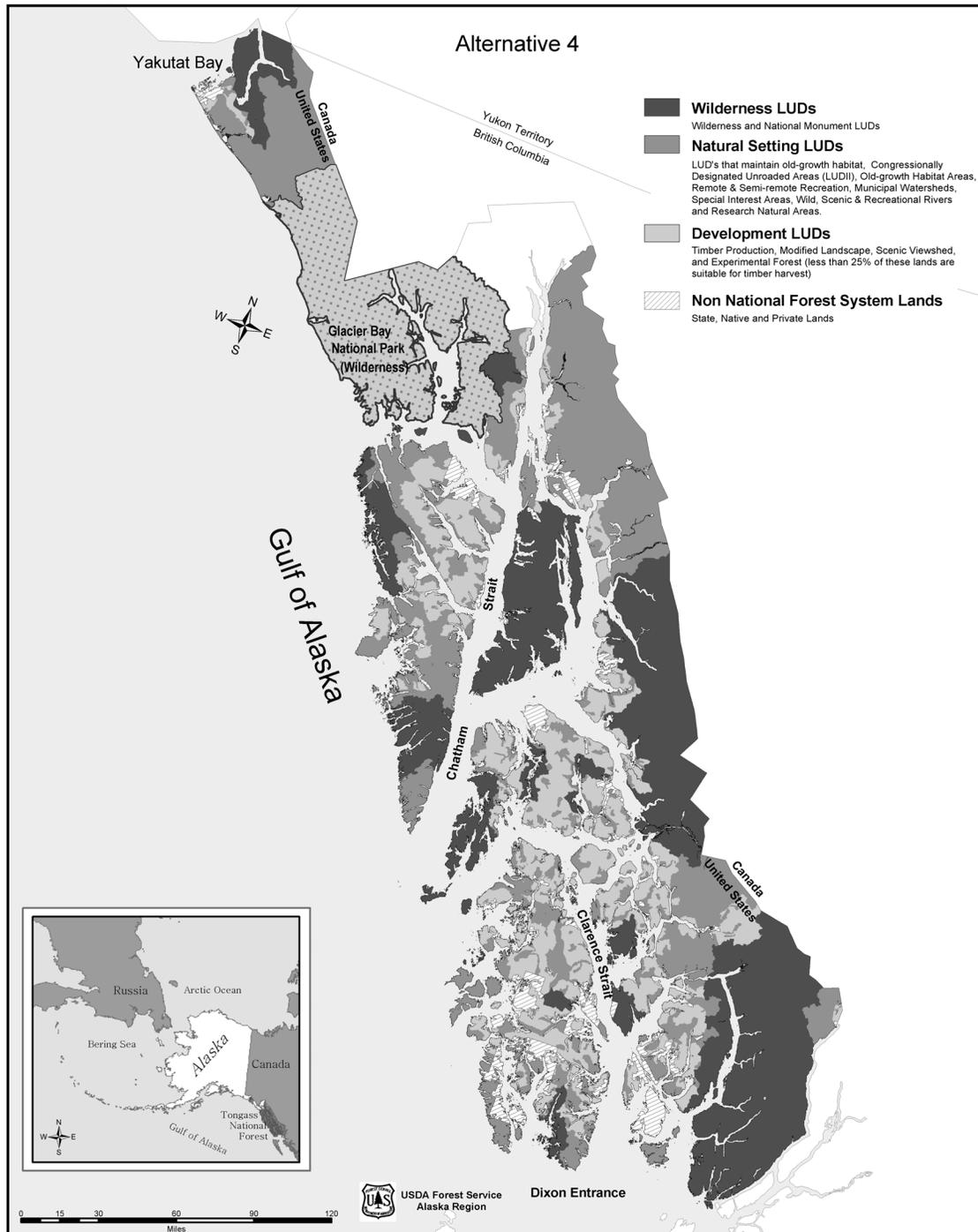
Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	736,330	+736,330
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>6,650,598</b>	<b>+736,330</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	26,020	0
Special Interest Area	161,963	-12,270
Remote Recreation	2,073,888	-59,413
Enacted Municipal Watershed	45,272	0
Old-Growth Habitat	1,150,567	-25,629
Semi-Remote Recreation	2,225,958	-624,960
Recommended LUD II	0	0
LUD II	721,181	0
Wild, Scenic, Recreational River	105,583	-14,058
<b>Total for Natural Setting LUD Group</b>	<b>6,510,432</b>	<b>-736,330</b>
<b>Development LUD Group</b>		
Experimental Forest	17,106	0
Scenic Viewshed	484,355	0
Modified Landscape	612,876	0
Timber Production	2,525,610	0
<b>Total for Development LUD Group</b>	<b>3,639,947</b>	<b>0</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 169,057; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

## 2 Alternatives

**Figure 2-4  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest  
under Alternative 4**



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**Table 2-11  
Selected Outputs and Measures Associated with Alternative 4<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	6.7
Recommended LUD II plus Current LUD II	0.7
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	21%
Pacific Coastal Mountain Tundra and Ice Fields	38%
Productive Old-growth after 150 Years (millions of acres)	4.51
Estimated Land Suitable for Timber Production (acres)	664,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	212
Non-interchangeable component II	47
Total	259
Annual Road Construction during 1st Decade, based on the ASQ (miles)	106
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	8,900
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	0%
Percent of Proposed Timber Sales (10-year plan) Affected	0%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	27%
Percent of Undiscovered Mineral Areas	39%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	11.9
Semi-primitive Motorized	1.3
Roaded Natural and Roaded Modified	3.7

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

## 2 Alternatives

### Alternative 5

#### Framework

Alternative 5 would recommend approximately 2,005,000 acres for new wilderness designation. It would result in the conversion of all portions of the 23 areas proposed for wilderness by HR 987 that are not already in wilderness, along with any additional areas identified by the 1999 Forest Plan Revision ROD as Areas of Special Interest, to the Recommended Wilderness LUD. There is substantial overlap in these two groups of areas. This alternative responds to Key Issue 1 at a moderate to high level by recommending areas of high public interest for long-term protection of fish, wildlife, scenic, and recreation values. It responds to Key Issue 2 at a low to moderate level by moderately reducing the area of development LUDs. Under this alternative, most existing LUD II areas would be converted to wilderness and there would be no change to existing wildernesses.

HR 987, which was introduced and passed in the U.S. House of Representatives in 1989, represented an alternative to the bill actually passed by both houses of Congress and signed into law as the Tongass Timber Reform Act. Included in this Bill was the proposed designation of 23 areas as wilderness. In TTRA, portions of these areas were designated as wilderness, portions were designated as LUD II, and portions were left undesignated. The lands recommended for wilderness in HR 987 included lands recommended for permanent protection by SEACC, the Alaska Department of Fish and Game, the United Fishermen of Alaska, the Sealaska Corporation, the Southeast Conference, the Governor of Alaska, and 11 Southeast Alaska communities. Protection of these areas was considered important by these entities for a variety of reasons, mostly for protection of fish, wildlife, scenic, and recreation values.

In the 1999 ROD, 18 Areas of Special Interest were identified where development LUDs would have been changed to mostly natural LUDs. These areas were identified by the public in comments and appeals on the Tongass Forest Plan EIS as having particularly high value for a number of resources. Because the 1999 ROD was vacated by court ruling in March 2001, the LUDs of these areas have not been changed from the 1997 Tongass Forest Plan.

#### New Wilderness or LUD II Areas

This alternative would result in the creation of 26 Recommended Wildernesses totaling approximately 2,005,000 acres. If designated by Congress, this would ultimately result in 7.8 million acres of wilderness. Approximately 45,000 acres of areas with LUD II designations would also remain. If designated, the 26 Recommended Wildernesses would result in 16 new wildernesses and 10 wilderness additions. The 26 areas are described in Table 2-12. The Alternative 5 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 26 areas.

**Table 2-12  
New Wilderness Recommendations for Alternative 5**

<b>Area Recommended</b>	<b>National Forest System Acres</b>	<b>Wilderness Name or Addition</b>
Part of Roadless Area 339 (Yakutat Forelands)	219,524	Addition to Russell Fiord Wilderness
Part of Roadless Area 303 (Sullivan) – Sullivan Island	3,976	New Sullivan Island Wilderness
Part of Roadless Area 301 (Juneau-Skagway Icefield) – Berners Bay LUD II Area	42,024	New Berners Bay Wilderness
Parts of Roadless Areas 311 (Chichagof) and 342 (Neka Mountain)	370,317	Addition to West Chichagof-Yakobi Wilderness
Roadless Area 328 (Hoonah Sound)	97,806	Addition to West Chichagof-Yakobi Wilderness
Part of Roadless Area 312 (Trap Bay) – Trap Bay LUD II Area	6,408	New Trap Bay Wilderness
Part of Roadless Area 330 (North Baranof)	23,839	New Saook Bay Wilderness
Part of Roadless Area 302 (Taku-Snettisham)	49,185	Addition to Tracy Arm-Fords Terror Wilderness
Part of Roadless Area 308 (Windham-Port Houghton)	81,901	Addition to Tracy Arm-Fords Terror Wilderness
Part of Roadless Area 223 (Manzanita)	11,066	New Southeast Mitkof Wilderness
Parts of Roadless Areas 214 (South Kupreanof) and 215 (Castle)	104,939	Addition to the Petersburg Creek – Duncan Salt Chuck Wilderness
Parts of Roadless Areas 242 (Camden) and 243 (Rocky Pass)	128,635	New Rocky Pass Wilderness
Part of Roadless Area 244 (Bay of Pillars) and Roadless Area 245 (East Kuiu)	62,829	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 246 (South Kuiu)	63,063	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 209 (Anan) – Anan Creek LUD II Area	37,915	New Anan Creek Wilderness
Roadless Area 528 (Cleveland)	191,462	New Cleveland Peninsula Wilderness
Part of Roadless Area 526 (Naha) – Naha LUD II Area	31,355	New Naha Wilderness
Parts of Roadless Areas 515 (Kosciusko) and 516 (Calder)	70,600	New Mt. Calder – Mt. Holbrook Wilderness
Part of Roadless Area 518 (Salmon Bay)	24,707	New Salmon Bay Wilderness
Part of Roadless Area 514 (Sarkar)	24,765	New Sarkar Wilderness
Part of Roadless Area 511 (Thorne River)	66,208	New Honker Divide Wilderness
Part of Roadless Area 503 (Outer Islands)	95,953	New Outside Islands Wilderness
Part of Roadless Area 501 (Dall Island)	104,465	New Dall Island Wilderness
Part of Roadless Area 504 (Sukkwan)	16,228	New Sukkwan Wilderness
Part of Roadless Area 531 (Nutmwa)	51,893	Addition to South Prince of Wales Wilderness
Part of Roadless Area 507 (Eudora)	24,434	Addition to South Prince of Wales Wilderness

## 2 Alternatives

### Land Use Designations

If Alternative 5 is selected, the LUD allocation acres shown in Table 2-13 would result. Figure 2-5 shows the distribution of LUDs across the Tongass under Alternative 5 according to three LUD groups (see Table 2-13 for definitions of the LUD groups). Table 2-14 displays selected outputs and other measures associated with this alternative.

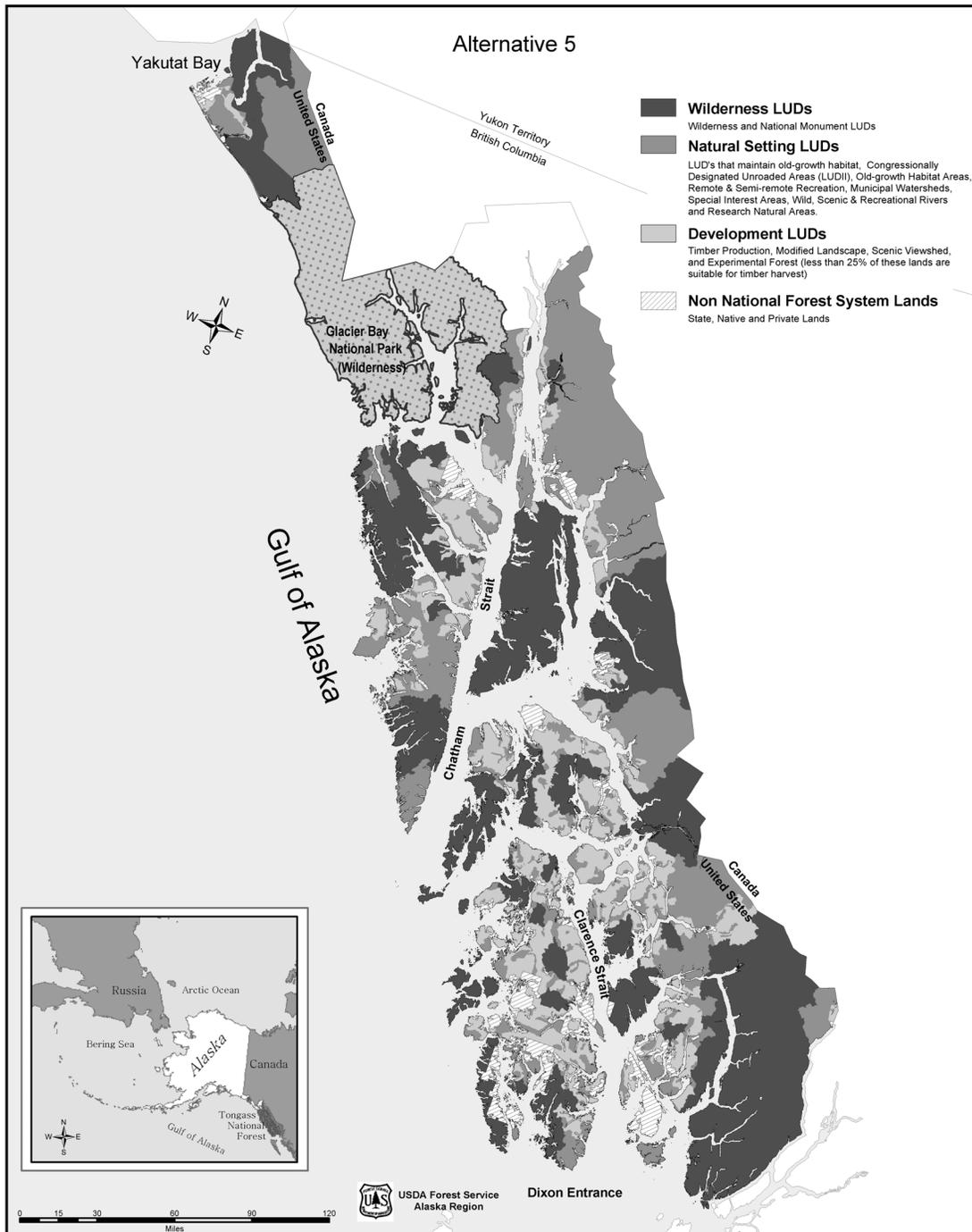
**Table 2-13**  
**Land Use Designations for Alternative 5<sup>1</sup>**

Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	2,005,497	+2,005,497
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>7,919,766</b>	<b>+2,005,497</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	24,399	-1,621
Special Interest Area	168,222	-6,011
Remote Recreation	2,002,289	-131,012
Enacted Municipal Watershed	45,272	0
Old-Growth Habitat	952,579	-223,617
Semi-Remote Recreation	2,498,268	-352,650
Recommended LUD II	0	0
LUD II	45,075	-676,106
Wild, Scenic, Recreational River	87,184	-32,457
<b>Total for Natural Setting LUD Group</b>	<b>5,823,288</b>	<b>-1,423,474</b>
<b>Development LUD Group</b>		
Experimental Forest	17,106	0
Scenic Viewshed	441,628	-42,727
Modified Landscape	542,300	-70,576
Timber Production	2,056,890	-468,720
<b>Total for Development LUD Group</b>	<b>3,057,924</b>	<b>-582,023</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 154,520; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

**Figure 2-5  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest under Alternative 5**



## 2 Alternatives

**Table 2-14  
Selected Outputs and Measures Associated with Alternative 5<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	7.9
Recommended LUD II plus Current LUD II	<0.1
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	26%
Pacific Coastal Mountain Tundra and Ice Fields	38%
Productive Old-growth after 150 Years (millions of acres)	4.59
Estimated Land Suitable for Timber Production (acres)	589,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	171
Non-interchangeable component II	38
Total	209
Annual Road Construction during 1st Decade, based on the ASQ (miles)	82
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	7,200
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	2%
Percent of Proposed Timber Sales (10-year plan) Affected	6%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	34%
Percent of Undiscovered Mineral Areas	47%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	12.2
Semi-primitive Motorized	1.3
Roaded Natural and Roaded Modified	3.3

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

**Alternative 6**

**Framework**

Alternative 6 would recommend approximately 3,203,000 acres for new wilderness designation and 5,680,000 acres for new LUD II designation. It would result in the conversion of all areas recommended for wilderness or LUD II by HR 2908 to Recommended Wilderness and Recommended LUD II, respectively. It responds to Key Issue 1 at a high level by recommending most roadless areas for long-term protection of resource values. It responds to Key Issue 2 at a low level because, although it substantially reduces the area of development LUDs, the majority of the conversions are to Recommended LUD II, which is less restrictive than Recommended Wilderness. Three existing LUD II areas (Berners Bay, Trap Bay, and Kadashan) would be converted to wilderness; there would be no change to existing wildernesses.

HR 2908 is referred to as the Alaska Rainforest Conservation Act of 2001 and was introduced in the U.S. House of Representatives in 2001. This Bill was intended to provide additional protections for National Forest System lands in Alaska (it includes both the Tongass and the Chugach National Forests) through the designation of wilderness, wilderness study areas, LUD II management areas, restoration areas, special management areas, and additional components of the national Wild and Scenic Rivers System. Alternative 6 includes only the wilderness and LUD II components of the Bill.

**New Wilderness or LUD II Areas**

This alternative would result in the creation of approximately 18 Recommended Wildernesses, totaling approximately 3,203,000 acres, as well as 5,680,000 acres of Recommended LUD II. If designated by Congress, this would ultimately result in a total of 9.0 million acres of wilderness and 6.3 million acres of LUD II areas. If designated, the 18 Recommended Wildernesses would result in 5 new wildernesses and 13 wilderness additions. Virtually all other roadless areas in the Tongass would be converted to Recommended LUD II. The 18 Recommended Wildernesses are described in Table 2-15. The Alternative 6 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the Recommended Wildernesses, as well as the Recommended LUD II areas.

## 2 Alternatives

**Table 2-15  
New Wilderness Recommendations for Alternative 6**

<b>Area Recommended</b>	<b>National Forest System Acres</b>	<b>Wilderness or LUD II Name or Addition</b>
Roadless Area 338 (Brabazon Addition) and Part of Roadless Area 341 (Upper Situk)	515,806	Addition to Russell Fiord Wilderness
Part of Roadless Area 303 (Sullivan) and Roadless Area 304 (Chilkat-West Lynn)	260,110	Addition to Endicott River Wilderness
Part of Roadless Area 301 (Juneau-Skagway Icefield)	268,793	New Berners Bay Wilderness
Part of Roadless Area 306 (Mansfield Peninsula)	64,169	New Mansfield Peninsula Wilderness
Part of Roadless Area 311 (Chichagof) – Kadashan LUD II Area	33,003	New Kadashan Wilderness
Roadless Area 328 (Hoonah Sound)	43,665	Addition to West Chichagof-Yakobi Wilderness
Part of Roadless Area 312 (Trap Bay) – Trap Bay LUD II Area	13,821	New Trap Bay Wilderness
Part of Roadless Area 302 (Taku-Snettisham)	423,913	Addition to Tracy Arm-Fords Terror Wilderness
Roadless Areas 308 (Windham-Port Houghton) and 201 (Fanshaw)	210,367	Addition to Tracy Arm-Fords Terror Wilderness
Roadless Area 202 (Spires)	547,990	Addition to and Connection Between Tracy Arm-Fords Terror and Stikine-LeConte Wilderness
Part of Roadless Area 334 (Port Alexander)	100,616	Addition to South Baranof Wilderness
Part of Roadless Area 216 (Lindenberg), Roadless Areas 214 (South Kupreanof) and 215 (Castle), and two unroaded areas	305,857	Addition to the Petersburg Creek – Duncan Salt Chuck Wilderness
Roadless Area 218 (Woewodski)	10,646	New Woewodski Island Wilderness
Roadless Areas 244 (Bay of Pillars) and 245 (East Kuiu)	74,360	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 246 (South Kuiu)	63,063	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Areas 233 (Mosman) and 234 (South Etolin)	85,416	Addition to South Etolin Wilderness
Part of Roadless Area 531 (Nutmwa)	30,539	Addition to South Prince of Wales Wilderness
Part of Roadless Area 507 (Eudora)	150,458	Addition to South Prince of Wales Wilderness

**Land Use Designations**

If Alternative 6 is selected, the LUD allocation acres shown in Table 2-16 would result. Figure 2-6 shows the distribution of LUDs across the Tongass under Alternative 6 according to three LUD groups (see Table 2-16 for definitions of the LUD groups). Table 2-17 displays selected outputs and other measures associated with this alternative.

**Table 2-16  
Land Use Designations for Alternative 6<sup>1</sup>**

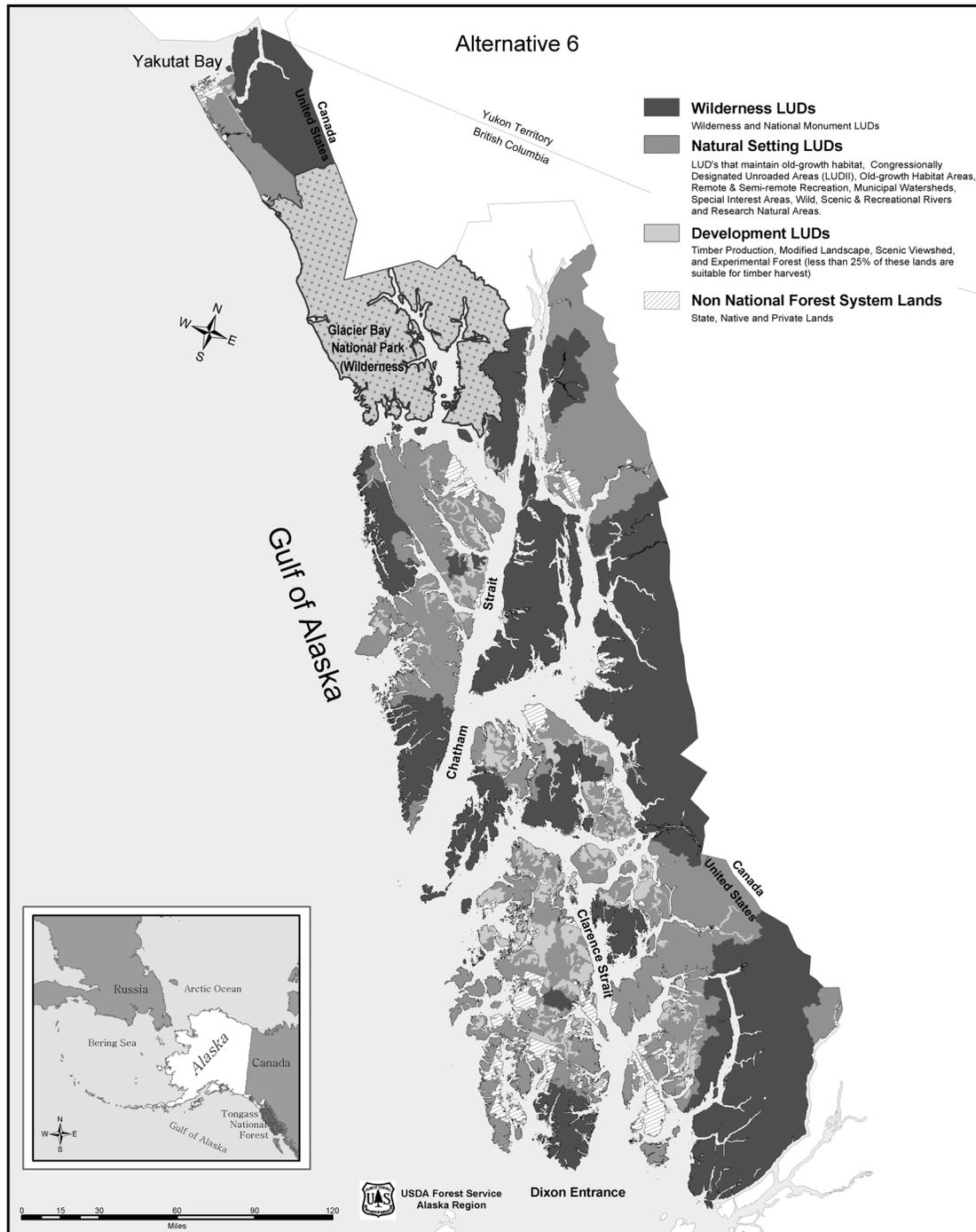
Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	3,202,591	+3,202,591
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>9,116,859</b>	<b>+3,202,591</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	405	-25,615
Special Interest Area	7,322	-166,911
Remote Recreation	2,774	-2,130,527
Enacted Municipal Watershed	2,300	-42,972
Old-Growth Habitat	176,016	-1,000,180
Semi-Remote Recreation	55,876	-2,795,042
Recommended LUD II	5,679,574	+5,679,574
LUD II	639,195	-81,986
Wild, Scenic, Recreational River	13,600	-106,041
<b>Total for Natural Setting LUD Group</b>	<b>6,577,062</b>	<b>-669,700</b>
<b>Development LUD Group</b>		
Experimental Forest	4,360	-12,746
Scenic Viewshed	124,599	-359,756
Modified Landscape	219,503	-393,373
Timber Production	758,594	-1,767,016
<b>Total for Development LUD Group</b>	<b>1,107,056</b>	<b>-2,532,891</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more-restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 116,135; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

## 2 Alternatives

**Figure 2-6  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest under Alternative 6**



**Table 2-17  
Selected Outputs and Measures Associated with Alternative 6<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	9.1
Recommended LUD II plus Current LUD II	6.3
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	50%
Pacific Coastal Mountain Tundra and Ice Fields	49%
Productive Old-growth after 150 Years (millions of acres)	4.82
Estimated Land Suitable for Timber Production (acres)	344,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	75
Non-interchangeable component II	17
Total	92
Annual Road Construction during 1st Decade, based on the ASQ (miles)	23
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	3,200
Short-term Effects on Timber Industry (percent of volume)	
Percent of Timber Sales Under Contract Affected	64%
Percent of Proposed Timber Sales (10-year plan) Affected	60%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	33%
Percent of Undiscovered Mineral Areas	57%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	13.4
Semi-primitive Motorized	1.4
Roaded Natural and Roaded Modified	2.0

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

## 2 Alternatives

### Alternative 7

#### Framework

Alternative 7 would recommend approximately 4,638,000 acres for new wilderness designation. It would result in the conversion of all areas recommended for wilderness under Alternatives 4, 5, and 6 to Recommended Wilderness. This alternative responds to Key Issue 1 at a moderate to high level by recommending for long-term protection a combination of the areas on the Tongass with the highest public interests and other values. It responds to Key Issue 2 at a low to moderate level by moderately reducing the area of development LUDs. Virtually all existing LUD II areas would be converted to wilderness.

#### New Wilderness or LUD II Areas

This alternative would result in the creation of 32 Recommended Wildernesses totaling approximately 4,638,000 acres. If designated by Congress, this would ultimately result in 10.4 million acres of wilderness. Approximately 44,000 acres of areas with LUD II designations would also remain. If designated, the 32 Recommended Wildernesses would result in 18 new wildernesses and 14 wilderness additions. The 32 areas are described in Table 2-18. The Alternative 7 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the 32 areas.

**Table 2-18  
New Wilderness Recommendations for Alternative 7**

Area Recommended	National Forest System Acres	Wilderness Name or Addition
Roadless Area 338 (Brabazon Addition) and Parts of Roadless Areas 339 (Yakutat Forelands) and 341 (Upper Situk)	735,513	Addition to Russell Fiord Wilderness
Part of Roadless Area 303 (Sullivan) – Sullivan Island	3,976	New Sullivan Island Wilderness
Part of Roadless Area 303 (Sullivan) and Roadless Area 304 (Chilkat-West Lynn)	260,110	Addition to Endicott River Wilderness
Part of Roadless Area 301 (Juneau-Skagway Icefield) – Berners Bay LUD II Area	268,793	New Berners Bay Wilderness
Part of Roadless Area 306 (Mansfield Peninsula)	64,169	New Mansfield Peninsula Wilderness
Parts of Roadless Areas 311 (Chichagof) and 342 (Neka Mountain)	371,267	Addition to West Chichagof-Yakobi Wilderness
Roadless Area 328 (Hoonah Sound)	98,026	Addition to West Chichagof-Yakobi Wilderness
Part of Roadless Area 312 (Trap Bay) – Trap Bay LUD II Area	13,821	New Trap Bay Wilderness
Part of Roadless Area 330 (North Baranof)	23,839	New Saook Bay Wilderness
Part of Roadless Area 302 (Taku-Snettisham)	423,798	Addition to Tracy Arm-Fords Terror Wilderness
Roadless Areas 308 (Windham-Port Houghton) and 201 (Fanshaw)	210,368	Addition to Tracy Arm-Fords Terror Wilderness
Roadless Areas 202 (Spires) and 203 (Thomas)	547,910	Addition to and Connection Between Tracy Arm-Fords Terror and Stikine-Le Conte Wilderness
Part of Roadless Area 334 (Port Alexander)	100,616	Addition to South Baranof Wilderness
Part of Roadless Area 223 (Manzanita)	11,066	New Southeast Mitkof Wilderness
Parts of Roadless Areas 216 (Lindenberg) and 211 (N. Kupreanof) and Roadless Areas 214 (South Kupreanof) and 215 (Castle), and two unroaded areas	304,244	Addition to the Petersburg Creek – Duncan Salt Chuck Wilderness
Roadless Area 218 (Woewodski)	10,646	New Woewodski Island Wilderness
Parts of Roadless Areas 242 (Camden) and 243 (Rocky Pass)	98,317	New Rocky Pass Wilderness

**Table 2-18 (continued)  
New Wilderness Recommendations for Alternative 7**

<b>Area Recommended</b>	<b>National Forest System Acres</b>	<b>Wilderness Name or Addition</b>
Roadless Area 244 (Bay of Pillars) and Roadless Area 245 (East Kuiu)	77,693	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Area 246 (South Kuiu)	63,063	Addition to Tebenkof Bay – Kuiu Wilderness
Roadless Areas 233 (Mosman) and 234 (South Etolin)	85,287	Addition to South Etolin Wilderness
Roadless Area 209 (Anan) – Anan Creek LUD II Area	37,915	New Anan Creek Wilderness
Roadless Area 528 (Cleveland)	191,462	New Cleveland Peninsula Wilderness
Part of Roadless Area 526 (Naha) – Naha LUD II Area	31,355	New Naha Wilderness
Part of Roadless Area 518 (Salmon Bay)	24,706	New Salmon Bay Wilderness
Parts of Roadless Areas 515 (Kosciusko) and 516 (Calder)	70,600	New Mt. Calder – Mt. Holbrook Wilderness
Part of Roadless Area 514 (Sarkar)	24,765	New Sarkar Wilderness
Part of Roadless Area 511 (Thorne River)	66,208	New Honker Divide Wilderness
Roadless Area 503 (Outer Islands)	95,953	New Outside Islands Wilderness
Roadless Area 501 (Dall Island)	104,358	New Dall Island Wilderness
Part of Roadless Area 504 (Sukkwan)	16,231	New Sukkwan Wilderness
Part of Roadless Area 531 (Nutkwa)	51,974	Addition to South Prince of Wales Wilderness
Part of Roadless Area 507 (Eudora)	150,313	Addition to South Prince of Wales Wilderness

## 2 Alternatives

### Land Use Designations

If Alternative 7 is selected, the LUD allocation acres shown in Table 2-19 would result. Figure 2-7 shows the distribution of LUDs across the Tongass under Alternative 7 according to three LUD groups (see Table 2-19 for definitions of the LUD groups). Table 2-20 displays selected outputs and other measures associated with this alternative.

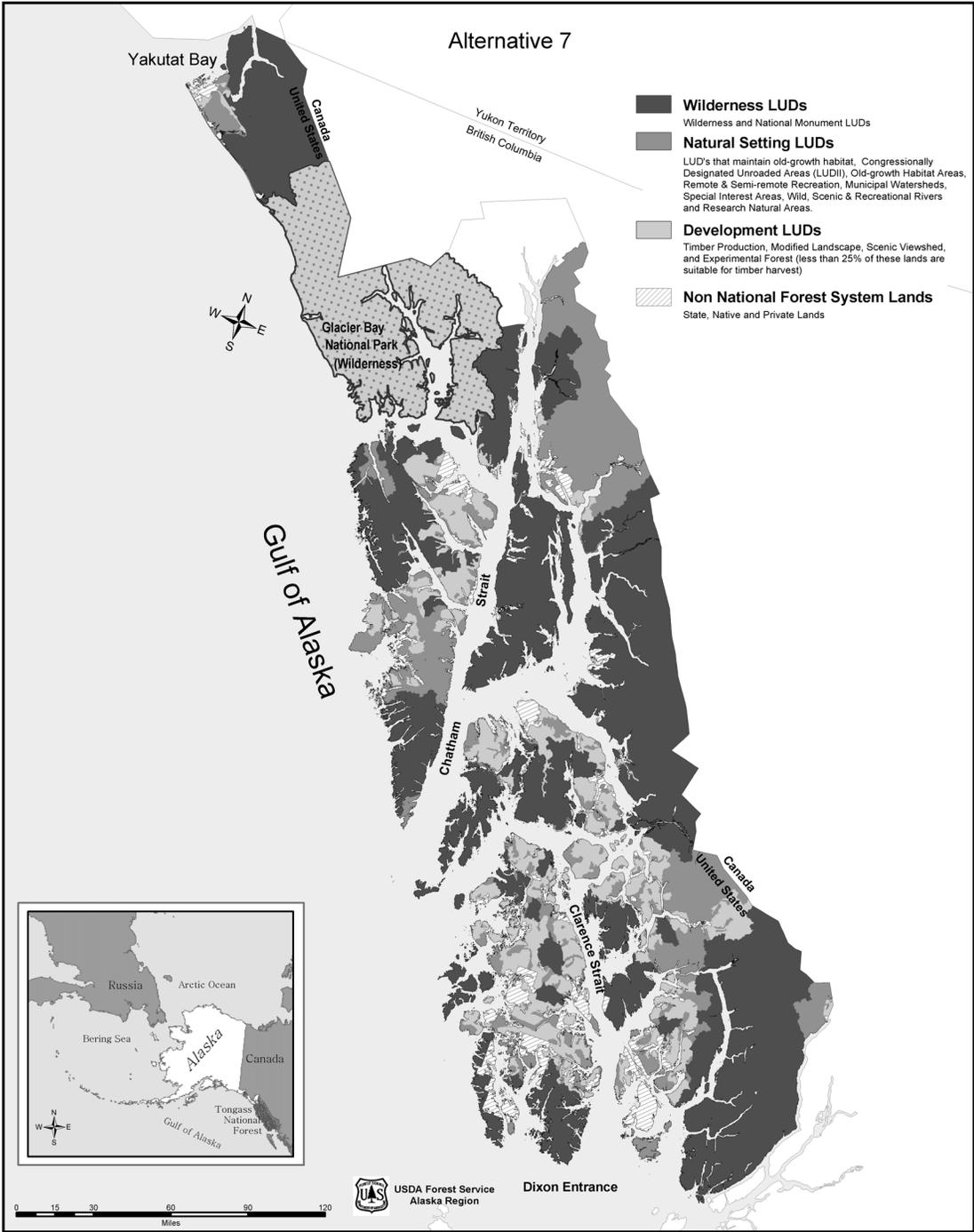
**Table 2-19**  
**Land Use Designations for Alternative 7<sup>1</sup>**

Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>2</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness	4,638,362	4,638,362
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	159,681	0
<b>Total for Wilderness LUD Group</b>	<b>10,552,630</b>	<b>4,638,362</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	15,105	-10,915
Special Interest Area	152,395	-21,838
Remote Recreation	1,093,585	-1,039,716
Enacted Municipal Watershed	45,272	0
Old-Growth Habitat	803,507	-372,689
Semi-Remote Recreation	1,510,826	-1,340,092
Recommended LUD II	0	0
LUD II	44,108	-677,073
Wild, Scenic, Recreational River	66,127	-53,514
<b>Total for Natural Setting LUD Group</b>	<b>3,730,925</b>	<b>-3,515,837</b>
<b>Development LUD Group</b>		
Experimental Forest	10,562	-6,544
Scenic Viewshed	321,500	-162,855
Modified Landscape	431,638	-181,238
Timber Production	1,753,722	-771,888
<b>Total for Development LUD Group</b>	<b>2,517,422</b>	<b>-1,122,525</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 98,673; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

<sup>2</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

**Figure 2-7**  
**Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest**  
**under Alternative 7**



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## 2 Alternatives

**Table 2-20  
Selected Outputs and Measures Associated with Alternative 7<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	10.6
Recommended LUD II plus Current LUD II	<0.1
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	33%
Pacific Coastal Mountain Tundra and Ice Fields	43%
Productive Old-growth after 150 Years (millions of acres)	4.66
Estimated Land Suitable for Timber Production (acres)	521,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	143
Non-interchangeable component II	31
Total	174
Annual Road Construction during 1st Decade, based on the ASQ (miles)	64
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	6,000
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	8%
Percent of Proposed Timber Sales (10-year plan) Affected	19%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	41%
Percent of Undiscovered Mineral Areas	65%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	12.6
Semi-primitive Motorized	1.3
Roaded Natural and Roaded Modified	2.9

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

**Alternative 8**

**Framework**

Alternative 8 would recommend approximately 9,601,000 acres for new wilderness designation. It would result in the conversion of all inventoried roadless areas in the current roadless inventory to Recommended Wilderness. This alternative responds to Key Issue 1 at a very high level by recommending almost all roadless lands for long-term protection of resource values. It does not respond to Key Issue 2. Virtually all acres of LUD II would be included in this conversion. Under this alternative, there would be no change to existing wilderness.

**New Wilderness or LUD II Areas**

This alternative would result in the creation of large tracts of land consisting of almost continuous wilderness and Recommended Wilderness across each of the islands and the mainland of the Tongass National Forest. If designated by Congress, this would result in 15.4 million acres of wilderness. Approximately 10,000 acres of LUD II areas (outside of current roadless areas) would remain. If designated, the Recommended Wildernesses would result in 22 new wilderness groupings. These groupings are described in Table 2-21. The Alternative 8 map in the *Map Packet* accompanying the SEIS hard copy or in the *Map Section* of the CD version displays the locations of the areas.

**Table 2-21  
New Wilderness Recommendations for Alternative 8**

Area Recommended	National Forest System Acres	Wilderness Name or Addition
Roadless Areas 338, 339, and 341	856,383	Addition to Russell Fiord Wilderness
Roadless Areas 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 301, 302, 305, 308, 313, 523, 524, 525, 526, 528, 529, 530, and 577	4,061,513	Additions to and Connection Between Mainland Wilderness group (Tracy Arm-Fords Terror/Chuck River, Stikine-LeConte, Misty Fiords)
Roadless Areas 303 and 304	264,252	Addition to Endicott River Wilderness
Roadless Areas 306 and 307	71,947	Additions to Kootznoowoo Wilderness – Admiralty National Monument (Mansfield Peninsula, Greens Creek)
Roadless Areas 309 and 310	27,636	New Juneau/Douglas Islands Wilderness
Roadless Areas 311, 312, 314, 317, 318, 319, 321, 323, 325, and 328	869,038	Additions to Chichagof Island Wildernesses (connects with West Chichagof-Yakobi Wilderness)
Roadless Areas 326, 327, 329, 330, 331, 332, 333, and 334	754,507	Addition to Baranof Island Wildernesses (connects with South Baranof Wilderness – includes Kruzof and adjacent Islands)
Roadless Areas 239, 240, 241, 242, 244, 245, 246, and part of 243	266,655	Additions to Kuiu Island Wilderness (connects with Tebenkof Bay/Kuiu Wilderness)
Roadless Areas 211, 212, 213, 214, 215, 216, 217, 218, and part of 243	499,849	Additions to Kupreanof Island Wilderness (connects with Petersburg Creek-Duncan Salt Chuck Wilderness – includes Woewodski Island)
Roadless Areas 219, 220, 222, 223, and 224	55,497	New Mitkof Island Wildernesses
Roadless Areas 235, 236, and 237	66,718	New Zarembo Island Wildernesses
Roadless Areas 225, 227, 229, 247, 288, 289, and 290	75,278	New Wrangell Island Wilderness – includes Kadin-Greys Islands
Roadless Areas 231, 232, 233, and 234	140,598	Additions to Etoin Island Wildernesses (connects with South Etoin Wilderness – includes Woronkofski Island)
Roadless Areas 523, 524, 525, 526, and 535	326,069	Additions to Revilla Island Wildernesses (connects with Misty Fiords Wilderness)

## 2 Alternatives

**Table 2-21 (continued)  
New Wilderness Recommendations for Alternative 8**

Area Recommended	National Forest System Acres	Wilderness Name or Addition
Roadless Area 522	38,978	New Gravina Island Wilderness
Roadless Area 521	46,863	New Duke Island Wilderness
Roadless Area 238	5,743	New Kashevarof Islands Wilderness
Roadless Areas 505, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 531, 532, 533, 534, 535, and 536	888,517	Additions to Prince of Wales Wildernesses (connects with Karta and South Prince of Wales Wildernesses) – includes Heceta Is.
Roadless Area 503	99,741	New Outside Islands Wilderness
Roadless Area 502	24,478	New Sumez Island Wilderness
Roadless Area 501	111,545	New Dall Island Wilderness
Roadless Area 504	49,459	New Sukkwan Wilderness

**Table 2-22  
Land Use Designations for Alternative 8<sup>1</sup>**

Land Use Designation	Acres Allocated	Net Change from Current Forest Plan Acres <sup>3</sup>
<b>Wilderness LUD Group</b>		
Recommended Wilderness <sup>2</sup>	9,601,263	9,601,263
Wilderness	2,642,123	0
Wilderness National Monument	3,112,464	0
Nonwilderness National Monument	4,575	-155,106
<b>Total for Wilderness LUD Group</b>	<b>15,360,425</b>	<b>9,446,157</b>
<b>Natural Setting LUD Group</b>		
Research Natural Area	405	-25,615
Special Interest Area	7,450	-166,783
Remote Recreation	2,768	-2,130,533
Enacted Municipal Watershed	1,891	-43,381
Old-Growth Habitat	198,285	-977,911
Semi-Remote Recreation	57,990	-2,792,928
Recommended LUD II	0	0
LUD II	9,871	-711,310
Wild, Scenic, Recreational River	16,032	-103,609
<b>Total for Natural Setting LUD Group</b>	<b>294,692</b>	<b>-6,952,070</b>
<b>Development LUD Group</b>		
Experimental Forest	4,361	-12,746
Scenic Viewshed	124,741	-359,614
Modified Landscape	235,924	-376,953
Timber Production	780,835	-1,744,775
<b>Total for Development LUD Group</b>	<b>1,145,860</b>	<b>-2,494,087</b>

<sup>1</sup> When more than one LUD is applied to the same area, such as a Special Interest Area within Wilderness, only the acreage of the more restrictive LUD is included, except that total Wilderness, Wilderness National Monument, and LUD II acres are always shown. The acreage for Minerals LUD would be 15,134; these acres are not included in the table because the Minerals LUD is an overlay. No acreages have been calculated for the Transportation and Utility Systems LUD because it is a corridor. Totals may not exactly equal the sum of individual entries due to rounding.

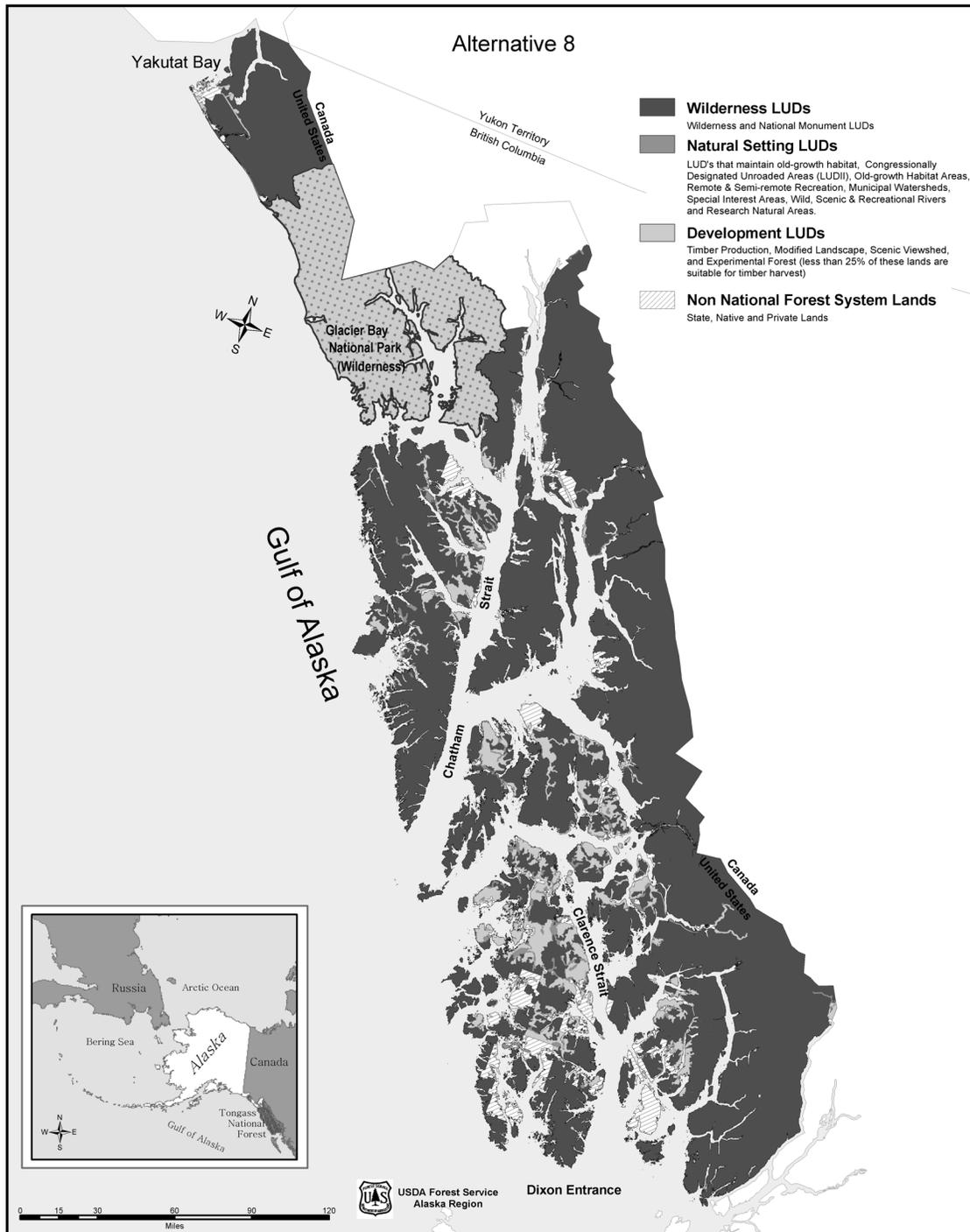
<sup>2</sup> Note that 155,106 acres of the Recommended Wilderness acres would eventually become Wilderness National Monument if designated by Congress.

<sup>3</sup> These changes from current Forest Plan acres are the differences from the decisions made in the 1997 Tongass Forest Plan Revision ROD, as amended. Except as they may be modified in this SEIS process by the selection of an alternative proposing Recommended Wilderness or Recommended LUD II, the current Forest Plan LUD allocations are outside the scope of this SEIS process.

### Land Use Designations

If Alternative 8 is selected, the LUD allocation acres shown in Table 2-22 would result. Figure 2-8 shows the distribution of LUDs across the Tongass under Alternative 8 according to three LUD groups (see Table 2-22 for definitions of the LUD groups). Table 2-23 displays selected outputs and other measures associated with this alternative.

**Figure 2-8  
Wilderness, Natural Setting, and Development LUDs on the Tongass National Forest under Alternative 8**



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## 2 Alternatives

**Table 2-23  
Selected Outputs and Measures Associated with Alternative 8<sup>1</sup>**

Resource/Category	Output/Measure
Amount of Wilderness and LUD II Protection (millions of acres)	
Recommended Wilderness plus Current Wilderness and National Monument	15.4
Recommended LUD II plus Current LUD II	<0.1
Percent of Ecoregion Protected in Reserves	
Northern Pacific Coastal Forest	50%
Pacific Coastal Mountain Tundra and Ice Fields	49%
Productive Old-growth after 150 Years (millions of acres)	4.81
Estimated Land Suitable for Timber Production (acres)	351,000
Allowable Sale Quantity (million board feet) <sup>2</sup>	
Non-interchangeable component I	79
Non-interchangeable component II	17
Total	96
Annual Road Construction during 1st Decade, based on the ASQ (miles)	25
Annual Timber Harvest during 1st Decade, based on the ASQ (acres)	3,300
Short-term Effects on Timber Industry	
Percent of Timber Sales Under Contract Affected	58%
Percent of Proposed Timber Sales (10-year plan) Affected	57%
Percent of Identified and Undiscovered Mineral Areas Withdrawn or Potentially Withdrawn	
Percent of Identified Mineral Tracts	64%
Percent of Undiscovered Mineral Areas	90%
Recreation Opportunity Spectrum Classes after 150 Years (millions of acres)	
Primitive and Semi-primitive Non-motorized	13.4
Semi-primitive Motorized	1.4
Roaded Natural and Roaded Modified	2.0

<sup>1</sup> Unless otherwise noted, figures are average annual amounts for the next decade (2002 to 2012).

<sup>2</sup> All timber volumes are sawlog plus utility. Totals may not add exactly due to rounding.

### Comparison of the Alternatives

This section briefly compares the environmental consequences of the eight alternatives with respect to the key issues described in Chapter 1. This comparison is based on the effects analysis presented in Chapter 3. Table 2-24 and Figure 2-9 summarize the LUD allocations of the alternatives using LUD Group combinations. The four LUD Groups combine the individual LUDs in terms of similarities in management and/or potential effects as described in the *Introduction* to Chapter 3. Table 2-25 displays some of the key indicators or measures that are used to quantitatively compare the alternatives relative to the key issues.

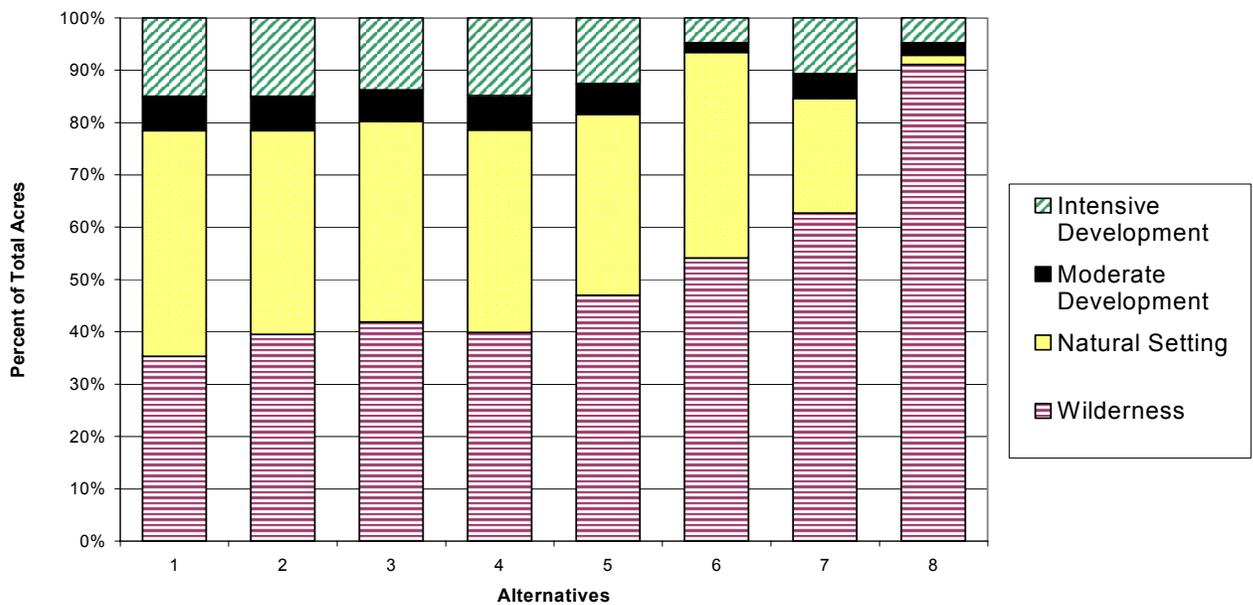
In addition to these tables and figures that focus on the indicators and measures most closely related to the key issues, Table 2-26, located at the end of this chapter, represents a "Summary of Effects Matrix." This table allows the reader to compare the effects of the alternatives on essentially all resource areas simultaneously, so that a cumulative picture of the net effect can be obtained. This table presents many quantitative measures, but it uses qualitative comparisons where quantitative measures are not feasible. This table may be used to help consider the net public benefits associated with each alternative.

**Table 2-24**  
**Land Use Designation Group Comparison by Alternative (million acres)<sup>1</sup>**

Alternative	Wilderness	Natural Setting	Moderate Development	Intensive Development
1	5.9	7.2	1.1	2.5
2	6.6	6.5	1.1	2.5
3	7.0	6.4	1.0	2.3
4	6.7	6.5	1.1	2.5
5	7.9	5.8	1.0	2.1
6	9.1	6.6	0.3	0.8
7	10.6	3.7	0.8	1.8
8	15.4	0.3	0.4	0.8

<sup>1</sup> LUD Group combinations are described in the *Introduction* to Chapter 3 (Table 3.1-1).

**Figure 2-9**  
**Land Use Designation Group Comparison by Alternative (percent)**



**Table 2-25  
Comparison of Alternatives**

Resource/Category	Alternative							
	1	2	3	4	5	6	7	8
<b>Key Issue 1—Additional Wilderness Designation for Long-Term Protection of Roadless Areas</b>								
<b>Amount of Wilderness and LUD II Protection</b>								
Recommended Wilderness plus Current Wilderness and National Monument <sup>1</sup>	5.9	6.6	7.0	6.7	7.9	9.1	10.6	15.4
Recommended LUD II plus Current LUD II	0.7	0.0	0.7	0.7	<0.1	6.3	<0.1	<0.1
Percent of Inventoried Roadless Areas in LUD II, National Monument, Recommended Wilderness, or Recommended LUD II	9	9	20	17	23	100	50	100
Percent of Inventoried Roadless Areas in Natural Setting LUDs, Recommended Wilderness, or Recommended LUD II	74	74	76	74	80	100	85	100
<b>Ecological Values of Wilderness</b>								
Productive Old Growth after 120 Years	4.51	4.51	4.55	4.51	4.59	4.82	4.66	4.81
Percentage of Original (1954) Productive Old Growth Remaining by the Year 2120	83	83	84	83	85	89	86	89
<b>Ecoregions, Biogeographic Provinces, and Ecological Subsections</b>								
Percent of Ecoregion Protected in Reserves								
Northern Pacific Coastal Forest	19	19	23	21	26	50	33	50
Pacific Coastal Mountain Tundra and Ice Fields	37	37	38	38	38	49	43	49
Number of Biogeographic Provinces with Greater than 12 Percent Protected (out of 21)	18	18	19	19	21	21	21	21
Number of Ecological Subsections with No Representation in Wilderness, LUD II, or National Monument (out of 73 on the Tongass)	17	17	12	12	11	0	8	0
<b>Key Issue 2—Social and Economic Well-Being of Southeast Alaskan Communities</b>								
<b>Natural Resource-Based Industry</b>								
<b>Wood Products</b>								
<b>Short-Term Effects (2003 to 2005)</b>								
Percent of Volume Under Contract Affected	0	0	2	0	2	64	8	58
Percent of Other Timber Sales in the 10-year Plan Affected	0	0	4	0	6	60	19	57
<b>Long-Term Effects (First Decade)</b>								
Percent Change in Suitable Acres	0	0	-7	0	-11	-48	-22	-47
ASQ (average annual over the first decade)	259	259	236	259	209	92	174	96
NIC I Component of the ASQ	212	212	194	212	171	75	143	79

**Table 2-25 (continued)  
Comparison of Alternatives**

Resource/Category	Alternative							
	1	2	3	4	5	6	7	8
<b>Mining</b>								
Mineral Areas/Tracts Withdrawn or Potentially Withdrawn								
Identified Mineral Tracts	25	31	31	27	37	43	53	90
Undiscovered Mineral Areas	35	38	40	39	47	59	66	92
<b>Recreation and Tourism</b>								
Recreation Opportunity Spectrum Classes after 150 Years								
Primitive and Semi-primitive Non-motorized	11.8	11.8	12.0	11.9	12.2	13.4	12.6	13.4
Semi-primitive Motorized	1.2	1.2	1.3	1.3	1.3	1.4	1.3	1.4
Roaded Natural and Roaded Modified	3.7	3.7	3.5	3.7	3.3	2.1	2.9	2.0
Recreation Places Important for Tourism in Wilderness or Recommended Wilderness								
Tongass Acres Available for Tourism	46	54	49	48	62	58	71	93
Developments	20	20	16	16	18	1	11	1
<b>Regional Economy and Local Communities</b>								
<b>Short-Term Effects (2003 to 2006)</b>								
<b>Employment</b>								
Sawmill and Logging Employment	1,154	1,154	1,129	1,154	1,129	423	1,060	486
Net Change from Alternative 1	0	0	-25	0	-25	-731	-94	-668
<b>Income</b>								
Sawmill and Logging Income	51.2	51.2	50.7	51.2	50.1	18.8	47.0	20.2
Net Change from Alternative 1	0.0	0.0	-1.1	0.0	-1.1	-32.4	-4.2	-30.9
<b>Employment and Income Percent Change from Alternative 1</b>								
<b>Long-Term Effects (First Decade)</b>								
<b>Direct Employment</b>								
Wood Products	1,021	1,021	950	1,021	858	476	747	492
Recreation/Tourism	5,013	5,013	5,014	5,013	5,014	5,020	5,016	5,020
<b>Total</b>	6,034	6,034	5,963	6,034	5,873	5,497	5,763	5,512
<b>Subsistence</b>								
Change in Amount of Productive Old Growth Available after 120 Years Relative to the Current Forest Plan	0	0	1	0	2	6	3	6
<b>Recreation</b>								
Home Range Recreation Places in Wilderness	22	30	27	26	39	34	47	81

<sup>1</sup>Includes both Wilderness and Nonwilderness National Monument.

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### **Key Issue 1 – Additional wilderness designation will provide greater long-term protection of roadless areas on the Tongass National Forest than is provided by the 1997 Forest Plan.**

The review of public input conducted for this SEIS indicated that concerns for additional wilderness protection primarily center around two broad themes. These can be generally characterized as the *symbolic, spiritual, and passive use* value of wilderness and the value of wilderness as a means for additional *ecological* protection, including protection of wildlife viability, biodiversity, and fish populations. The indicators of this key issue area are associated with quantifying the amount of additional protection, describing the values protected by additional wilderness designation, and assessing how well the ecoregions, biogeographic provinces, and ecological subsections of the Tongass are represented by wilderness and other forms of long-term protection. The indicators are discussed in the following paragraphs.

### **Amount of Wilderness and LUD II Areas on the Tongass**

Approximately 5.9 million acres of Congressionally designated wilderness and National Monument lands occur throughout the Forest. In addition to these lands, there are approximately 9.6 million acres of inventoried roadless areas (including designated LUD II areas) on the Tongass. The 1997 (current) Forest Plan allocated 74 percent of the roadless areas to non-development LUDs. However, that designation is not permanent (and may be subject to future Forest Plan amendments and revisions); some segments of the public would rather have permanent protection status. Some hold the belief that many areas would be of more value to Americans as wilderness than as other LUDs.

Alternative 1 would not change the 5.9 million acres allocated to the Wilderness LUD Group or the 74 percent of the remaining roadless lands allocated to non-development LUDs under the current Forest Plan (Table 2-24, Table 2-25, Figure 2-9). Under Alternatives 2, 3, and 4, from 6.6 to 7.0 million acres would be allocated to the Wilderness LUD Group, and the percentage of roadless lands allocated to non-development LUDs would range from 74 to 77. Alternative 5 would result in 7.9 million acres in the Wilderness LUD Group and 80 percent of the remaining roadless lands would be allocated to non-development LUDs. Alternative 6 would increase the area in the Wilderness LUD Group to 9.1 million acres and would protect essentially 100 percent of the remaining roadless lands in non-development LUDs, mostly consisting of Recommended LUD II areas. Under Alternative 7, 10.6 million acres would be allocated to the Wilderness LUD Group and 86 percent of the remaining roadless lands would be allocated to non-development LUDs. Alternative 8 would allocate 15.4 million acres to the Wilderness LUD Group, which would include all roadless lands.

A consistent theme with respect to protecting roadless areas on the Tongass is the idea that the Tongass represents the last relatively intact temperate rainforest on earth and should be maintained in a wilderness condition. The action alternatives would increase the net area of the Tongass allocated to wilderness; they would also result in combinations of new and existing wilderness that would result in extensive contiguous areas of mainland being preserved. On the north end of the Forest, new wilderness on the Tongass would connect the Glacier Bay National Park and Preserve with the Wrangell-St. Elias National Park and Preserve, creating a contiguous wilderness covering 12 or 13 million acres, depending on the alternative. Much of this area would be comprised of the existing Wrangell-St. Elias National Park and Preserve, which is currently approximately 9.7 million acres in size. Alternatives 2, 5, 6, 7, and 8 would connect the Glacier Bay and Wrangell-St. Elias

National Park and Preserves. Alternatives 1, 3, and 4 would also connect these National Parks and Preserves if LUD II areas are considered.

Alternatives 3, 4, 6, 7, and 8 would connect the existing Tracy Arm-Fords Terror and Stikine-LeConte Wildernesses, creating a contiguous wilderness ranging from 1.6 to 2.3 million acres in size, depending on the alternative. Alternative 8 would also connect these two areas with the Misty Fjords National Monument Wilderness to the south, forming a contiguous mainland wilderness over 7 million acres in size.

### **Productive Old-Growth Forest**

Productive old growth provides essentially all of the highly important habitats and the preponderance of the moderately important habitats for the wildlife species of concern on the Tongass (including the management indicator species and those with viability concerns). In 1954, when commercial logging was initiated on the Tongass, the Forest contained approximately 5.4 million acres of productive old growth. Today, there are 5.0 million acres left (92 percent of the original acres). Based on implementing the current Forest Plan, there would be 4.5 million acres remaining after 120 years, when all productive old growth considered suitable for timber management by the Forest Plan is expected to have been harvested.

Under Alternatives 1, 2, and 4, the minimum amount of productive old growth that would remain after all suitable lands are harvested would be the same (4.5 million acres) as under the 1997 (current) Forest Plan (Table 2-25). Under Alternatives 3 and 5, this acreage would increase slightly to 4.6 million acres. Alternative 7 would result in 4.7 million acres, and Alternatives 6 and 8 would result in 4.8 million acres after all suitable lands have been harvested. These amounts represent between 83 percent and 89 percent of the original (1954) acreage of productive old growth (Table 2-25).

### **Wildlife Species Viability**

Alternative 11 was the Selected Alternative in the 1997 Tongass Forest Plan Revision Final EIS. With some modification, it is being implemented as the current Forest Plan. All SEIS alternatives are being analyzed using the current Forest Plan as the baseline. Alternative 11 from the 1997 Final EIS was the Selected Alternative for the 1997 Forest Plan Revision because it represented an explicit attempt to address general, as well as specific, issues related to wildlife viability and conservation planning. Specifically, this alternative met the conservation planning measures considered important to sustain viable populations of the Alexander Archipelago wolf and Queen Charlotte goshawk as identified in interagency conservation assessments. The 1997 Final EIS Record of Decision concluded that because of its Forest-wide old-growth conservation strategy and Forest-wide standards and guidelines, Alternative 11 would provide an amount and distribution of habitat adequate to maintain viable populations of vertebrate species across the Tongass and to maintain the diversity of plant and animal communities.

Under the SEIS alternatives, the level of protection would be the same or improved, relative to Alternative 11 and the current Forest Plan. Based on the number of acres recommended for long-term protection as wilderness or LUD II designations, Alternatives 1, 2, and 4 are essentially the same as the current Forest Plan. Alternatives 3, 5, 7, 8, and 6, in order of increasing amount of acres protected for the long-term (Tables 2-24 and 2-25), would result in an even higher likelihood of maintaining viable well-distributed populations of old growth-associated species across the Tongass National Forest.

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### **Ecoregion, Biogeographic Province, and Ecological Subsection Representation**

Two ecoregions cover the Tongass National Forest: the Northern Pacific Coastal Forest and the Pacific Coastal Mountain Tundra and Ice Fields (Ricketts et al., 1999). These two ecoregions extend from eastern Kodiak Island to the southern end of the Alaska panhandle. Approximately 19 percent of the Northern Pacific Coastal Forest and 37 percent of the Pacific Coastal Mountain Tundra and Ice Fields ecoregion are presently in reserves (DeVelice and Martin, 2001). The portions of both of these areas protected in wilderness are well above the 12 percent threshold considered by some authorities (e.g., Conservation of Arctic Flora and Fauna, 1994; World Commission on Environment and Development, 1987) as the minimum area for representation (DeVelice and Martin, 2001). Under the SEIS alternatives, the portion of these ecoregions protected in wilderness would remain the same or would increase.

Alternatives 1 and 2 are essentially the same as the current Forest Plan in terms of amount of area in reserves. Alternatives 3, 4, and 5 would increase the percentage in reserves to 23, 21, and 26 percent, respectively, for the Northern Pacific Coastal Forest and to 38 percent for the Pacific Coastal Mountain Tundra and Ice Fields ecoregion (Table 2-25). Alternative 7 would result in these percentages increasing to 33 and 43 percent, respectively. Alternatives 6 and 8 would protect 50 and 49 percent of these ecoregions in reserves, respectively.

The Tongass National Forest can also be subdivided into 21 biogeographic provinces, characterized by similar species composition, similar patterns of distribution for many species, similar geologic barriers and historic events (such as glaciation), and similar climatic conditions. Using the 12 percent threshold identified above as a benchmark for evaluation, 18 of the 21 biogeographic provinces on the Tongass presently have more than 12 percent of their area protected in wilderness, wilderness national monument, or LUD II. Under the SEIS alternatives, the portion of these areas protected in wilderness would remain the same or would increase. The number of biogeographic provinces with more than 12 percent of their total area protected in wilderness, wilderness national monument, or LUD II would be 18 under Alternatives 1 and 2, 19 under Alternatives 3 and 4, and all 21 under Alternatives 5 through 8 (Table 2-25).

The ecosystems of the Tongass can be examined on a finer scale by subdividing the Tongass into 73 ecological subsections (Nowacki et al., 2001). Ecological subsections are delineated based on surficial geology, lithology, geomorphic process, soil groups, subregional climate, and potential natural communities (climax vegetation). Currently, 56 of the 73 ecological subsections have some degree of representation in wilderness, national monument, or LUD II areas. This proportion would continue under Alternatives 1 and 2. The number of ecological subsections having some level of Congressional protection would increase to 61 under Alternatives 3 and 4, 62 under Alternative 5, 65 under Alternative 7, and all 73 under Alternatives 6 and 8.

### **Key Issue 2 – Additional wilderness designation will affect the social and economic well-being of the communities of Southeast Alaska.**

The communities of Southeast Alaska depend on the Tongass National Forest in various ways, including employment in natural resource-based industries, as well as subsistence hunting and fishing. Natural amenities and recreation opportunities associated with the Tongass also play an important role in the quality of life of many Southeast Alaskans.

This issue focuses on the social and economic effects of recommended wilderness designation on communities in Southeast Alaska. There are three central themes to this issue: natural resource-based industry, transportation and utility projects, and the regional economy and local communities.

### **Natural Resource-Based Industry**

#### ***Wood Products***

The wood products analysis is divided into short- and long-term effects. The short-term effects analysis focuses on the existing Tongass timber sale volume under contract (i.e., National Forest timber sales that have been sold but not yet harvested) and proposed sales that are not yet under contract. The long-term effects analysis focuses on potential changes to the Allowable Sale Quantity (ASQ), which is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period.

**Short-term Effects.** The Forest Service had approximately 295 MMBF of timber under contract in September 2002. Existing volumes under contract likely represent the vast majority of, if not the entire, short-term timber supply for the sawmills located in Southeast Alaska. Alternatives 1, 2, and 4 would have no effect on these sales. Alternatives 3 and 5 would both affect approximately 2 percent (6 MMBF), while Alternative 7 would affect approximately 8 percent (23 MMBF). Alternatives 6 and 8 would affect 61 percent (188 MMBF) and 58 percent (172 MMBF) of the total volume under contract, respectively (Table 2-25).

The effects on proposed sales that are not yet under contract would be similar. Alternatives 1, 2, and 4 would have no effect on the proposed sale area, and Alternatives 6 and 8 would affect the largest area, approximately 60 percent (912 MMBF) and 57 percent (868 MMBF), respectively (Table 2-25).

The effects on these sales go beyond the loss of acres volume. Sales are designed to constitute an economic package. When portions of a sale are removed, it may not be economically feasible to harvest the remaining portions. Also, portions of sales not located in a roadless area allocated to a non-development LUD may not be available for harvest because the road that would access that timber may go through the roadless area, or because the planned log transfer facility may be in the roadless area.

**Long-term Effects.** Suitable acres would vary from approximately 664,000 under Alternatives 1, 2, and 4 to 344,000 acres and 351,000 acres under Alternatives 6 and 8, respectively (Table 2-25). The percent reductions in suitable acres on individual ranger districts would vary substantially by alternative. Relative effects under Alternatives 6 and 8 would be most pronounced on the Juneau Ranger District (89 percent reduction), but would also be high in the Craig, Sitka, Petersburg, Ketchikan, Hoonah, Wrangell, and Yakutat Ranger Districts (46 to 60 percent reductions). The largest absolute reduction (-87,000 acres) would occur on the Petersburg Ranger District.

The average annual ASQ over the first decade would range from 259 MMBF under Alternatives 1, 2, and 4, to 92 and 96 MMBF under Alternatives 6 and 8, respectively (Table 2-25). The ASQ (which is not a target, but a ceiling on how much timber may be sold) is divided into two non-interchangeable components (NICs) based on harvest economics and available technology. The NIC I portion is the amount considered likely to be economically viable over the next decade. The NIC I ASQ for each of the alternatives would range from 100 percent of the current Forest Plan level under Alternatives 1, 2, and 4, to a low of 35 percent of the current Forest Plan level under

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Alternative 6. The NIC I component of the ASQ is presented for each alternative in Table 2-25.

### ***Mining***

Approximately 148 locatable mineral resource deposits have been identified on the Tongass and grouped into 52 identified mineral activity tracts. The percentage of these areas that are located in wilderness and other restrictive LUDs would range from 25 percent under Alternative 1 to 90 percent under Alternative 8. The percentage of areas that are believed to have undiscovered mineral resources that would be located in wilderness and other restrictive LUDs ranges from 35 percent under Alternative 1 to 92 percent under Alternative 8 (Table 2-25).

Allocating areas to Recommended Wilderness would not prohibit existing or proposed mining activities, but may make minerals more costly to develop. If recommended areas are designated as wilderness by Congress, then these areas would be closed to mineral entry, subject to valid existing mineral rights.

### ***Recreation and Tourism***

The Forest Service's Recreation Opportunity Spectrum (ROS) system is intended to identify the appropriate combination of activities, settings, and experiences for different types of recreation experience, ranging from primitive to urban settings. Viewed in terms of total Forest-wide acres over a 150-year planning horizon, Alternatives 6 and 8 would provide the greatest amount of primitive and semi-primitive opportunities, with little change occurring from the existing condition. They would result in approximately 12 percent of the Tongass in roaded ROS settings after 150 years. Alternatives 1, 2, and 4 would result in the greatest shift from the existing condition to roaded opportunities; roaded settings would represent approximately 22 percent of the ROS settings on the Tongass after 150 years. Alternatives 3, 5, and 7 would be intermediate, resulting in 17 to 21 percent of the Tongass in roaded ROS settings after 150 years, respectively (Table 2-25).

Commercial recreation businesses serving large numbers of clients (more than 12 persons) could be negatively affected if one or more of the areas they regularly use is ultimately designated as wilderness. Outfitter/guides serving groups with more than 12 persons currently account for a large number of visitors to the Forest, but this use tends to be concentrated in a relatively few locations. Businesses with these types of operations in areas designated wilderness could either be displaced to other areas or forced to change their operations. Displacing large guided tours from one location to another could also negatively affect users at other locations. Potential effects would be largest under Alternative 8, which would allocate all inventoried roadless areas to Recommended Wilderness. Limiting the size of groups could, however, benefit other, smaller outfitter/guide businesses that consider high concentrations of other recreationists, particularly group sizes over 50, as detrimental to their business.

The existing wilderness and other wildland areas are expected to continue to offer a wide range of opportunities for commercial recreation businesses under all alternatives.

The percent of existing recreation place acres important for tourism that would be located in wilderness would range from 46 percent under Alternative 1 to 93 percent under Alternative 8. The percent of Tongass acres compatible with major tourism developments would range from 20 percent under Alternatives 1 and 2 to 1 percent under Alternatives 6 and 8 (Table 2-25).

## **Transportation and Utility Projects**

Alternatives 1 through 7 would have relatively little effect on the implementation of the 1999 Southeast Alaska Transportation Plan (SATP, as amended) because most planned developments would take place in existing developed areas. Alternative 8 could, however, affect development of the proposed South Wrangell ferry terminal, as well as new road construction along all the potential transportation corridors identified in the SATP. Alternatives 3, 5, and 7 would limit the potential for highway construction through the Cleveland Peninsula corridor, and Alternatives 2, 5, 6, and 7 would affect the East Lynn Canal route connecting Juneau with Skagway.

Reclassifying land to Recommended Wilderness and eventual designation as wilderness could also affect opportunities for other potential regional transportation developments that are not included in the SATP. Alternatives 6 and 7 would restrict the potential for a road connection along the west side of Lynn Canal, as would Alternative 8. Alternatives 3, 5, 6, 7, and 8 would also affect development of a road connection between Kake and Petersburg via Duncan Canal. Alternative 8 would also affect a number of other potential transportation routes in Southeast Alaska, including two Juneau-to-Canada routes along Taku Inlet; the East Bradfield River corridor connection to the Cassiar Highway, and several other road corridors near Wrangell; a coastal alignment connecting Thorne Bay and Coffman Cove; a road connecting North Whale Pass and the East Prince of Wales road; a road to the southeastern tip of the Kasaan Peninsula; a potential route connecting Hoonah and Tenakee Springs; and a short connector route between the Chatham and Corner Bay road systems.

Alternatives 1 through 4 would affect relatively few potential power transmission line development opportunities. Alternatives 5, 6, 7, and 8 would, however, restrict a number of potential future projects; Alternative 8 would have the greatest potential effect. Alternative 8 is the only alternative that could potentially restrict the development of the Swan Lake-Lake Tye Intertie Project.

## **Regional Economy and Local Communities**

### ***Regional Employment and Income***

**Short-Term Effects.** Reductions in the volume under contract would affect both sawmill and logging employment. A potential loss of mill jobs would, for the most part, be concentrated in the community where the mill is located because the majority of mill workers reside close to their place of work. Potential reductions in logging employment are more difficult to tie to specific communities due to the mobility of sales and mobility of operations. There would be no effect on the areas containing timber volume under contract under Alternatives 1, 2, and 4. Potential reductions in direct employment under the other alternatives would range from approximately 25 job-years under Alternatives 3 and 5 to approximately 731 job-years under Alternative 6. Projected overall direct job losses under Alternatives 7 and 8 would be 94 and 668 job-years, respectively (Table 2-25).

Estimated changes in short-term sawmill and logging employment are presented in job-years; each job-year is the equivalent of one job lasting for 1 year. This potential employment loss would not all occur in one year and estimated job totals do not directly translate into estimated numbers of affected workers.

The preceding discussion implicitly assumes a linear relationship between reductions in the volume under contract and sawmill employment, with a 1 percent decline in harvest resulting in a 1 percent decline in sawmill employment. This type of relationship is also assumed with respect to logging employment. There are a

## 2 Alternatives

number of factors that suggest that this type of direct relationship rarely exists. There is a possibility that the short-term supply reductions projected under the more restrictive alternatives could, in conjunction with current market conditions, result in the closure of one or more of the remaining sawmills in the region. If all remaining sawmills closed, approximately 431 and 413 direct sawmill and logging jobs would be lost, respectively. These estimates are based on the assumption that 212 MMBF is being harvested (the projected NIC I level under the No-Action Alternative). Total job loss (direct, indirect, and induced) would be approximately 1,694 jobs. This represents a worst-case scenario that assumes all projected Tongass-related sawmill and logging jobs would be lost.

**Long-term Effects.** Long-term effects for the purposes of this analysis are considered to be those effects that would occur over the next 10 years. Direct employment in the wood products and recreation and tourism industries are estimated to range from 5,497 jobs under Alternative 6 to 6,034 jobs under Alternatives 1, 2, and 4 (Table 2-25). Most of the difference between these two values (537 jobs) is caused by differences in timber-related employment. Recreation and tourism employment shows much less variation across the alternatives, with a difference between high and low employment levels of less than 10 direct jobs. Direct earnings follow a similar pattern, as do total employment and earnings. Total wood products and recreation and tourism employment (direct, indirect, and induced) would range from 7,015 jobs under Alternative 6 to 8,100 jobs under Alternatives 1, 2, and 4.

The employment and income estimates for the wood products sector assume that the entire NIC I component volume projected for each alternative for the first decade following implementation would be harvested. It would, however, take unprecedented conditions for the entire NIC I component of the ASQ to be sold and harvested. Realistically, approximately 70 percent of the estimated NIC I volume can be expected to be sold and harvested. Recreation and tourism employment and income estimates are for nonresident recreation and tourism activity only. The recreation and tourism analysis is based on the future supply of and demand for recreation opportunities by setting. Differences in projected levels of recreation use between alternatives are small because the Semi-primitive Motorized ROS setting is the only setting where demand exceeds supply in the first decade of this analysis, and the effects related to harvest activity have had little time to accumulate.

Projected recreation and tourism employment is expected to increase by approximately 17 percent from 2000 levels under all of the alternatives. The majority of this projected increase is due to the projected change in non-Tongass, nonresident, recreation-related employment, which does not vary by alternative. Changes in projected wood products employment range from a loss of approximately 52 and 50 percent of total 2000 employment under Alternatives 6 and 8, respectively, to a gain of about 6 percent under Alternatives 1, 2, and 4.

Congressional wilderness designation would not affect mining claims with existing rights, but designated areas would be withdrawn from future mineral exploration and development. Future mining employment and income could be reduced accordingly, depending on whether the affected resources would be economical to develop in the future.

Wilderness designation could affect regional transportation projects, which could, in turn, restrict transportation access to affected communities and the region as a whole. These restrictions could indirectly affect employment and income by limiting community and regional economic development opportunities. Restrictions on power transmission corridors could also affect future community development, as well as potentially limiting the provision of basic services to existing community residents and businesses.

### **Local Communities**

**Employment.** Timber and logging activities play an important role in at least 10 of Southeast Alaska's 32 communities. The majority of these communities are located on Prince of Wales Island, including Coffman Cove, Craig, Hollis, Klawock, Naukati Bay, Thorne Bay, and Whale Pass. Other communities with a relatively heavy reliance on wood products employment include Wrangell, Ketchikan, and Saxman.

These communities would be affected by reductions in wood products employment. Under the worst-case, short-term scenario that would result in closure of the region's remaining larger mills and a partial reduction or complete halt in Tongass-related logging activity, these communities would likely be significantly affected. In some cases, this could result in relatively large numbers of residents moving elsewhere to look for work. Communities with relatively high concentrations of employment in the wood products sector would also be negatively affected by reductions in long-term harvest.

**Subsistence.** The subsistence analysis conducted for the 1997 Forest Plan Revision Final EIS used deer as the main "indicator" species for potential subsistence resource consequences. This analysis indicated that deer harvest capabilities in certain portions of the Tongass may not be adequate to sustain current levels of harvest, and that implementation of any Forest Plan alternative possibly could significantly restrict hunting.

Under the alternatives analyzed in this SEIS, the possibility of a significant restriction, resulting from a change in abundance or distribution, would be the same as, or less than, the possibility under Alternative 11 (Selected Alternative) of the 1997 Forest Plan Revision Final EIS. In the short term, the risk of a significant restriction would be about the same under any of the SEIS alternatives. This is because the effects of past harvest would override the effects of new harvest during the next 10 years. In the long term, those alternatives that reduce areas available for future timber harvesting the most would result in the largest reduction in risk. Alternatives 1, 2, and 4 would result in the same possibility of a significant restriction relative to Alternative 11 of the 1997 Final EIS because they would not produce a change in old-growth harvest rates. Alternatives 3, 5, and 7 would reduce the possibility of a significant restriction with reductions in development LUD acreage of 7, 16, and 31 percent, respectively. Alternatives 6 and 8 would result in a larger reduction in the possibility of a significant restriction with reductions in development LUD acreage of 70 and 69 percent, respectively.

None of the alternatives would directly limit the use of public lands for subsistence purposes. Historical access (by foot, boat, and floatplane) would be available under all alternatives for present and proposed foreseeable future activities.

**Recreation.** Designating areas wilderness would have little immediate effect on resident recreationists, but could limit the types of recreation that may be pursued in the future. Wilderness designation would limit types of facility and trail development, which could affect the type of future recreation opportunities available to those communities located close to wildernesses. Wilderness designation could limit the development of commercial recreation facilities and restrict use by outfitter/guides that serve large groups of clients. Conversely, designating areas wilderness would retain their natural and wild character, a major attraction to the region for residents and visitors. This designation would also protect areas from being developed and benefit certain groups of recreationists and outfitter/guides.

Almost half of the inventoried recreation places on the Tongass are located within 20 miles of one or more communities. The proportion of these areas that would be Recommended Wilderness or wilderness would range from 22 percent under Alternative 1 to 81 percent under Alternative 8 (Table 2-25). This designation would

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affect future management of these areas and may be viewed positively or negatively, depending on the place and user group.

**Table 2-26  
Summary of Effects Matrix**

Value/Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
<b>PHYSICAL AND BIOLOGICAL ENVIRONMENT</b>								
<b>Soils</b>								
<b>Soil Productivity:</b> Changes in soil productivity are proportional to the extent of road development, with road development removing land from productive status.	Cumulative roaded acres are estimated to increase by 3,195 acres after 10 yrs and 8,351 acres after 50 yrs. These acreages represent <0.1% of the TNF.	Cumulative roaded acres are estimated to increase by the same amount as under Alternative 1 after 10 and 50 yrs.	Cumulative roaded acres are estimated to increase by 2,850 acres after 10 yrs and 7,449 acres after 50 yrs. These acreages represent <0.1% of the TNF.	Cumulative roaded acres are estimated to increase by the same amount as under Alternative 1 after 10 and 50 yrs.	Cumulative roaded acres are estimated to increase by 2,445 acres after 10 yrs and 6,391 acres after 50 yrs. These acreages represent <0.1% of the TNF.	Cumulative roaded acres are estimated to increase by 690 acres after 10 yrs and 1,804 acres after 50 yrs. These acreages represent <0.1% of the TNF.	Cumulative roaded acres are estimated to increase by 1,920 acres after 10 yrs and 5,018 acres after 50 yrs. These acreages represent <0.1% of the TNF.	Cumulative roaded acres are estimated to increase by 750 acres after 10 yrs and 1,960 acres after 50 yrs. These acreages represent <0.1% of the TNF.
<b>Soil Erosion:</b> The amount of soil erosion is proportional to the extent of road development. However, Forest Plan S&Gs are expected to strongly limit soil erosion and, in particular, the amount reaching streams.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.	See cumulative roaded acres under Soil Productivity as an index of potential for effects from soil erosion.
<b>Karst</b>								
<b>Karst Resources:</b> Effects on karst resources can be estimated based on karst vulnerability mapping. Those areas mapped as high vulnerability are fully protected by Forest Plan S&Gs. More limited S&Gs apply to the other karst areas; therefore, effects on these other areas are proportional to the amount of carbonate soils in Development LUDs.	62 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 38 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	62 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 38 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	62 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 38 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	62 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 38 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	63 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 37 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	69 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 31 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	64 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 36 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.	68 percent of roadless area karst resources are either in Non-Development LUDs or are currently mapped as high vulnerability and are fully protected by Forest Plan S&Gs. Of the remaining 32 percent, some will be identified as high vulnerability during project-level mapping and the remaining medium and low vulnerability karst could be affected by timber management.
<b>Water</b>								
<b>Stream Flows:</b> Effects on stream flows are expected to vary by watershed and are difficult to predict, but are expected to be small. Any effects that do occur are expected to be proportional to the extent of road development and harvest.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.
<b>Wetlands:</b> Effects of timber harvest and road construction are proportional to the extent of road development and harvest.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.	See cumulative roaded acres under Soil Productivity and road development and timber harvest measures under Fish.
<b>Public Water Supplies:</b> The supply and quality of water produced by municipal watersheds.	No change.							
<b>Fish</b>								
<b>Fish Passage:</b> Effects of road-stream crossings on fish passage are proportional to the length of roads constructed. However, Forest Plan S&Gs and monitoring are expected to reduce this impact to low levels for all alternatives over the long term.	Cumulative road development after 50 yrs is expected to increase by 2,784 miles. This represents a 56% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 2,784 miles. This represents a 56% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 2,483 miles. This represents a 50% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 2,784 miles. This represents a 56% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 2,130 miles. This represents a 43% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 601 miles. This represents a 12% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 1,673 miles. This represents a 33% increase over existing conditions.	Cumulative road development after 50 yrs is expected to increase by 653 miles. This represents a 13% increase over existing conditions.
<b>Fish Habitat:</b> Impacts on fish habitat can be measured by the amount of timber harvest activity. However, Forest Plan S&Gs associated with riparian areas, wetlands, beach and estuary fringe, etc., are expected to reduce these effects to nonsignificant levels.	Maximum timber harvest per decade is 88,790 acres.	Maximum timber harvest per decade is 88,790 acres.	Maximum timber harvest per decade is 81,020 acres.	Maximum timber harvest per decade is 88,790 acres.	Maximum timber harvest per decade is 71,750 acres.	Maximum timber harvest per decade is 31,570 acres.	Maximum timber harvest per decade is 59,520 acres.	Maximum timber harvest per decade is 32,780 acres.
<b>Fish Habitat Enhancement:</b> Fish enhancement projects, such as fish passage, stream and lake stocking, and lake fertilization, would not likely be compatible with wilderness objectives. The level of restriction would be roughly proportional to the number of acres recommended for wilderness.	5.8 million acres would remain Wilderness under this alternative.	Wilderness and Recommended Wilderness would total 6.5 million acres under this alternative.	Wilderness and Recommended Wilderness would total 6.8 million acres under this alternative.	Wilderness and Recommended Wilderness would total 6.5 million acres under this alternative.	Wilderness and Recommended Wilderness would total 7.8 million acres under this alternative.	Wilderness and Recommended Wilderness would total 9.0 million acres under this alternative.	Wilderness and Recommended Wilderness would total 10.4 million acres under this alternative.	Wilderness and Recommended Wilderness would total 15.4 million acres under this alternative.
<b>Biodiversity</b>								
<b>Old-Growth Forest:</b> One measure of effects on biodiversity is the amount of old-growth forest available for harvest. The 1997 Forest Plan's old-growth forest conservation strategy is designed to conserve habitats of species with the greatest viability concerns. In addition, S&Gs protect specific areas (e.g., beach and estuary fringe, etc.) and provide habitat connectivity in those areas with Development LUD allocations.	Approximately 483,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 83 percent of the POG identified in 1954 would remain in 2120, about 90 percent of the current amount.	Same as Alternative 1.	Approximately 439,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 84 percent of the POG identified in 1954 would remain in 2120, about 91 percent of the current amount.	Same as Alternative 1.	Approximately 400,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 85 percent of the POG identified in 1954 would remain in 2120, about 92 percent of the current amount.	Approximately 172,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 89 percent of the POG identified in 1954 would remain in 2120, about 97 percent of the current amount.	Approximately 334,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 86 percent of the POG identified in 1954 would remain in 2120, about 93 percent of the current amount.	Approximately 179,000 acres across all biogeographic provinces would be suitable and available for harvest. Assuming all suitable and available POG is harvested over the next 120 years, approximately 89 percent of the POG identified in 1954 would remain in 2120, about 97 percent of the current amount.
<b>Wildlife</b>								
<b>Management Indicator Species:</b> Many of the MIS are covered by specific and general S&Gs in the 1997 Forest Plan. A Forest-wide analysis of general habitat changes is not sufficient to reliably predict alternative effects. Species-specific and other S&Gs in the current Forest Plan can, however, be relied upon to maintain some of the habitat features and other factors necessary for these species under all alternatives.	Habitat features and other factors necessary for MIS would be managed in accordance with the current Forest Plan.	Same risk as Alternative 1.	Slightly less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Same risk as Alternative 1.	Slightly less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.

**Table 2-26  
Summary of Effects Matrix (Continued)**

Value/Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	
<b>Wildlife Species Viability:</b> The 1997 Forest Plan specifically addressed wildlife viability conservation planning and was projected to have a moderately high likelihood of maintaining viable well-distributed old-growth associated species. Conversion of development LUDs to LUDs with long-term protection would, however, provide further benefits to many wildlife species.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 22 percent of the Forest would be in Development LUDs.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 22 percent of the Forest would be in Development LUDs.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 20 percent of the Forest would be in Development LUDs, 2 percent less than under Alternative 1.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 22 percent of the Forest would be in Development LUDs.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 18 percent of the Forest would be in Development LUDs, 4 percent less than under Alternative 1.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 7 percent of the Forest would be in Development LUDs, 15 percent less than under Alternative 1.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 15 percent of the Forest would be in Development LUDs, 7 percent less than under Alternative 1.	Wildlife species viability would be managed in accordance with the 1997 Forest Plan. 7 percent of the Forest would be in Development LUDs, 15 percent less than under Alternative 1.	
<b>Threatened, Endangered, and Sensitive Species</b>									
<b>Threatened and Endangered Species:</b> USFWS and NMFS concluded that the 1997 Forest Plan was "not likely to adversely affect" threatened or endangered species on the Tongass. The SEIS alternatives are all at least as protective as the Forest Plan.	Based on USFWS and NMFS review of the 1997 Forest Plan alternatives, this alternative is "not likely to adversely affect" threatened or endangered species on the Tongass.	Same as Alternative 1.	Same as or less risk than Alternative 1.	Same as Alternative 1.	Same as or less risk than Alternative 1.	Same as or less risk than Alternative 1.	Same as or less risk than Alternative 1.	Same as or less risk than Alternative 1.	
<b>Sensitive Species:</b> Specific and general S&Gs in the 1997 Forest Plan provide protection for sensitive species' habitat. The SEIS alternatives are all at least as protective as the Forest Plan.	Specific and general S&Gs in the Forest Plan would continue to provide protection for sensitive species' habitat. See potential acres of POG harvest under Old-growth Forest.	Same as Alternative 1.	Same as or less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Same as Alternative 1.	Slightly less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest.	Less risk than Alternative 1. See potential acres of POG harvest under Old-growth Forest. Wilderness designation under this alternative could, however, limit Fish Creek Chum Salmon hatchery activities and/or the ability to conduct improvement projects.	
<b>HUMAN USES AND LAND MANAGEMENT</b>									
<b>Timber</b>									
<b>Suitable Forest Lands:</b> Approximately 2.3 million acres on the Tongass are tentatively suitable for timber production. Under the current Forest Plan, 664,000 of the tentatively suitable acres are estimated to be suitable and available.	664,000 acres are estimated to be suitable and available.	664,000 acres are estimated to be suitable and available.	620,000 acres are estimated to be suitable and available. A reduction of 7 percent compared to Alternative 1.	664,000 acres are estimated to be suitable and available.	589,000 acres are estimated to be suitable and available. A reduction of 11 percent compared to Alternative 1.	344,000 acres are estimated to be suitable and available. A reduction of 48 percent compared to Alternative 1.	521,000 acres are estimated to be suitable and available. A reduction of 22 percent compared to Alternative 1.	351,000 acres are estimated to be suitable and available. A reduction of 47 percent compared to Alternative 1.	
<b>Allowable Sale Quantity (ASQ):</b> The ASQ is the maximum quantity of timber that may be scheduled from Suitable Forest lands for a 10-year period expressed as an annual average.	The ASQ for the next decade is 259 MMBF.	The ASQ for the next decade is 259 MMBF. The same as Alternative 1.	The ASQ for the next decade is 236 MMBF. A reduction of 9 percent compared to Alternative 1.	The ASQ for the next decade is 259 MMBF. The same as Alternative 1.	The ASQ for the next decade is 209 MMBF. A reduction of 19 percent compared to Alternative 1.	The ASQ for the next decade is 92 MMBF. A reduction of 64 percent compared to Alternative 1.	The ASQ for the next decade is 174 MMBF. A reduction of 33 percent compared to Alternative 1.	The ASQ for the next decade is 96 MMBF. A reduction of 63 percent compared to Alternative 1.	
<b>Non-Interchangeable Component I:</b> NIC I is the portion of the ASQ that may be harvested using existing logging systems.	NIC I for the next decade is 212 MMBF.	NIC I for the next decade is 212 MMBF. The same as Alternative 1.	NIC I for the next decade is 194 MMBF. A reduction of 8 percent compared to Alternative 1.	NIC I for the next decade is 212 MMBF. The same as Alternative 1.	NIC I for the next decade is 171 MMBF. A reduction of 19 percent compared to Alternative 1.	NIC I for the next decade is 75 MMBF. A reduction of 65 percent compared to Alternative 1.	NIC I for the next decade is 143 MMBF. A reduction of 33 percent compared to Alternative 1.	NIC I for the next decade is 79 MMBF. A reduction of 63 percent compared to Alternative 1.	
<b>Existing Timber Volume Under Contract:</b> Additional wilderness or LUD II designation could affect timber sales under contract. 58 separate sales with a total volume of approximately 295 MMBF are presently under contract.	There would be no effect on the volume under contract under this alternative.	There would be no effect on the volume under contract under this alternative.	Approximately 2 percent of the volume under contract would be affected.	There would be no effect on the volume under contract under this alternative.	Approximately 2 percent of the volume under contract would be affected.	Approximately 64 percent of the volume under contract would be affected.	Approximately 8 percent of the volume under contract would be affected.	Approximately 57 percent of the volume under contract would be affected.	
<b>Minerals</b>									
<b>Mineral Resources:</b> Additional wilderness or LUD II designation would affect the economic availability of identified mineral tracts and undiscovered mineral resources. (Areas in Recommended Wilderness would remain open to mineral development until designated withdrawn by Congress)	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	<b>Identified Mineral Tracts:</b> Withdrawn: 25 percent	
	Recommended Withdrawn: 0 percent	Recommended Withdrawn: 6 percent	Recommended Withdrawn: 6 percent	Recommended Withdrawn: 2 percent	Recommended Withdrawn: 12 percent	Recommended Withdrawn: 18 percent	Recommended Withdrawn: 28 percent	Recommended Withdrawn: 65 percent	
	Higher Cost Open Areas: 29 percent	Higher Cost Open Areas: 23 percent	Higher Cost Open Areas: 27 percent	Higher Cost Open Areas: 27 percent	Higher Cost Open Areas: 27 percent	Higher Cost Open Areas: 21 percent	Higher Cost Open Areas: 33 percent	Higher Cost Open Areas: 2 percent	
	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent	<b>Undiscovered Mineral Areas:</b> Withdrawn: 35 percent
	Recommended Withdrawn: 0 percent	Recommended Withdrawn: 3 percent	Recommended Withdrawn: 5 percent	Recommended Withdrawn: 4 percent	Recommended Withdrawn: 12 percent	Recommended Withdrawn: 24 percent	Recommended Withdrawn: 31 percent	Recommended Withdrawn: 57 percent	
	Higher Cost Open Areas: 41 percent	Higher Cost Open Areas: 38 percent	Higher Cost Open Areas: 37 percent	Higher Cost Open Areas: 38 percent	Higher Cost Open Areas: 33 percent	Higher Cost Open Areas: 24 percent	Higher Cost Open Areas: 18 percent	Higher Cost Open Areas: 2 percent	
<b>Transportation and Utilities</b>									
<b>National Forest Transportation System Roads:</b> Additional wilderness or LUD II designation would restrict timber harvest, which would, in turn, affect new road construction.	Approximately 106 miles would be constructed each year over the first decade resulting in a cumulative total of 6,073 miles at the end of the decade. The cumulative total at the end of 50 years would be 7,792 miles.	Projected road construction is the same as under Alternative 1.	Approximately 95 miles would be constructed each year over the first decade resulting in a cumulative total of 5,958 miles at the end of the decade. The cumulative total at the end of 50 years would be 7,491 miles. A reduction of 4 percent compared to Alternative 1.	Projected road construction is the same as under Alternative 1.	Approximately 82 miles would be constructed each year over the first decade resulting in a cumulative total of 5,823 miles at the end of the decade. The cumulative total at the end of 50 years would be 7,138 miles. A reduction of 8 percent compared to Alternative 1.	Approximately 23 miles would be constructed each year over the first decade resulting in a cumulative total of 5,238 miles at the end of the decade. The cumulative total at the end of 50 years would be 5,609 miles. A reduction of 28 percent compared to Alternative 1.	Approximately 64 miles would be constructed each year over the first decade resulting in a cumulative total of 5,648 miles at the end of the decade. The cumulative total at the end of 50 years would be 6,681 miles. A reduction of 14 percent compared to Alternative 1.	Approximately 25 miles would be constructed each year over the first decade resulting in a cumulative total of 5,258 miles at the end of the decade. The cumulative total at the end of 50 years would be 5,661 miles. A reduction of 27 percent compared to Alternative 1.	
<b>Log Transfer Facilities:</b> The 1997 Forest Plan FEIS estimated that 200 to 350 acres of benthic habitat could be adversely affected by new LTFs over the next 30 years. The effects under the SEIS alternatives would be the same or less.	200 to 350 acres of benthic habitat could be adversely affected over the next 30 years.	Same as Alternative 1.	Same as or less than Alternative 1.	Same as Alternative 1.	Same as or less than Alternative 1.	Same as or less than Alternative 1.	Same as or less than Alternative 1.	Same as or less than Alternative 1.	
<b>Southeast Alaska Transportation Plan (SATP):</b> Additional wilderness designation could affect planned ferry terminal and road construction.	There would be no effect on the SATP under this alternative.	The East Lynn Canal route would be affected under this alternative.	The potential Cleveland Peninsula corridor would be affected under this alternative.	There would be no effect on the SATP under this alternative.	The East Lynn Canal route and the potential Cleveland Peninsula corridor would be affected under this alternative.	The East Lynn Canal route would be affected under this alternative. LUD II designation would not preclude development of regional transportation linkages, but it may make development more difficult.	The East Lynn Canal route and the potential Cleveland Peninsula corridor would be affected under this alternative.	Development of the South Wrangell ferry terminal and road connection could be affected. Highway construction along all the potential transportation corridors identified in the SATP would be affected.	

**Table 2-26  
Summary of Effects Matrix (Continued)**

Value/Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
<b>Other Regional Transportation Opportunities:</b> Additional wilderness designation could affect other potential regional transportation corridors that are not included in the 1999 SATP.	There would be no effect on the other regional transportation opportunities identified in the SEIS under this alternative.	There would be no effect on the other regional transportation opportunities identified in the SEIS under this alternative.	The potential Kake to Petersburg (via Duncan Canal) route would be affected under this alternative.	There would be no effect on the other regional transportation opportunities identified in the SEIS under this alternative.	The potential Kake to Petersburg (via Duncan Canal) route would be affected under this alternative.	The potential Kake to Petersburg (via Duncan Canal) and West Lynn Canal routes would be affected under this alternative.	The potential Kake to Petersburg (via Duncan Canal) and West Lynn Canal routes would be affected under this alternative.	Alternative 8 would affect the potential for road development along numerous corridors, including, but not limited to two Juneau-to-Canada routes along Taku Inlet; the East Bradfield River corridor; a coastal alignment connecting Thorne Bay and Coffman Cove; and a road to the southeastern tip of the Kasaan Peninsula.
<b>Power Transmission Lines:</b> Additional wilderness designation could affect potential transmission line development opportunities.	There would be no effect on potential power transmission line opportunities under this alternative.	This alternative would restrict the potential development of transmission lines connecting Tenakee Springs and Sitka/Angoon, and Juneau and Skagway.	One of the potential routes for a transmission line linking Kake with Petersburg would be affected under this alternative.	There would be no effect on potential power transmission line opportunities under this alternative.	Potential routes connecting Tenakee Springs and Sitka/Angoon, Juneau and Skagway, and Kake and Petersburg would be affected under this alternative.	Potential routes connecting Tenakee Springs and Sitka/Angoon, Juneau and Skagway, and Kake and Petersburg would be affected under this alternative.	Potential routes connecting Tenakee Springs and Sitka/Angoon, Juneau and Skagway, and Kake and Petersburg would be affected under this alternative.	Potential routes connecting Tenakee Springs and Sitka/Angoon, Juneau and Skagway, and Kake and Petersburg; potential transmission lines from the Lake Dorothy, Otter Creek, and Sunrise Lake Hydroelectric Projects; development of the Swan Lake-Lake Tyee Intertie; and routes connecting Sitka with Kake and Tenakee Springs with Hoonah could be affected under this alternative.
<b>Lands</b>								
<b>Lands:</b> Additional wilderness or LUD II designation would reduce the pool of land available for future land exchanges with Native Corporations or other entities. Communication sites and three proposed hydroelectric projects could also be affected.	Lands would be managed in accordance with the 1997 Forest Plan under this alternative.	This alternative would have virtually no effect on the pool of land available for future land exchanges or communication site developments. It would have no effect on the proposed hydroelectric projects.	This alternative would have relatively little effect on the pool of land available for future land exchanges or communication site developments. It would have no effect on the proposed hydroelectric projects.	This alternative would have relatively little effect on the pool of land available for future land exchanges or communication site developments. It would have no effect on the proposed hydroelectric projects.	2.0 million acres would be recommended for wilderness under this alternative. This would limit the pool of land available for future land exchanges and restrict potential locations for communication sites. This alternative would have no effect on the proposed hydroelectric projects.	8.9 million acres would be recommended for wilderness or LUD II under this alternative. This would limit the pool of land available for future land exchanges and restrict potential locations for communication sites to areas near existing development. The proposed hydroelectric projects would need to be designed to retain the overall primitive characteristics of the area.	4.6 million acres would be recommended wilderness under this alternative. This would limit the pool of land available for future land exchanges and restrict potential locations for communication sites. This alternative would have no effect on the proposed hydroelectric projects.	9.6 million acres would be recommended wilderness under this alternative. This would limit the pool of land available for future land exchanges and restrict potential locations for communication sites to areas near existing development. The proposed hydroelectric projects would be unlikely to be authorized under this alternative.
<b>Recreation and Tourism</b>								
<b>Recreation Opportunity Spectrum:</b> Current projections suggest that demand currently exceeds supply for Semi-Primitive Motorized settings. The alternatives affect the supply of different recreation settings over time.	Primitive: 56 percent	Primitive: 56 percent	Primitive: 57 percent	Primitive: 56 percent	Primitive: 58 percent	Primitive: 61 percent	Primitive: 59 percent	Primitive: 62 percent
	Semi-Primitive Non-Motorized: 14 percent	Semi-Primitive Non-Motorized: 14 percent	Semi-Primitive Non-Motorized: 15 percent	Semi-Primitive Non-Motorized: 14 percent	Semi-Primitive Non-Motorized: 15 percent	Semi-Primitive Non-Motorized: 18 percent	Semi-Primitive Non-Motorized: 16 percent	Semi-Primitive Non-Motorized: 18 percent
	Semi-Primitive Motorized: 7 Percent	Semi-Primitive Motorized: 7 Percent	Semi-Primitive Motorized: 8 Percent	Semi-Primitive Motorized: 7 Percent	Semi-Primitive Motorized: 8 Percent	Semi-Primitive Motorized: 8 Percent	Semi-Primitive Motorized: 8 Percent	Semi-Primitive Motorized: 8 Percent
	Roaded Natural: 3 percent	Roaded Natural: 3 percent	Roaded Natural: 2 percent	Roaded Natural: 3 percent	Roaded Natural: 2 percent	Roaded Natural: 1 percent	Roaded Natural: 2 percent	Roaded Natural: 1 percent
	Roaded Modified: 19 percent	Roaded Modified: 19 percent	Roaded Modified: 18 percent	Roaded Modified: 19 percent	Roaded Modified: 17 percent	Roaded Modified: 11 percent	Roaded Modified: 15 percent	Roaded Modified: 11 percent
<b>Facilities:</b> Additional wilderness designation could affect public recreation cabins and recreation-related capital improvement projects (CIPs) for 2003-2006.	There would be no effects on public recreation cabins or CIPs (2003-2006) under this alternative.	13 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 1 percent under this alternative.	12 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 1 percent under this alternative.	12 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 1 percent under this alternative.	28 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 4 percent under this alternative.	14 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 2 percent under this alternative.	36 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 5 percent under this alternative.	76 recreation cabins would be in recommended wilderness and CIP costs are projected to increase by 25 percent under this alternative.
<b>Commercial Outfitter/Guide Use:</b> Businesses serving large groups of clients could be affected if one or more of the areas they use are designated wilderness. Limiting group size may, however, benefit other smaller outfitter/guide businesses.	Lands and outfitter/guide use would be managed in accordance with the 1997 Forest Plan under this alternative.	This alternative would have relatively little effect on existing outfitter/guide use patterns.	This alternative would have relatively little effect on existing outfitter/guide use patterns. Spires Roadless Area would, however, be recommended wilderness, limiting helicopter landing tours in that area.	This alternative would have relatively little effect on existing outfitter/guide use patterns. Spires Roadless Area would, however, be recommended wilderness, limiting helicopter landing tours in that area.	2 million acres would be recommended wilderness under this alternative. This could limit existing and future use by large guided parties.	3.2 million acres would be recommended wilderness under this alternative; 5.7 million acres would be recommended LUD II. This could limit existing and future use by large guided parties. Spires Roadless Area would be recommended wilderness under this alternative.	4.6 million acres would be recommended wilderness under this alternative. This could limit existing and future use by large guided parties. Spires Roadless Area would be recommended wilderness under this alternative.	9.6 million acres would be recommended wilderness under this alternative. This could limit existing and future use by large guided parties on most of the Forest. Juneau Icefields, Spires, and Revilla roadless areas would all be recommended wilderness under this alternative, affecting helicopter landing tours in these areas.
<b>Scenery</b>								
<b>Visual Quality Objectives (VQOs):</b> VQOs define the degree to which the natural landscape can be altered. Visual priority routes and use areas are protected under the 1997 Forest Plan. Additional wilderness designation would increase the area managed for retention.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 60 percent of the Forest would be managed under the retention VQO.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 60 percent of the Forest would be managed under the retention VQO.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 66 percent of the Forest would be managed under the retention VQO. An increase of 6 percent compared to Alternative 1.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 64 percent of the Forest would be managed under the retention VQO. An increase of 4 percent compared to Alternative 1.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 66 percent of the Forest would be managed under the retention VQO. An increase of 6 percent compared to Alternative 1.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 93 percent of the Forest would be managed under the retention VQO. An increase of 33 percent compared to Alternative 1.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 75 percent of the Forest would be managed under the retention VQO. An increase of 15 percent compared to Alternative 1.	Visual priority routes and use areas would be protected under the 1997 Forest Plan. Approximately 93 percent of the Forest would be managed under the retention VQO. An increase of 33 percent compared to Alternative 1.
<b>Subsistence</b>								
<b>Abundance and Distribution:</b> The 1997 deer analysis indicated that deer habitat capabilities in portions of the Tongass would not be adequate to sustain current levels of harvest under any of the Forest Plan alternatives (inc. Alt. 11). The possibility of a significant restriction in harvest resulting from changes in abundance and distribution would be the same as or lower than Alternative 11.	The possibility of a significant restriction, resulting from a change in abundance or distribution, would be the same under this alternative as under Alternative 11 in the 1997 Forest Plan FEIS.	The effects under this alternative would be the same as under Alternative 1.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a 7 percent reduction in development LUD acreage under this alternative.	The effects under this alternative would be the same as under Alternative 1.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a 16 percent reduction in development LUD acreage under this alternative.	The possibility of a significant restriction would be lower relative to Alternative 1 because of a 70 percent reduction in development LUD acreage under this alternative.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a 31 percent reduction in development LUD acreage under this alternative.	The possibility of a significant restriction would be lower relative to Alternative 1 because of a 69 percent reduction in development LUD acreage under this alternative.
<b>Competition:</b> The 1997 Forest Plan FEIS concluded that Alternative 11 would result in the significant possibility of a significant restriction of subsistence use through increased competition. The possibility of a significant restriction in harvest resulting from a change in competition would be the same as or lower than Alternative 11.	The possibility of a significant restriction, resulting from a change in competition, would be the same under this alternative as under Alternative 11 in the 1997 Forest Plan FEIS.	The effects under this alternative would be the same as under Alternative 1.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a reduction in proposed road construction under this alternative.	The effects under this alternative would be the same as under Alternative 1.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a reduction in proposed road construction under this alternative.	The possibility of a significant restriction would be similar to Alternative 8 and lower relative to the other alternatives because of the level of reduction in proposed road construction under this alternative.	The possibility of a significant restriction would be slightly lower relative to Alternative 1 because of a reduction in proposed road construction under this alternative.	The possibility of a significant restriction would be similar to Alternative 6 and lower relative to the other alternatives because of the level of reduction in proposed road construction under this alternative.

**Table 2-26  
Summary of Effects Matrix (Continued)**

Value/Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8
<b>Roadless Areas</b>								
<b>Roadless Areas:</b> Roadless areas within moderate and intensive development LUDs would change from roadless to developed status over time.	2.5 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 835,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. 8.8 million acres of roadless areas (92% of existing) would remain after 50 years.	The effects under this alternative would be the same as under Alternative 1.	2.2 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 745,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. 8.9 million acres of roadless areas (93% of existing) would remain after 50 years.	The effects under this alternative would be the same as under Alternative 1.	1.9 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 639,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. 9.0 million acres of roadless areas (94% of existing) would remain after 50 years.	Less than 20,000 acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 180,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. 9.5 million acres of roadless areas (99% of existing) would remain after 50 years.	1.4 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 502,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. 9.2 million acres of roadless areas (96% of existing) would remain after 50 years.	Less than 20,000 acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 196,000 acres of roadless and other unroaded lands would be changed to developed after 50 years. At least 9.5 million acres of roadless areas (99% or more of existing) would remain after 50 years.
<b>Wilderness</b>								
<b>Wilderness:</b> If Recommended Wilderness areas were designated the total wilderness acres on the Tongass would increase from the current level of 5.8 million acres.	5.8 million acres would remain Wilderness under this alternative.	5.8 million acres would remain Wilderness under this alternative. 721,000 acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 1.1 million acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 736,000 acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 2.0 million acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 3.2 million acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 4.6 million acres would be Recommended Wilderness.	5.8 million acres would remain Wilderness under this alternative. 9.6 million acres would be Recommended Wilderness.
<b>Ecoregions:</b> Two ecoregions cover the Tongass: the Northern Pacific Coastal Forest and the Pacific Coastal Mountain Tundra and Ice Fields. 12 percent protection is considered the minimum area of representation by some authorities.	Northern Pacific Coastal Forest: 19 percent	Northern Pacific Coastal Forest: 19 percent	Northern Pacific Coastal Forest: 23 percent	Northern Pacific Coastal Forest: 21 percent	Northern Pacific Coastal Forest: 26 percent	Northern Pacific Coastal Forest: 50 percent	Northern Pacific Coastal Forest: 33 percent	Northern Pacific Coastal Forest: 50 percent
	Pacific Coastal Mountain Tundra and Ice Fields: 37 percent protection	Pacific Coastal Mountain Tundra and Ice Fields: 37 percent	Pacific Coastal Mountain Tundra and Ice Fields: 38 percent	Pacific Coastal Mountain Tundra and Ice Fields: 38 percent	Pacific Coastal Mountain Tundra and Ice Fields: 38 percent	Pacific Coastal Mountain Tundra and Ice Fields: 49 percent	Pacific Coastal Mountain Tundra and Ice Fields: 43 percent	Pacific Coastal Mountain Tundra and Ice Fields: 49 percent
<b>Biogeographic Provinces:</b> Number of biogeographic provinces with greater than 12 percent protected in wilderness, national monument, or LUD II areas (out of 21)	18	18	19	19	21	21	21	21
<b>Ecological Subsections:</b> Number of ecological subsections with some degree of representation in wilderness, national monument, or LUD II areas (out of 73)	56	56	61	61	62	73	65	73
<b>ECONOMIC AND SOCIAL ENVIRONMENT</b>								
<b>Economic Impact Analysis</b>								
<b>Short-Term Wood Products Effects:</b> Additional wilderness or LUD II designation could affect timber sales under contract. This could affect short-term saw mill and logging employment. Large reductions in volume under contract, in conjunction with current market conditions, may result in closure of region's remaining sawmills. However, the risk of this occurring and the actual thresholds at which it becomes probable are not known.	There would be no short-term effects on wood products employment and mill operations under this alternative.	Same as Alternative 1.	Approximately 2 percent of the volume under contract could be affected under this alternative, with minor effects on projected mill and logging employment compared with Alternative 1.	Same as Alternative 1	Approximately 2 percent of the volume under contract could be affected under this alternative, with minor effects on projected mill and logging employment compared with Alternative 1.	Approximately 64 percent of the volume under contract could be affected under this alternative, with an associated projected reduction of 731 sawmill and logging job-years.	Approximately 8 percent of the volume under contract could be affected under this alternative, with an associated projected reduction of 94 sawmill and logging job-years.	Approximately 58 percent of the volume under contract could be affected under this alternative, with an associated projected reduction of 668 sawmill and logging job-years.
<b>Long-Term Wood Products Effects:</b> Long-term employment projections are based on the NIC I Component of the ASQ and assume full implementation. Projections are average annual equivalents for the next 10 years. These totals do not include indirect or induced employment effects.	Projected average annual direct employment would be 1,021 jobs under this alternative.	Same as Alternative 1.	Projected average annual direct employment would be 950 jobs under this alternative.	Same as Alternative 1.	Projected average annual direct employment would be 858 jobs under this alternative.	Projected average annual direct employment would be 476 jobs under this alternative.	Projected average annual direct employment would be 747 jobs under this alternative.	Projected average annual direct employment would be 492 jobs under this alternative.
<b>Recreation and Tourism:</b> Employment projections are based on a linear projection of demand and projected supply based on changes to ROS settings (see above). Projections are average annual equivalents for the next 10 years, based on the estimated non-resident share of recreation and tourism activity. These totals do not include indirect or induced employment effects. Other possible recreation and tourism employment effects include restrictions on outfitter/guide group size and helicopter landing tours. These potential effects are noted qualitatively.	Projected average annual direct employment would be 5,013 jobs under this alternative.	Same as Alternative 1.	Projected average annual direct employment would be 5,014 jobs under this alternative. Spire Roadless Area would be recommended wilderness under this alternative, limiting helicopter landing tours and associated employment in that area.	Same as Alternative 1 except Spire Roadless Area would be recommended wilderness under this alternative, limiting helicopter landing tours and associated employment in that area.	Projected average annual direct employment would be 5,014 jobs under this alternative. 2 million acres would be recommended wilderness under this alternative, which could limit use by large guided parties and associated employment.	Projected average annual direct employment would be 5,020 jobs under this alternative. 3.2 million acres would be recommended wilderness under this alternative; 5.7 million acres would be recommended LUD II. This could limit use by large guided parties and associated employment. Spire Roadless Area would be recommended wilderness under this alternative.	Projected average annual direct employment would be 5,016 jobs under this alternative. 4.6 million acres would be recommended wilderness under this alternative, which could limit use by large guided parties and associated employment. Spire Roadless Area would be recommended wilderness under this alternative.	Projected average annual direct employment would be 5,020 jobs under this alternative. 9.6 million acres would be recommended wilderness under this alternative, which could limit use by large guided parties and associated employment. Juneau Icefields, Spire, and Revilla roadless areas would all be recommended wilderness under this alternative, affecting helicopter landing tours and associated employment in these areas.
<b>Salmon Harvesting and Processing:</b> There is not expected to be any significant change to the commercial fishing or fish processing industries over the next decade as a result of National Forest activities.	The 1997 Forest Plan S&Gs and monitoring are expected to reduce the effects of potential development activities on fish passage and habitat to low levels over the long-term and are not expected to have significant effects on the commercial fishing and fish processing industries.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
<b>Economic Efficiency Analysis</b>								
<b>Present Net Value (PNV):</b> Economic efficiency analysis measures the costs and benefits to society associated with a given alternative. PNV figures are calculated by subtracting discounted costs from discounted benefits to yield a net value. PNV is calculated for those costs and benefits that can be assigned monetary values, in this case timber, recreation and tourism, and program management costs that vary by alternative.	The estimated PNV for this alternative is \$5.9 million.	Same as Alternative 1.	The estimated PNV for this alternative is \$5.9 million.	Same as Alternative 1	The estimated PNV for this alternative is \$6.0 million.	The estimated PNV for this alternative is \$6.2 million.	The estimated PNV for this alternative is \$6.0 million.	The estimated PNV for this alternative is \$6.2 million.
<b>Non-Use Values:</b> Non-use values are values that individuals assign to a resource independent of their use of that resource and include existence, option, and bequest values. It is likely that these types of values are associated with wilderness, but they are difficult to measure and apply in a consistent manner. These values would likely increase with additional wilderness designation.	Under the 1997 Forest Plan, a maximum of 835,000 acres would be developed after 50 years, leaving 8.8 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.	Same as Alternative 1.	A maximum of 745,000 acres would be developed after 50 years, leaving 8.9 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.	Same as Alternative 1.	A maximum of 639,000 acres would be developed after 50 years, leaving 9.0 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.	A maximum of less than 180,000 acres would be developed after 50 years, leaving 9.5 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.	A maximum of 502,000 acres would be developed after 50 years, leaving 9.2 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.	A maximum of less than 196,000 acres would be developed after 50 years, leaving 9.5 million acres of roadless areas, as well as 5.9 million acres of existing Wilderness.

# CHAPTER 3

## ENVIRONMENT AND EFFECTS

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# Environment and Effects

## *Introduction*

This chapter combines the affected environment and environmental consequences discussions required by the National Environmental Policy Act (NEPA) implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508). The discussions are combined so that the environmental consequences (effects) of the alternatives on forest resources and the background information needed to understand these consequences are discussed together for each resource. Each resource is first described by its current condition, uses, supply, and demand, or expected use, along with an explanation of how each resource is measured and evaluated. The descriptions are limited to providing the background information necessary for understanding how the Supplemental Environmental Impact Statement (SEIS) alternatives may affect the resource. Methodology and scientific accuracy is discussed for most resources. Many of the relationships established and discussed in the 1997 Tongass Forest Plan Revision Final EIS and, in particular, Chapter 3 of the Final EIS, are still valid and, therefore, are incorporated by reference for this SEIS.

This SEIS uses updated relevant information to better reflect current conditions and focuses on potential effects most relevant to the potential changes that could occur from changing existing 1997 Tongass Forest Plan Land Use Designations (LUDs) to Recommended Wilderness and Recommended LUD II.

## **Analyzing Effects**

Following each resource description is a discussion of the potential effects (environmental consequences) to the resource associated with implementation of each SEIS alternative. All significant or potentially significant effects, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified, where possible, although qualitative discussions are also included. The means by which any identified potential adverse effects will be reduced or mitigated are also described.

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. Direct environmental effects are defined as those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time, or are spatially removed from the activity but would be significant in the foreseeable future. Cumulative effects result from the incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

Potential adverse environmental effects that cannot be avoided are discussed. Unavoidable adverse effects are those resulting from managing the land for one resource at the expense of the use or condition of other resources. Many adverse effects can be reduced or mitigated by limiting the extent or duration of effects. The 1997 Tongass Forest Plan and Forest Plan Revision Record of Decision (ROD) were designed to mitigate potential adverse effects on forest resources and uses,

### 3 Environment and Effects

especially through its mix of management prescriptions and Forest-wide standards and guidelines. Mitigation measures within standards and guidelines are specified for project activities to be implemented under the 1997 Tongass Forest Plan.

Short-term uses, and their effects, are those that occur annually or within the first 10 years of Forest Plan implementation. Long-term productivity refers to the capability of the land and resources to continue producing goods and services for 50 years and beyond. Long-term and cumulative effects may be projected out 100 years or more, as needed, to fully analyze the potential consequences for particular resources.

Irreversible and irretrievable resource commitments are normally not made at the programmatic level of a Forest Plan. Irreversible commitments are decisions affecting nonrenewable resources, such as soils, minerals, plant and animal species, and heritage resources. Such commitments of resources are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a long period of time or at a great expense, or the resource has been destroyed or removed. While the application of LUDs allowing land-altering activities can indicate the potential for such commitments, the actual commitment to develop, use, or affect nonrenewable resources is made at the project level. The gradual decline in old-growth habitat may be considered an irreversible commitment.

Irretrievable commitments represent opportunities foregone for the period during which resource use or production cannot be realized. These decisions are reversible, but the production opportunities foregone are irretrievable. An example of such commitments is the allocation of LUDs that do not allow timber harvest to areas containing suitable and accessible timberlands. For the time over which such allocations are made, the opportunity to obtain timber from those areas is foregone, thus irretrievable. Irreversible and irretrievable commitments are not identified, as such, in the discussions.

For estimating the effects of alternatives at the programmatic Forest Plan level, the assumption is made that the kinds of resource management activities allowed under the LUDs will in fact occur to the extent necessary to achieve the goals and objectives of each alternative. The actual location, design, and extent of such activities is, however, not known at this time because that is a project-by-project decision. In many cases, the discussions refer to the potential for effects to occur, realizing that in many cases these are only estimates. The effects analysis is useful in comparing and evaluating alternatives, but should not be applied per se to any specific location within the Forest.

A strong effort was made throughout the 1997 Tongass Forest Plan Revision EIS process to obtain and use the best available information to evaluate and compare the effects of alternatives. NEPA implementing regulations (40 CFR 1502.22) state that when “there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.” This was done where appropriate. The NEPA requirement goes on to say that if the incomplete information “is essential to a reasoned choice among alternatives” then considerations, such as the cost of obtaining it, apply. The 1997 Tongass Forest Plan Revision Final EIS and its planning record provided the Forest Supervisors and Regional Forester with the “essential” information needed to make a reasoned choice. The SEIS and associated planning record will add to and update the 1997 Tongass Forest Plan Revision EIS planning record.

## Geographic Information System Database and Quantification for SEIS

The Forest Service developed a computerized geographic information system (GIS) database for the revision of the Tongass Forest Plan, and that system continues to be improved upon and used. This system makes it possible to conduct spatial analysis of alternatives and effects, and to rapidly display resource information in map format. The GIS is a very large database, containing information on many of the resources of the Forest. Much of the data consist of map “layers,” each representing a particular resource or attribute (such as forest type, soil type, or recreation places). Numerical data can also be stored, displayed, and analyzed. Computer technology and capability continues to improve and the Forest GIS program, especially at the project level, reflects such growth. Additional information, as well as improved information, is now available for many resource areas. This SEIS takes advantage of the new technology capability and information. The SEIS validated various GIS layers used in the 1997 Forest Plan Revision Final EIS, including updating with better or newer information. This existing condition information is what has been used as a baseline for the SEIS and Alternative 1, No-Action.

The baseline numbers used in Alternative 1 do not always match the numbers for Alternative 11 of the 1997 Forest Plan Revision Final EIS, which is most like the current (1997) Forest Plan, primarily because of ongoing management of the Tongass National Forest. Examples include changes in land ownership, changes in resource conditions resulting from timber harvest and road construction, and nonsignificant amendments to the 1997 Forest Plan Revision Final EIS. 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 Forest Plan Revision Final EIS-generated numbers and the baseline numbers used in the SEIS are small, and do not affect the analysis relationships between the 1997 Final EIS and the SEIS.

It should be noted that in some cases where the acreages are measured that depend on overlaying of multiple coverages, the acreage measurements for individual categories sometimes needs to be adjusted to account for the fact that coverages do not always line up exactly in places where they should (e.g., along property boundaries, saltwater shorelines, lake edges). Very slight misalignment of the coverages can result in polygon slivers between the coverages, which can produce acreage differences initially. These differences can amount to tens of acres or more, especially because we are dealing with such a large area (i.e., 18 million acres). However, on a percentage basis, these slivers and the adjustments that are necessary are insignificant.

It should also be noted that the figures presented are generally rounded to the nearest whole acre, whole mile, or whole percent. No attempt has been made to adjust the numbers to force the sums of rounded numbers to equal the expected totals. Therefore, the sum of rounded individual numbers will often be one digit higher or lower than the expected sum. The sums that are presented are the sums of the unrounded numbers.

## Land Use Designation Groupings

For many resources, the effects and the differences in effects by alternative are best identified through the LUD allocations. While each LUD has a different purpose and management emphasis, many are similar in the kinds of effects they would potentially create. Based on this concept, and in order to simplify the identification of

### 3 Environment and Effects

effects, the LUDs have been grouped into four categories: wilderness, natural setting, moderate development, and intensive development. Table 3.1-1 displays these LUD groupings.

**Table 3.1-1  
Land Use Designation Groupings Used to Discuss Effects**

LUD Group	LUD
<b>Non-Development LUDs</b>	
Wilderness	Wilderness Wilderness National Monument Nonwilderness National Monument
Natural Setting	Research Natural Area Remote Recreation Special Interest Area Old-growth Habitat Enacted Municipal Watershed LUD II Semi-remote Recreation Wild River Scenic River Recreation River
<b>Development LUDs</b>	
Moderate Development	Experimental Forest Scenic Viewshed Modified Landscape
Intensive Development	Timber production Minerals

Note: The Minerals LUD is an overlay LUD. Areas allocated to this LUD are managed according to the underlying LUD until such time that mineral development is approved, if at all. Generally, acreages in the SEIS do not include the Minerals LUD, but rather the underlying LUD. The table does not include the Transportation and Utility Systems LUD, which is an overlay LUD corridor. Areas allocated to this LUD are managed according to the underlying LUD until transportation or utility systems are constructed.

### Land Divisions

The land area of the Tongass National Forest has been divided in several different ways to describe the different resources and how they are affected by Forest Plan alternatives. These divisions vary by resource because the relationship of each resource to geographic conditions and zones also varies. Several of these divisions are described briefly here.

#### Geographic Provinces

These are seven large land areas that are distinguished by differences in ecological processes. They are defined by a combination of climatic and geographic features. Geographic provinces are used in the evaluation of Research Natural Areas and Wild and Scenic Rivers. See the *Research Natural Areas* section of the 1997 Forest Plan Revision Final EIS for a description of each province.

#### Biogeographic Provinces

These are areas where certain kinds of plants and animals tend to occur together. They are defined by a combination of similarity in species, patterns of distribution of species, and natural characteristics or barriers. Twenty-one biogeographic provinces occur on the Tongass. They are used in the *Biodiversity* and *Wildlife* sections and described in the *Biodiversity* section of this chapter.

#### Ecological Sections and Subsections

These are two classification levels within a hierarchical system for subdividing ecosystems according to the National Hierarchical Framework of Ecological Units (see *Biodiversity* section of this chapter). The framework consists of eight nested mapping levels that serve a variety of purposes. Within the hierarchy, ecological sections characterize medium to large ecosystems (on the order of 1,000 square

miles) and ecological subsections characterize mid-sized ecosystems (10 to 1,000 square miles). Fourteen ecological sections and 73 ecological subsections occur on the Tongass.

**Value Comparison Units**

These are distinct geographic areas, roughly analogous to watersheds, each encompassing a drainage basin containing one or more large stream systems. The boundaries usually follow watershed divides. Value Comparison Units (VCUs) were used for the 1979 Tongass Forest Plan, and have since been updated. The Forest currently has 926 VCUs averaging 18,000 acres in size. They are used to describe the locations of specific resources on the Forest. They are also used for some of the resource descriptions in the individual roadless area descriptions of Appendix C.

**Wildlife Analysis Areas**

These are land divisions used by the Alaska Department of Fish and Game (ADF&G). Approximately 190 apply to the Tongass National Forest. They are used in the *Subsistence* and *Wildlife* sections and in Appendix C.

**General Forest Description**

A brief description of the physical, biological, and socioeconomic settings of the Tongass National Forest is presented in this section. Chapter 1 and the alternative maps include a vicinity map.

**Physical Setting**

The mainland and many of the islands of Southeast Alaska are mountainous, often rising abruptly from sea level to several thousand feet. Elevations of forested areas extend up to approximately 3,000 feet in the southern sections of the Tongass National Forest, and up to 2,500 feet further north. The mountain valleys provide reservoirs for huge ice fields and glaciers, located primarily on the mainland.

More than one million years ago, all but the highest mountain peaks and some outer coastal areas in Southeast Alaska were covered by ice. The great erosional powers of these vast expanses of ice molded and shaped the landscape as the glaciers moved downhill under their own weight, carving the bedrock below them. When the ice receded and uncovered the land, the more resistant mineral-rich rocks remained, revealing a network of islands dissected by numerous streams, U-shaped valleys, and fjords. This modification by glaciers gives Southeast Alaska’s landscape its unique character.

The configuration of the coastline, the warm Japanese ocean current, and the high coastal mountains provide the factors necessary to produce abundant rainfall. The annual precipitation of Southeast Alaska averages more than 100 inches throughout. Precipitation is highest in the southern areas, and decreases as one moves north. At higher elevations, more than 200 inches of snow may fall annually, perpetuating the existing ice fields and glaciers. Storms and moderate to heavy precipitation occur year-round, but most commonly from September through November. The abundant moisture feeds numerous streams, rivers, and lakes that dot the landscape.

Southeast Alaska has a maritime climate, resulting from the moderating influence of the Pacific Ocean. In the summer, this provides a cooling influence, while in winter, temperatures are warmer than would be expected for these latitudes. Normal temperatures range from mid-40 degrees Fahrenheit (°F) to mid-60 °F in the summer, and from the high teens to the low-40s in the winter. During the warmer months, temperatures are highest inland and lowest along the coasts, while in the colder months, the reverse is true.

## 3 Environment and Effects

### Biological Setting

The coastal forest of Southeast Alaska is part of the cool, temperate rain forest that extends along the Pacific coast from Northern California to Cook Inlet in Alaska. Most of the forest is composed of old-growth conifers, primarily western hemlock and Sitka spruce, with a scattering of mountain hemlock, western redcedar (in the south), and Alaska yellow-cedar. Red alder is common along streams, beach fringes, and on soils recently disturbed by management activities and landslides. Black cottonwood grows on the floodplains of major rivers and recently deglaciated areas.

Blueberries, huckleberry, Sitka alder, Devil's club, and salal are common shrubs in the Forest. The forest floor is composed of plants, such as deerheart, dogwood, single delight, and skunk cabbage. Because of the high rainfall and resulting high humidity, mosses grow in great profusion on the ground, on fallen logs, on the lower branches of trees, and in forest openings.

Grass-sedge meadows usually lie at low elevations, often along the coast. Stands of willows border many of the stream channels. Muskeg (bog plant) communities, dominated by sphagnum mosses and sedges, occur throughout the Forest.

The alpine zone usually lies above 2,500 to 3,000 feet. It occupies the area above the coastal forest and is separated from the forest by a subalpine or transition zone. Resident plants have adapted to snowpack and wind abrasion by evolving low-growth forms. Low, mat-forming vegetation covers most of the area, with cushion-like plants occupying crevices on exposed rock outcrops and talus slopes.

The forests, shorelines, streams, and rivers of Southeast Alaska provide habitat for over 300 species of birds and mammals, including game and non-game animals, such as brown and black bear, Sitka black-tailed deer, moose, wolf, mountain goat, beaver, otter, and marten. The coastline provides ideal habitat for a large population of bald eagles, and wetlands provide nesting habitat for many waterfowl.

A highly productive marine environment includes an abundance of marine mammals, halibut, herring, and hundreds of shellfish. Both resident and anadromous fish are found within and adjacent to the Forest.

### Socioeconomic Setting

Southeast Alaska's communities and individuals make up a variety of cultures. The abundant resources of the forests and waters have provided food, shelter, and livelihood for its peoples for thousands of years. The first inhabitants of the area, the Tlingit and Haida, adapted well to the coastal environment and developed a rich culture. The numerous waterways allowed for mobility, which aided in expanding trade and gathering food.

In the 1700s, Russian exploration began in Alaska. The fur trade, primarily sea otter pelts, was the main force driving colonization. When most of the sea otter populations were depleted, the fur industry declined and Russia lost interest in its North American colony. Alaska was sold to the United States in 1867.

Colonization continued under U.S. ownership, and new industries developed. In the late 1800s, commercial fish canning became an important part of the economy of Southeast Alaska. During that same period, the discovery of gold brought thousands of miners to the area; many were followed by their families. The most important of the early gold discoveries occurred in Juneau. In the early 1900s, the Depression brought a decline in mining employment, and the impact of World War II resulted in the closures of the last remaining mines.

The timber resource was used by the earliest inhabitants in a variety of ways. The Russians harvested timber for building ships and structures, but commercial timber harvest was not developed until the 1900s. In the earlier part of the century, small timber mills operated in a few communities. During the 1950s, two large-scale pulp mills were developed in Ketchikan and Sitka, and the timber industry became a major economic component of Southeast Alaska's economy.

In the 1950s, Alaska focused its attention on statehood, and on January 3, 1959, became the 49th state of the United States. This resulted in an increase in government employment and, coupled with the growth of the timber industry, a gradual shift towards a more diversified economy, with less dependence on nonrenewable resources.

Approximately 73,000 people live in the towns, communities, and villages of Southeast Alaska, most of which are located on islands or along the narrow coastal strip. Most of the region's population is concentrated in a few communities, the largest being Juneau, Ketchikan, Sitka, and Petersburg. Services, state and local government, and retail trade were the largest economic sectors by employment in Southeast Alaska in 1999, accounting for 26, 20, and 15 percent of total employment, respectively. Employment in natural resource-based industries remains important in many of the region's communities. Tourism, which has increased in recent years, provides another important source of regional employment and income. Many small, rural communities continue to depend primarily on fishing, timber production, and subsistence uses.

### Organization of Chapter 3

The remainder of Chapter 3 is divided into three parts. First, the resources that make up the physical and biological environment are described and the effects of the alternatives are analyzed. This part sets the stage for the next part—the evaluation of human uses and land management. Finally, both of these parts set the stage for the final part—the economic and social environment.

The focus is on significant effects, with the analysis centered on the public issues related to recommendations for wilderness. Resource areas that are not expected to be significantly affected by the SEIS alternatives or that are not necessary to set the stage for other resource assessments (i.e., Air, Fire Management, and Forest Health) are, therefore, not specifically addressed. The effects on Air, Fire Management, and Forest Health under the SEIS alternatives are not expected to vary from those described in the 1997 Forest Plan Revision Final EIS.

### ***Physical and Biological Environment***

**Soils**  
**Water**  
**Karst**  
**Fish**  
**Biodiversity**  
**Wildlife**  
**Threatened, Endangered, and Sensitive Species**

#### **Soils**

##### **Affected Environment**

Soils in Southeast Alaska develop in parent materials originating from a variety of geological or vegetative sources. Parent material is the inorganic or organic matter in which soils develop, and includes volcanic ash, glacial deposits, colluvium, stream and uplifted marine sediments, rock, and deposits of decomposed plant materials. Soils are commonly divided on the basis of their parent material. Both mineral and organic soils occur extensively within the Tongass National Forest, where over 100 different kinds of soils have been identified. Soils cover 84 percent of the inventoried land surface area of the Tongass; the remainder consists of ice, exposed bedrock, and bodies of water.

From a resource management perspective, soil productivity, i.e., a soil's ability to support vegetative growth, and the potential loss of soils or off-site effects from erosion and landslides are the principle concerns. The productivity of soils directly or indirectly affects the productivity of other forest resources. Tree growth, wildlife and fish habitat quality, and recreation uses and potentials are in part dependent on the quality of the soils. In Southeast Alaska, soil productivity, in terms of tree growth, is high on well-drained soils, and decreases as latitude and elevation increase and as drainage becomes poorer. A more detailed description of the soils of the Tongass National Forest and the potential effects of management on them, is presented in the *Soils* section of Chapter 3 in the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a).

##### **Environmental Consequences**

Forest management activities can cause soil erosion and subsequent loss of site productivity through the exposure of mineral soil, alteration of subsurface drainage, and the concentration of soil and rock material at unstable sites. The management activities that have the greatest potential to affect soil erosion, including sheet, rill, gully, or mass movement erosion, are timber harvest-associated activities, such as road and log-landing construction, rock pit development, and some yarding methods. Although Forest-wide standards and guidelines protect all areas of the Forest to a high degree, as timber harvest and most road construction is prohibited in wildernesses or LUD II areas, soil erosion and loss of productivity would be reduced when lands are converted from development LUDs.

Due to the substantial amount of vegetative groundcover remaining on harvest units during and following timber harvest, erosion from these areas is usually small.

Blowdown, or windthrow, can increase along the edges of regeneration harvest units, and this may expose mineral soil. Blowdown increases the potential for soil erosion, and may increase the potential for landslides. However, preliminary information suggests that blowdown may also have a positive effect on soil productivity through the periodic mixing of soil horizons.

Soil productivity decreases from the construction of roads because land is taken “out of production” (i.e., removed, covered over, or compacted). Erosion increases from the construction of roads because of the destabilizing effect of cuts, fills, and drainage alterations and the lack of protective vegetation cover on road surfaces and other disturbed areas.

The amount of road construction by alternative is used as a measure of both soil productivity losses and erosion potential. The actual amount of erosion caused by roads is not known or reliably quantifiable, but the differences in acres disturbed by roads is a good indication of how site-specific effects are likely to vary between alternatives. These site-specific effects are evaluated more precisely during project planning, based on the specific conditions found at the project site, and will vary based on soil parent materials, slope, location within a watershed, mass movement hazard, and other factors. Standards and guides, Best Management Practices (BMPs), and other relevant mitigation measure are applied at the project level to minimize potential adverse effects. Table 3.2-1 displays cumulative roaded acres—the total amount of land area covered by roads at a point in time. “Current roaded acres” is the cumulative amount as of 2001 (including all classified and unclassified roads). The amount of new classified roads estimated to occur by alternative is added to this amount to estimate the total cumulative roaded acres at the end of decade 1 and at the end of decade 5.

Under Alternatives 1, 2, and 4, the increase in roaded acres would be the same as expected under the 1997 Forest Plan. The increase in acres would be slightly reduced under Alternative 3, moderately reduced under Alternatives 5 and 7, and substantially reduced under Alternatives 6 and 8. Reductions in soil productivity losses and soil erosion would follow the same pattern.

Soil mass movements (e.g., slumps, earthflows, debris avalanches, and debris flows) constitute the most potentially damaging type of erosion. They are thought to be the major cause of accelerated erosion resulting from resource management activities. Landslides may adversely affect soil quality. They have the potential to affect aquatic habitats both positively and negatively. Landslides have a positive effect by providing new sources of woody debris and gravel. They negatively affect aquatic habitats by destroying viable eggs by smothering and bed load overturn, and by destroying habitat elements for fish (pools, riffles, log discharge, etc.). Resource management activities would be eliminated when lands are switched from development LUDs to Recommended Wilderness or LUD II, reducing the risk of soil mass movements. Alternatives 1, 2, and 4 would have the same landslide potential as under the 1997 Forest Plan. The other alternatives would result in reductions in this potential, with the reductions following the same approximate pattern as shown in Table 3.2-1 for roaded acres.

### 3 Environment and Effects

**Table 3.2-1  
Current Cumulative Roaded Acres and Cumulative Acres at the End of  
Decades 1 and 5, by Alternative**

<b>Alt.</b>	<b>Current Cumulative Roaded Acres<sup>1</sup></b>	<b>Cumulative Acres at End of Decade 1</b>	<b>Cumulative Acres at End of Decade 5</b>
1	15,024	18,219	23,375
2	15,024	18,219	23,375
3	15,024	17,874	22,473
4	15,024	18,219	23,375
5	15,024	17,469	21,415
6	15,024	15,714	16,828
7	15,024	16,944	20,042
8	15,024	15,774	16,984

<sup>1</sup> Total acres covered by roads as of 2001. Roaded acres are calculated based on an average of 3 acres per 1 mile of road.

## Water

### Affected Environment

The Tongass National Forest can be characterized by its abundance of water. The maritime climate brings precipitation nearly year-round, with the heaviest amounts occurring from September through January. Coastal low-elevation rain forests thrive in this maritime climate. Thousands of miles of shoreline and hundreds of bays and inlets characterize the marine environment of the Tongass.

The water environment of the Forest can be described in terms of climate, streamflow regimen, water quality, floodplains, wetlands, riparian areas, watershed condition, and water use. These factors are summarized in the following subsections. More complete descriptions are provided in the *Water* section of Chapter 3 in the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a).

#### Climate

Sea level precipitation in Southeast Alaska ranges from 30 inches per year at Skagway to 220 inches per year at Little Port Walter. It is estimated that average annual precipitation may be as high as 400 inches on the southern end of Baranof Island and about 260 inches over the Juneau Icefield. Southeast Alaska has complete cloud cover approximately 85 percent of the year. Snowfall varies according to elevation and distance inland from the coast. October is generally the wettest month. May through July are, on average, the drier months. The Pacific maritime influence holds the daily and seasonal temperatures within a narrow range. Temperatures average 32 °F in the winter and 60 °F in the summer.

#### Streamflow Regimen

Glacial and non-glacial river and stream systems occur on the Tongass National Forest. Runoff from glacially fed streams usually starts in June in response to snow and ice melt, reaching peak flows in July and August. Runoff drops rapidly in October and low flows occur from December through April. Runoff from non-glacial island and Yakutat Forelands streams tends to respond to high precipitation events; therefore, the highest flows tend to be in October and December and the lowest flows between January and March, and mid-May to August.

The Tongass uses a stream channel classification system called channel typing. Stream channels are categorized into distinctly different groups, called process groups, which are used to assess watershed conditions, fish habitat production capabilities, and sensitivity to management activities. Approximately 63 percent of the stream channels on the Tongass are classified in the high gradient contained process group.

An estimated 44,867 miles of stream are recorded on the Forest. These miles are adjusted for estimates of channels missed in the channel type inventories. There are also streams on the Forest considered unmappable during extensive inventory. At the present detail of channel type inventory, these unmappable streams are typically narrow and have low flow, but they may contain valuable aquatic habitat.

#### Water Quality

##### Sediment

Changes in any of the physical or chemical properties of water can directly affect water use by people, fish, and wildlife. For understanding the effects of the alternatives, the most important water quality factor is sedimentation. (Other factors, such as temperature and dissolved oxygen, do not differ appreciably by alternative, and will not be affected to a significant degree. These are not discussed further here.)

### 3 Environment and Effects

Sediment is water-transported earth material. Sediment may be transported as either suspended load or bedload. Suspended sediment is carried within the water column, while bedload material moves (rolls or bounces) along the bottom of the stream or riverbed. Suspended sediment causes water to have a turbid or murky appearance. Under natural conditions, the great majority of suspended load and bedload transport occurs during storm runoff events.

Soil mass movements (landslides), streams cutting new channels, and bank erosion are the main natural processes creating sediment. Landslides cause large, but temporary, increases in suspended and bedload sediments. Stream and riverbed or bank erosion may contribute to sediment over long periods of time. Steep terrain and large amounts of rainfall make the land sensitive to natural sediment production, and to sediment produced by road construction and timber-harvesting activities.

In Southeast Alaska, suspended sediment loads in non-glacial streams in undisturbed watersheds are very low. Concentrations of suspended sediments range from less than 10 parts per million (ppm) in winter, to occasionally over 100 ppm in the fall during storm runoff periods. Suspended sediment in glacial streams is highly dependent on the volume of water flow from snow and ice melt. At high flows, concentrations may reach from 200 to more than 600 ppm; at low flows during winter, suspended sediment concentrations seldom exceed 20 ppm.

#### Floodplains

Executive Order 11988 directs Federal agencies to provide leadership and take action on Federal lands to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. Agencies are required to: 1) avoid the direct or indirect support of floodplain development whenever there are practicable alternatives; 2) evaluate the potential effects of any proposed action on floodplains; 3) ensure planning programs and budget requests reflect consideration of flood hazards and floodplain management; and 4) prescribe procedures to implement the policies and requirements of the Executive Order.

The Forest's floodplains are typically found in broad, flat, alluvial U-shaped valleys, are forested, and usually support plant communities having an overstory of Sitka spruce or Sitka spruce and western hemlock. The shrub understory is variable and may include blueberry, skunk cabbage, devil's club, salmonberry, and alder. Supporting this vegetation are well-, moderately well-, or somewhat poorly drained, deep mineral soils with thin organic surface layers. Floodplains are associated with 12 percent of the 44,867 linear miles of the streams mapped on the Forest.

#### Wetlands

Executive Order 11990, as amended (42 U.S.C. 4321 et. seq.), requires Federal agencies that exercise statutory authority and leadership over Federal lands to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands. Where practicable, direct or indirect support of new construction in wetlands must be avoided.

The U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) jointly define wetlands as: "those areas that are inundated or saturated by surface or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Wetland functions include flood flow moderation, groundwater recharge and discharge, wildlife and fish habitat, and water quality protection. Following guidelines set by the Corps (1987) and Cowardin et al. (1979), DeMeo and Loggy (1989) classified wetlands and water habitats on the Tongass National Forest. On the Tongass, wetlands are made up of forested sites on both poorly and very poorly

drained organic soils, and poorly and somewhat poorly drained mineral soils. Muskegs are found on poorly and very poorly drained organic soils. Wetlands may be found from sea level to alpine elevations and may include estuaries.

Palustrine wetlands make up 95 percent of the wetland types on the Tongass. Forested wetlands comprise 44 percent of the total mapped wetland acres. Peatlands (muskegs), the most unique and distinct of the palustrine wetlands, comprise 40 percent of the total mapped wetland area on the Forest. Scrub-shrub wetland areas are the most vegetatively varied wetland classes in Southeast Alaska and comprise 11 percent of the total. Wetland systems and classes are described in more detail in the 1997 Forest Plan Revision Final EIS.

**Riparian Areas**

Riparian areas are streamside zones that generally include stream-associated vegetation (plants dependent on a perpetual source of water) and may include features of the stream channel (such as floodplains). Riparian ecosystems previously harvested for timber are now in various states of secondary plant succession. Except where the ground is highly disturbed, the species composition on these secondary successional riparian areas is very similar to the riparian vegetation prior to timber harvest, with spruce and hemlock dominating the tree canopy. On the more disturbed sites, the vegetation is often similar to primary successional species, such as occurs following deglaciation, with alder the most common component.

Current management emphasis under the 1997 Forest Plan is to maintain riparian areas in mostly natural conditions for fish and other riparian-associated resources. Management direction requires no-harvest buffers for Class I, II, and III streams with the widths depending on stream channel process groups.

**Watershed Condition**

For land within the Tongass National Forest exterior boundary, including all ownerships, 77 percent of the watersheds in 1992 were classified as healthy (i.e., having watershed functions and conditions generally in balance) (USDA Forest Service, 1995a). For Tongass National Forest System land in 1992 (excluding other ownerships), 87 percent of the watersheds was classified as having satisfactory watershed conditions, 10 percent was classified as having declining watershed conditions, and 3 percent was classified as having unsatisfactory watershed conditions (USDA Forest Service, 1995b).

**Water Use**

Key water uses on the Forest include public water supply, recreation, growth and propagation of fish, and hydroelectric power generation. The Forest supplies domestic water for 18 permanent communities. Ketchikan, Sitka, and Petersburg have Congressionally designated municipal watersheds. In addition, water is supplied from the Forest to fish hatcheries, industrial sites, and resorts.

Hydroelectric generation continues to be used in many places throughout the Forest to provide electricity for mining, sawmills, communities, and other uses. There are six major power installations on the Tongass National Forest: the Snettisham and Gold Creek south of Juneau; Beaver Falls, Ketchikan Lakes, and Swan Lake east of Ketchikan; Lake Tyee near the Bradfield River; and Blue and Green Lakes south and east of Sitka. Additional installations and interties between installations are proposed. The *Lands* section of this chapter addresses planned hydroelectric projects.

**Environmental Consequences**

**Direct, Indirect, and Cumulative Effects**

This section considers the effects of forest management activities on stream flows, wetlands, and public water supplies. The effects of timber harvest and roads on fish habitat and riparian resources are discussed in the *Fish* section of this chapter. The

### 3 Environment and Effects

effects of sedimentation caused by soil erosion and landslides are discussed in the *Soils* section of this chapter. The effects on potential hydroelectric projects are discussed in the *Lands* section, and the effects of log transfer facilities on the marine environment are discussed in the *Transportation and Utilities* section of this chapter.

Forest management activities affect water quality and quantity, and the timing of water flows, through alteration of soil and watershed conditions. Most watersheds are in a state of dynamic equilibrium where changes occur naturally because of changes in weather patterns. Because of the overriding influence of climate and basin resiliency, changes in streamflow and sediment delivery resulting from management activities (e.g., timber harvest) are difficult to measure.

Little is known about the effects of timber harvest and roads on stream flows in Southeast Alaska watersheds. The potential effects of changes in stream flows within watersheds Forest-wide are expected to vary depending on the relative allocation of wilderness and the applicable Forest-wide standards and guidelines for each alternative. The effects from changes in stream flows in a particular watershed can only be estimated during project planning, at which point the rate of entry into watersheds and locations of proposed roads and harvest units will be analyzed. The actual effects on stream flows can only be determined by site-specific monitoring.

The large amount and general distribution of wetlands throughout the Southeast Alaska landscape make it difficult and expensive to avoid construction on wetlands if resource management activities are to occur. The chemical, physical, and biological integrity of wetlands is affected mainly through timber harvest operations, which include the construction and maintenance of roads, landings, stream crossing structures, and log transfer facilities. Silvicultural operations, such as harvesting trees, are generally exempted from Corps permitting requirements. The construction or maintenance of forest roads in support of silvicultural practices, and temporary roads for moving mining equipment, are also generally covered under this exemption for the discharge of dredged or fill material into waters of the United States. This exemption is contingent on the construction and maintenance being conducted in accordance with the Federal BMPs as stated in 33 CFR 323.4(a)(6).

The 1997 Forest Plan Revision Final EIS estimated that about 0.13 percent of the total inventoried wetland acres on the Forest was occupied by roads in 1995. Under the current Forest Plan (Alternative 1), this total is expected to increase to about 0.16 percent by the end of the first decade and about 0.21 percent by the end of the fifth decade. Under all action alternatives, the increase in wetlands occupied by roads would be less. As road acres increase, some roads would cross wetlands. Those would be kept to a minimum number, width, and total length consistent with the specific silvicultural operation.

The Municipal Watershed LUD is applied to 45,272 acres in 11 watersheds serving 9 incorporated cities and boroughs (see the 1997 Forest Plan, Chapter 3, Municipal Watershed) under Alternatives 1, 2, 3, 4, 5, and 7. Watersheds serving unincorporated communities and other non-municipal water systems would be managed under Forest-wide standards and guidelines (see the 1997 Forest Plan, Chapter 4, Soil and Water). Under Alternatives 6 and 8, the majority of these acres would be assigned to Recommended Wilderness or Recommended LUD II; however, this change would have little effect on their management as municipal watersheds.

The potential for future hydroelectric project development would be similar under Alternatives 1, 2, and 4; more restricted under Alternatives 3 and 5; and most restricted under Alternatives 6, 7, and 8. Refer to the *Lands* section of this chapter for a discussion of effects on specific potential projects.

Riparian areas, as a component of aquatic and riparian ecosystems, will continue to be protected through use of the riparian standards and guidelines in all alternatives. In addition, the application of BMPs will minimize or prevent adverse effects on water quality from the limited amount of riparian area within yarding corridors and stream road crossings, and from any non-commercial timber harvest that may occur.

In all alternatives, mitigation for activities that affect wetlands includes compliance with the Executive Order for the Protection of Wetlands and Section 404 of the Clean Water Act, and implementation of BMPs contained in the Soil and Water Conservation Handbook (Forest Service Handbook 2509.22).

## 3 Environment and Effects

### Karst

#### Affected Environment

**Karst:** A type of topography, drainage systems, and landforms that develops in areas underlain by soluble rocks, primarily limestone and marble (carbonates). About 556,000 acres or 3 percent of the land within the Tongass boundary are underlain by karst.

Karst is a comprehensive term that applies to the unique topography, surface and subsurface drainage systems, and landforms that develop by the action of water on soluble rock (primarily limestone and marble [carbonates] in Southeast Alaska). The dissolution of the rock results in the development of internal drainage, producing sinking streams (streams that sink into the stream bed or karst features), closed depressions, sinkholes, collapsed channels, and caves.

The geology and climate of Southeast Alaska are particularly favorable for karst development. Extensive areas of very pure carbonate, approximately 556,000 acres (869 square miles), are found within the boundaries of the Tongass National Forest. This includes carbonate bedrock on Federal, as well as State and private lands. Because of fractures in the carbonates, high annual precipitation, and peatlands adjacent to the carbonate bedrock, karst has developed, to varying extent, within all carbonate blocks. The Tongass National Forest contains the largest known concentration of dissolution caves in Alaska.

In Southeast Alaska the karst landscape can be characterized as an ecological unit found atop carbonate bedrock in which karst features and drainage systems have developed as a result of differential solution by surface and ground waters. These acidic waters are a direct product of abundant precipitation and passage of these waters through the organic-rich forest soil and the adjacent peatlands. Recharge areas may be on carbonate or adjacent non-carbonate substrate. A few characteristics of this ecological unit include: mature, well developed spruce and hemlock forests along valley floors and lower slopes, increased productivity for plant and animal communities, extremely productive aquatic communities, well-developed subsurface drainage, and the underlying unique cave resources (Baichtal and Swanston, 1996).

These karst areas are most comparable to those of karst lands found on Vancouver Island and the Queen Charlotte Islands of British Columbia (Canada), portions of Patagonia (Chile), Tasmania, and the west coast of the South Island of New Zealand. All of these areas have very steep surface slopes and subsurface hydraulic gradients, and very high levels of rainfall. These characteristics put them among the most dynamic karst terrains on earth, evolving and changing more rapidly and abruptly than karst in more moderate settings. The Karst Panel Report (Aley *et al*, 1993) found the karst lands of the Tongass to be of national and international significance for a variety of reasons. The Karst Review Panel in the summer of 2002 confirmed these findings (Griffiths, 2002). Both of these panels consisted of world renowned karst experts with a breadth of karst resource backgrounds and a wide variety of international exposure to karst areas and management considerations. Not only is the level of karst development and the karst hydrology and mineralogy globally significant, the paleontological and archaeological discoveries have, for the first time, written the prehistory of Southeastern Alaska and contributed to and challenged theories of the peopling of North America.

The natives and local inhabitants of Southeast Alaska have long known of the presence of caves. The existence of well-developed cave systems was first reported in 1975 and mapping of the caves began in 1987. The existence of vast areas in which karst had developed was fully recognized in 1990. Though noted by early foresters and geologists, about this same time the relationship between high site productivity and the presence of karst landscape became apparent. With the

passing of the Federal Cave Resources Protection Act (FCRPA) in 1988, the Forest struggled with methods to protect the many caves throughout the landscape. At first, protection focused on only the large, significant karst features and cave entrances. Subsequent measures tended to look at entire karst hydrologic systems.

One of the five additional “emphasis areas” identified during the 1997 Tongass Forest Plan Revision was karst and cave resource management. Responding to the need for a management strategy, standards and guidelines were developed that provided for other land uses while taking into account the function and biological significance of the karst and cave resources within the landscape. This strategy was developed during the 4 years prior to completion of the 1997 Tongass Forest Plan, beginning with the recommendations of a karst and cave resource significance assessment completed by Aley *et al.* in 1993 and combining the most current thinking on karst management issues. The Forest began adopting a land management strategy for the karst lands similar to “hazard area mapping” or “risk assessment.” Referred to as “vulnerability mapping” or “karst vulnerability,” this strategy assesses the susceptibility of the karst resources to any land use. Vulnerability mapping utilizes the fact that some parts of a karst landscape are more sensitive than others to planned land uses. The key elements of the strategy focus on the openness of the karst system and its ability to transport water, nutrients, soil and debris, and pollutants in to the underlying hydrologic systems. The strategy strives to maintain the capability of the karst landscape to regenerate a forest after harvest, to maintain the quality of the waters issuing from the karst hydrologic systems, and to protect the many resource values within the underlying cave systems as per the requirements of the FCRPA. A more detailed description of the karst and cave resources and current management strategy of the Tongass National Forest is presented in the *Karst and Caves* section of Chapter 3, pages 3-82 to 3-86, and in *Appendix I* of the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a).

About 468,000 acres (731 square miles) of carbonates underlie the lands currently administered by the Tongass National Forest. Of those acres, approximately 88,763 acres are in the Wilderness LUD Group and 158,926 acres are in the Natural Setting LUD Group. This means that 247,689 acres or 53 percent of the karst lands on the Tongass are currently allocated to a protective LUD (either wilderness or some other type of non-development LUD). The remaining 219,991 acres of carbonate are in development LUDs. Of these development LUD karst acres, 41,333 have been mapped as high vulnerability karst lands, which are protected from timber harvest and road construction. Further, it is estimated that through inventory and karst vulnerability assessments, 10 to 30 percent or more of the remaining 178,538 acres of karst lands within the development LUDs is likely to be characterized as additional high vulnerability karst lands. Combining all of these categories of protected karst lands, an estimated two-thirds or more of the karst lands on the Tongass (about 315,000 acres) are fully protected under the current Forest Plan. Therefore, the remaining one-third or less of the karst lands may be available for some level of management pending the results of a thorough inventory and karst vulnerability assessment.

### Environmental Consequences

#### Direct, Indirect, and Cumulative Effects

Karst lands have separate issues and concerns compared with other landforms because karst is a three-dimensional landform with closely integrated surface and subsurface processes. Groundwater flows relatively slowly through porous rock and soil, or via fracture flow, in non-karst terrain. In karst terrain, groundwater may flow relatively quickly through complex underground systems of solution-widened conduits that vary from fissures a few inches wide to cave systems many feet wide. Potential impacts to karst systems and caves and associated drainages, from timber

### 3 Environment and Effects

harvest and road building, are a change in hydrology, infiltration rates, sediment production, debris transport, pollutants, and introduction of organics that can lead to oxygen depletion. Issues and concerns related to karst lands primarily revolve around potential change of groundwater flow in the underground system. Any management activity that causes sediment or organic debris to build up in the subsurface conduits decreases the capacity of these conduits and makes it more likely that surface streams will form. Similarly, any management activity that increases groundwater recharge may also affect the capacity of the conduits in the underground system and make formation of surface streams more likely. Changes in the presence of surface water can produce broad ecosystem changes both above and below ground. Groundwater recharge in karst lands occurs by either discrete or diffuse recharge. Discrete recharge refers to losing or sinking streams that enter the subsurface at specific resurgence points. Diffuse recharge refers to subsurface entry of water through the forest floor and the epikarst. Losing or sinking streams can rapidly deliver sediment into subsurface passageways.

Sediment transport into karst systems also produces concern. This concern is primarily attributed to the size of past harvest blocks and the rate at which the landscape was harvested prior to the early 1990s, when the extensiveness and significance of karst terrain on the Tongass became more fully recognized. The current standards and guidelines address these concerns to a high degree.

Potential effects on karst lands from planned timber harvesting, associated road construction, and quarry development may occur; however, with careful implementation of the current standards and guidelines (as modified through ongoing monitoring and adaptive management), and site-specific mitigation measures (designed and implemented at the project level), the Forest expects to mitigate the effects of any proposed activity. Site-specific mitigation measures include protection of the most sensitive karst areas and features, partial cutting, reduced harvest unit size, use of logging systems that achieve at least partial suspension, reductions in rate of harvest, and other changes in logging practices.

Table 3.2-2 summarizes the acres of karst lands by roadless area and LUD Group. Much of the karst land within the development LUDs has been designated as high vulnerability karst land and is protected by standards and guidelines.

Of the 109 inventoried roadless areas considered in the SEIS, 51 contain known karst resources. These areas represent 40 percent (187,047 acres) of the karst resources of the Tongass. Under the action alternatives, 2,868 to 187,047 acres of karst lands would be recommended for wilderness or LUD II designation (Table 3.2-3). Alternatives 3 and 4 would propose very limited acres, Alternatives 2, 5, and 7 would propose an increasing number of acres, and Alternatives 6 and 8 would propose all or virtually all of the acres for permanent protection. However, an estimated 80 percent of the karst lands within roadless areas are already in a protected status either by LUD or Forest Plan standards and guidelines.

**Table 3.2-2  
Roadless Areas Containing Karst Lands and the Acres of Carbonate  
Bedrock by Land Use Designation Group**

Roadless Area Number	Roadless Area Name	Land Use Designation Group			Grand Total
		Development LUDs	Natural Setting LUDs	Wilderness LUDs	
*202	Spires		2,796		2,796
*204	Madan	919	50		969
205	Aaron		112		112
211	North Kupreanoff		117		117
214	South Kuperanof		54		54
215	Castle		50		50
238	Kashevarof		534		534
*239	Keku	1,580	715		2,296
*241	North Kuiu	1,920	350		2,270
242	Camden	5	500		505
243	Rocky Pass	0			0
301	Juneau-Skagway Icefield		1,438		1,438
302	Taku-Snettisham		5,393		5,393
303	Sullivan	1,731	8,546		10,277
304	Chilkat-West Lynn Canal	2,584	16,819		19,403
307	Greens Creek		67	60	127
*311	Chichagof	11,081	10,150		21,231
*312	Trap Bay	3,508	2,159		5,668
314	Point Craven	38	3		41
*319	Pavlof-East Point	935	1,478		2,413
*321	Tenakee ridge	6,410	1,939		8,349
*323	Game Creek	8,249	3,527		11,776
*325	Freshwater Bay	5,730	13,014		18,744
328	Hoonah Sound		118		118
330	North Baranof	96	31		127
*342	Neka Mountain	3,628	5,328		8,956
*343	Neka Bay		2,157		2,157
*501	Dall Island		15,497		15,497
502	Suemez Island	965	900		1,865
503	Outer Islands		5,061		5,061
504	Sukkwon		112		112
505	Soda Bay	448	610		1,058
*507	Eudora	4,109	309		4,418
508	Cristoval	257	1,661		1,918
509	Kogish	1,661	439		2,100
511	Thorne River	76	516		592
512	Ratz	6			6
*514	Sarkar	71	552		622
*515	Kosciusko	1,713	4,653		6,366
*516	Calder	400	3,192		3,591
*517	El Capitan	3,120	7,414		10,534
*518	Salmon Bay	1,936	1,715		3,651
519	McKenzie	121	10		131
522	Gravina	444	244		688
*523	South Revilla	689	353	3	1,046
524	Revilla		97		97
*526	North Revilla	641	109		750
528	Cleveland		22		22
531	Nutkwa	76	184		260
532	Fake Pass		641		641
535	Carroll	101			101
<b>Grand Total</b>		<b>65,248</b>	<b>121,735</b>	<b>64</b>	<b>187,047</b>

\* Roadless areas discussed by a number of respondents.

### 3 Environment and Effects

**Table 3.2-3  
Roadless Areas Containing Karst Lands and the Acres of Carbonate  
Bedrock Proposed for Wilderness or LUD II Designation by Alternative**

Roadless Area		Alternative							
Area Number	Roadless Area Name	1	2	3	4	5	6	7	8
*202	Spires	0	0	2,796	2,796	0	2,796	2,796	2,796
*204	Madan	0	0	0	0	0	969	0	969
205	Aaron	0	0	0	0	0	112	0	112
211	North Kupreanoff	0	0	0	0	0	117	117	117
214	South Kuperanof	0	0	54	0	54	54	54	54
215	Castle	0	0	50	50	50	50	50	50
238	Kashevarof	0	0	0	0	0	534	0	534
*239	Keku	0	0	0	0	0	2,296	0	2,296
*241	North Kuiu	0	0	0	0	0	2,270	0	2,270
242	Camden	0	0	0	0	0	505	0	505
243	Rocky Pass	0	0	0	0	0	0	0	0
301	Juneau-Skagway Icefield	0	0	0	0	0	1,438	0	1,438
302	Taku-Snettisham	0	0	0	0	69	5,393	5,393	5,393
303	Sullivan	0	0	0	0	0	10,277	10,277	10,277
304	Chilkat-West Lynn Canal	0	0	0	0	0	19,403	19,403	19,403
307	Greens Creek	0	0	0	0	0	127	127	127
*311	Chichagof	0	7,042	0	0	11,340	14,192	11,340	21,231
*312	Trap Bay	0	2,115	0	0	2,109	5,668	5,668	5,668
314	Point Craven	0	0	0	0	0	41	0	41
*319	Pavlof-East Point	0	0	0	0	0	2,413	0	2,413
*321	Tenakee ridge	0	0	0	0	0	8,349	0	8,349
*323	Game Creek	0	0	0	0	0	11,776	0	11,776
*325	Freshwater Bay	0	0	0	0	0	18,744	0	18,744
328	Hoonah Sound	0	118	0	0	118	0	118	118
330	North Baranof	0	0	0	0	0	127	0	127
*342	Neka Mountain	0	0	0	0	4,019	8,956	4,019	8,956
*343	Neka Bay	0	0	0	0	0	2,157	0	2,157
*501	Dall Island	0	0	0	0	15,495	15,497	15,495	15,497
502	Suemez Island	0	0	0	0	0	1,865	0	1,865
503	Outer Islands	0	5,036	0	0	5,061	25	5,061	5,061
504	Sukkwan	0	0	0	0	0	112	0	112
505	Soda Bay	0	0	0	0	0	1,058	0	1,058
*507	Eudora	0	0	0	0	0	4,418	89	4,418
508	Cristoval	0	0	0	0	0	1,918	0	1,918
509	Kogish	0	0	0	0	0	2,100	0	2,100
511	Thorne River	0	0	0	0	592	592	592	592
512	Ratz	0	0	0	0	0	6	0	6
*514	Sarkar	0	0	0	0	512	622	512	622
*515	Kosciusko	0	242	0	0	2,238	6,123	2,238	6,366
*516	Calder	0	2,430	0	0	2,412	1,161	2,412	3,591
*517	El Capitan	0	0	0	0	0	10,534	0	10,534
*518	Salmon Bay	0	1,475	0	0	2,249	2,205	2,249	3,651
519	McKenzie	0	0	0	0	0	131	0	131
522	Gravina	0	0	0	0	0	688	0	688
*523	South Revilla	0	0	0	0	0	1,046	0	1,046
524	Revilla	0	0	0	0	0	97	0	97
*526	North Revilla	0	0	0	0	0	750	0	750
528	Cleveland	0	0	22	22	22	22	22	22
531	Nutkwa	0	184	0	0	204	80	204	206
532	Fake Pass	0	0	0	0	0	641	0	641
535	Carroll	0	0	0	0	0	101	0	101
<b>Grand Total</b>		<b>0</b>	<b>18,643</b>	<b>2,922</b>	<b>2,868</b>	<b>46,544</b>	<b>170,556</b>	<b>88,236</b>	<b>187,047</b>

\* Roadless areas discussed by a number of respondents.

A group of 21 of the roadless areas under analysis were brought forward by a large group of respondents suggesting that these areas receive wilderness designation or at least a higher level of protection (see Appendix C and Appendix F). The total acreage of these areas is 134,422 acres. Under current Forest Plan LUDs and the Karst and Cave standards and guidelines, 111,442 acres, or 83 percent of the karst resources within these 21 roadless areas of concern are currently in some form of protected status.

From a cumulative perspective, approximately 88,000 of the total 556,000 acres of karst lands within the Tongass boundary are on State or private lands. Assuming that none of these state or private lands are protected and that only the estimated 315,000 acres on National Forest System land are protected, an estimated 55 to 60 percent of all the karst lands are fully protected under the current Forest Plan.

### 3 Environment and Effects

## Fish

### Affected Environment

Fish and the aquatic resources on the Tongass National Forest provide major subsistence, commercial, sport fisheries, and traditional and cultural values. Abundant rainfall, streams with glacial origins, and watersheds with high stream densities provide an unusual number and diversity of freshwater fish habitats. These abundant aquatic systems of the Tongass provide spawning and rearing habitats for the majority of fish produced in Southeast Alaska. Maintenance of this habitat, and associated high quality water, is a focal point of public, State, and Federal natural resource agencies, as well as user groups, Native organizations, and individuals.

Anadromous fish habitat within the Forest includes 10,800 stream miles and 4,100 lakes and ponds. Another 12,200 stream miles and 4,700 lakes and ponds provide non-anadromous fish habitat. Most of the Forest's streams and rivers empty into bays or estuaries which are important during some life stages of anadromous species, as well as for many saltwater fish species. Thirty-seven freshwater and anadromous fish species are found in the freshwaters of Southeast Alaska. Thirty-six species of marine invertebrates, such as clams and crabs, are commonly found in the near-freshwater environment (Taylor, 1979). Although these are marine dwellers, some may be affected by upland management activities, such as timber harvest-related log transfer and storage facilities. Species that may be particularly sensitive to upland management include the king (*Parotithodes* sp.), Dungeness (*Cancer magister*), and Tanner crabs (*Chionocoetes bairdi*), and butter clams (*Saxidomes giganteus*). The primary fish species harvested for sport, subsistence, or commercial uses are shown in Table 3.2-4.

Approximately 85 percent of Southeast Alaska's sport fishing occurs in the vicinity of the Tongass National Forest. Sport fishing use has increased with a generally steady trend over the past three decades, almost doubling between the late 1970s and mid-1990s. The economics of commercial and sport fishing is discussed in more detail in the 1997 Tongass Forest Plan Revision Final EIS.

**Table 3.2-4  
Commonly Harvested Sport, Subsistence, and Commercial Fish**

Species <sup>1</sup>	Sport	Subsistence	Commercial
Pink salmon ( <i>Oncorhynchus gorbuscha</i> )	X	X	X
Chum salmon ( <i>Oncorhynchus keta</i> )	X	X	X
Coho salmon ( <i>Oncorhynchus kisutch</i> )	X	X	X
Sockeye salmon ( <i>Oncorhynchus nerka</i> )	X	X	X
King salmon ( <i>Oncorhynchus tshawytscha</i> )	X	X	X
Cutthroat trout ( <i>Oncorhynchus clarki</i> )	X		
Rainbow trout & steelhead ( <i>Oncorhynchus mykiss</i> )	X	X	
Dolly Varden char ( <i>Salvelinus malma</i> )	X		
Eulachon smelt ( <i>Thaleichthys pacificus</i> )		X	

<sup>1</sup> Alternate names commonly used for the same species are: pink or humpback; chum or dog; coho or silver; sockeye or red; king or chinook; and eulachon or hooligan or candlefish.

### Fish Habitat Enhancement

Increased emphasis has been placed on the enhancement of fish habitat on the Tongass National Forest. From 1980 to 1995, the Forest Service implemented 176 fisheries habitat enhancement projects on the Tongass (Table 3.2-5). At full potential production these projects are expected to contribute 17.7 million pounds of

**Table 3.2-5  
Tongass National Forest Cooperative Fisheries Enhancement Projects  
Completed from 1980 to 1995**

<b>Enhancement Activity</b>	<b>Number of Projects</b>	<b>Estimated Production of Fish (million lbs/year)</b>
Fishways	42	6,749.1
Falls Modification	13	166.9
Spawning Channels	9	450.5
Debris Removal	10	76.0
Lake Fertilization	9	7,306.6
Lake Stocking	8	1,242.0
Stream Stocking	22	519.1
Rearing Ponds	18	17.1
Incubation Boxes	5	1,091.9
Large Woody Debris Management	28	83.6
Fish Weir	12	NA
<b>Total</b>	<b>176</b>	<b>17,702.2</b>

Notes:

1. Project totals represent the number of activities completed at different locations. Repetitive annual investments at the same site (that is, fertilizer applied to each lake annually) are not shown, although the costs of the repetitive treatments have been included in the cost totals.
2. Estimated production of fish is based on full utilization of habitat capability. The time it will take to reach full production varies with the species, application of bioenhancement techniques, and fisheries management strategies regulating the fish stocks returning to the projects. Total production is calculated to represent the fish available for subsistence, sport, and commercial harvest.

salmon annually to the harvest in Southeast Alaska. The majority of the fish habitat enhancement projects implemented on the Tongass National Forest are cooperative projects involving multiple agencies and organizations, and are coordinated by the Northern and Southern Southeast Regional Planning Teams, and the Yakutat Salmon Planning Group. "Comprehensive Salmon Plans" have been developed for the three areas. The Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, facilitates the activities of the coordinating groups.

**Fisheries Habitat Enhancement Opportunities**

The anticipated salmon production from fish habitat enhancement projects on the Tongass National Forest is calculated based on site-specific habitat conditions and an analysis of limiting factors for salmon production. The test for these habitat production estimates consists of monitoring conducted on individual projects and the subsequent feedback of the monitoring results into the project planning process.

The 1997 Tongass Forest Plan Revision Final EIS identified 158 potential projects for initiation during the first 10 years of implementation of the 1997 Tongass Forest Plan (Table 3.2-6). Most of the potential projects have not been through the environmental analyses or on-site review required to determine project feasibility.

All projects that are determined to be feasible following environmental analysis and on-site review may be scheduled for implementation. Some activities, such as road construction for timber harvest purposes, are important for the successful implementation of some fisheries projects.

A common demand of the public has been the maintenance or improvement of fish habitat values. Demand from the public for subsistence, commercial, and sport harvested fish remains very high. Demand and harvest goals are further discussed in the 1997 Forest Plan Revision Final EIS.

A large number of fish habitat enhancement projects have occurred within inventoried roadless areas. Many of the potential enhancement projects identified also are located within inventoried roadless areas. Projects, such as fish passage

### 3 Environment and Effects

**Table 3.2-6  
Number of Potential Enhancement Projects by Type**

Project Type	Single Year	Multi-year	Total
Small Instream Structures	22	9	31
Structural Fish Passage	24	2	26
Falls Modification	11	3	14
Barren Lake Stocking	1	4	5
Cooperative Fish Stocking	2	9	11
Incubation Boxes	2	3	5
Lake Fertilization	0	5	5
Weir/stock Assessment	7	10	17
Spawning Channels	2	0	2
Ponds & Off Channel Rearing	3	0	3
Riparian Rehabilitation	30	9	39
<b>Total Projects</b>	<b>104</b>	<b>54</b>	<b>158</b>

Notes:

1. Multi-year projects are usually implemented in successive years but only counted as one activity. Fertilization of a particular lake is an example of a single project that may be repeated for several years in order to achieve the desired objective of restoring a natural run of salmon to the lake.
2. The majority of the small instream structural projects, including projects such as large woody debris and gabion placement, mitigate past logging activities. These projects may be considered as rehabilitation rather than enhancement. Riparian rehabilitation projects will be coordinated with watershed restoration projects.

improvement, lake and stream stocking, and lake fertilization, often involve habitat within inventoried roadless areas. The *Fish Resource* sections in the Individual Roadless Area Descriptions in Appendix C address some of these potential projects.

#### Fish Management Indicator Species

National Forest Management Act (NFMA) regulations direct the use of Management Indicator Species (MIS) in forest planning to help display the effects of forest management. MIS are species whose population changes are believed to indicate the effects of land management activities. For the Forest Plan Revision, pink salmon, coho salmon, Dolly Varden char, and cutthroat trout were selected as MIS. These MIS fish species and their habitats, and the Fish/Riparian Panel Assessments are described in the 1997 Forest Plan Revision Final EIS.

#### Fish Habitats

With more than 45,000 miles of streams and 275,000 acres of ponds and lakes, the Forest provides abundant fish habitat. The habitat has been inventoried and classified, and estimates have been made of fish production.

#### Channel Inventory

Perennial streams on the Forest have been channel-type inventoried. The channel types provide a system to estimate the amount and quality of fish habitat, and can be used to predict their physical response and sensitivity to different management activities. Channel types have been categorized into distinctly different groups, called "stream process groups." Process groups describe the interrelationship between watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion or depositional processes. Process groups are used for assigning the riparian standards and guidelines. They are described in Appendix D of the 1997 Tongass Forest Plan.

**Stream Class Inventory**

Channel-typed streams have also been categorized by stream class, a classification primarily associated with fish use. Stream classes describe stream values, such as whether anadromous or resident fish inhabit a particular stream. Class I streams are anadromous and high value resident fish streams, Class II streams are other resident fish streams, and Class III streams are managed for water quality and, where appropriate, downstream aquatic resources. (See the *Glossary* for more complete definitions.)

**Environmental Consequences**

In general, effects of the alternatives on fish resources are expected to be at or below the level predicted for Alternative 11 in the 1997 Forest Plan Revision Final EIS. These effects are rated here in terms of the predicted level of road construction and timber harvest that would be associated with the alternatives evaluated in this SEIS. Additionally, some fish habitat enhancement projects may not be compatible with the objectives of Recommended Wilderness.

**Direct, Indirect,  
and Cumulative  
Effects**

Many of the standards and guidelines in the 1997 Forest Plan Revision Final EIS were based to a large extent on the recommendations of the Alaska Anadromous Fisheries Habitat Assessment (AFHA) (AFHA, 1995). AFHA is considered the most comprehensive scientific review available for the Tongass. The 1997 ROD notes that the standards and guidelines and other direction included in the 1997 Forest Plan meet or exceed all of the recommendations by AFHA.

Except for Alternatives 1, 2, and 4, all alternatives include areas for Recommended Wilderness or LUD II designation that are currently in areas of development LUDs. The relative likelihood of adverse effects on habitat would be reduced with a decrease in the area of development LUDs. Timber harvest and associated management activities planned in those watersheds that are not Recommended Wilderness or LUD II, in each alternative, have the potential to adversely affect stream channel processes, and thus fish habitat. However, the Riparian Management standards and guidelines of the 1997 Forest Plan greatly reduce the risk of negative effects in development LUDs.

**Roads**

Roads pose the greatest risk to fish resources on the Tongass. Roads can potentially create areas of hillslope instability resulting in landslide generation, contribute fine sediment from surface erosion, and alter surface and subsurface water flow patterns. Increased sediment yield, including yields from roads during construction, use during timber harvest activities, and lack of sufficient maintenance or proper closure following timber harvest activities, are all viewed as potential areas of risk for maintaining fish resources. Roads may also increase risk to fish movement due to blocked culverts. At highest risk are stream-rearing fish, particularly cutthroat trout, that occupy the smaller headwater streams during some parts of their lives. Juveniles of stream-rearing fish are often highly mobile during their freshwater stage, moving seasonally between stream reaches.

Riparian protection options provide little reduction in the risks to fish or stream channels caused by roads during construction. Road construction practices require additional attention to ensure that risks to fish and stream channels are not excessively high. Roads also increase the risk that improved access would contribute to over-harvest of fish by anglers. These potential effects are best addressed at the site-specific level during project design.

### 3 Environment and Effects

Table 3.2-7 shows the miles of existing mapped roads and projected classified road construction on the Forest. Currently, the Tongass-wide road density is approximately 0.19 mile/square mile. After 50 years of Forest Plan implementation, the estimated Tongass-wide road density would range from 0.21 to 0.30 mile/square mile depending on the alternative. However, this is an overall density averaged over the entire Tongass. Most of the Tongass is roadless and has a 0.0 mile/square mile density, while portions of the Tongass have much higher road densities than these figures. It should be noted that these projected road densities are based on harvesting at the ASQ level, including both the NIC I and II components. Therefore, these road densities represent maximums and, given current economic conditions (see the *Timber* section), are not likely to be achieved.

Approximately 28 percent of the Value Comparison Units within the Tongass currently have roads. This percentage would increase in all alternatives except Alternatives 6 and 8. Overall road densities would be highest under Alternatives 1, 2, and 4, and lowest under Alternatives 6 and 8.

Temporary roads are roads that are anticipated to be utilized only for the duration of a timber sale or other project activities. They are not designed to meet as high of an engineering standard as are system roads. Because of the temporary nature of these roads (often intended to be used for less than 1 year), investments in stream crossings structures and road surfacing are much less than they would be for more permanent system roads. Temporary roads may create short-term risks to fish habitat. They may also create long-term risks when cumulative effects are considered. The miles of temporary roads anticipated to be constructed follow the same pattern by alternative as shown in Table 3.2-7. The highest mileage of temporary road construction would occur under Alternatives 1, 2, and 4 (estimated 26.4 miles/year for 1st decade) and the lowest would be under Alternatives 6 and 8 (estimated 9.4 to 9.8 miles/year for 1st decade).

#### Timber Harvest

Timber harvest activities can increase risk to fish resources. Protection of riparian areas, including floodplains, areas of riparian vegetation, and certain wetlands associated with riparian systems are of particular concern. Also of concern is the amount of protection afforded steeper channels (often not fish-bearing) in the headwaters areas. Protection of estuaries is also important when locating roads and timber harvest units. Although Forest Plan standards and guidelines associated with riparian areas, wetlands, and beach and estuary fringe are expected to protect fish

**Table 3.2-7  
Estimated Miles of Existing and Planned Roads by Alternative  
after 50 Years<sup>1</sup>**

Alternative	Existing Roads <sup>1</sup>	New Roads	Total Roads	Percent Increase	Road density (miles/sq. mile)
1	5,008	2,784	7,792	56%	0.30
2	5,008	2,784	7,792	56%	0.30
3	5,008	2,483	7,491	50%	0.29
4	5,008	2,784	7,792	56%	0.30
5	5,008	2,130	7,138	43%	0.27
6	5,008	601	5,609	12%	0.21
7	5,008	1,673	6,681	33%	0.25
8	5,008	653	5,661	13%	0.22

<sup>1</sup> Based on the ASQ, which represents the maximum harvest per decade.

<sup>2</sup> The existing road miles in this table represent the total mapped road miles in the GIS database. They include all classified and unclassified roads, as well as some temporary and decommissioned roads. Existing road density is 0.19 mile/square mile.

resources from significant impacts associated with timber harvest, there is still some level of risk. The risk is related to the level of harvest associated with each alternative.

Timber harvest activities on the Forest could potentially affect from 32,000 to 89,000 acres per decade for the first four decades (Table 3.2-8). Alternatives 1, 2, and 4 would harvest the highest acreage and Alternatives 6 and 8 would harvest the least. Projected acreages are based on harvesting at the ASQ level, including both the NIC I and II components. Therefore, these acres represent maximums and, given current economic conditions (see the *Timber* section), are not likely to be achieved.

After the first four decades, second growth is predicted to become an increasingly larger portion of the harvest. When this occurs, the number of harvested acres is predicted to be approximately the same or less under Alternatives 1, 2, 3, 4, and 5; however, under Alternatives 6, 7, and 8, the harvest level is predicted to generally be higher than during the first four decades.

**Fish Habitat Enhancement**

Fish enhancement projects, such as fish passage, stream and lake stocking, and lake fertilization, planned in areas that are recommended for wilderness may not be compatible with wilderness objectives. The level of restriction would be roughly proportional to the number of acres recommended for wilderness. Alternative 1 would have no effect because no additional land would be recommended for wilderness. Alternatives 2 through 8 would include recommendations for additional wilderness, with Alternatives 2 and 4 recommending the lowest (0.7 million additional acres) and Alternative 8 recommending the highest (9.6 million additional acres). Additional acres recommended for LUD II should have little effect on fish enhancement projects; therefore, the effect of Alternative 6 would be proportional only to the amount of land recommended for wilderness. The overall ranking of the alternatives in terms of effects on fish habitat enhancement would be from lowest to highest effects: Alternatives 1, 2, 4, 3, 5, 6, 7, and 8.

**Table 3.2-8  
Estimated Maximum Acres of Timber Harvest per Decade for the First 4 Decades<sup>1</sup>**

	Alternative							
	1	2	3	4	5	6	7	8
Maximum Acres of Timber Harvest	88,790	88,790	81,020	88,790	71,750	31,570	59,520	32,780

<sup>1</sup> Based on the ASQ, which represents the maximum harvest per decade.

**Essential Fish Habitat**

Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.) mandates the establishment of new requirements for Essential Fish Habitat (EFH) description and requires Federal agencies to consult with the National Marine Fisheries Service on activities that may adversely affect EFH. This consultation is done at the site-specific project level because it is not possible to predict where Forest Plan implementation projects will take place. The application of Forest-wide standards and guidelines and BMPs developed to meet soil protection, water quality standards, and fish habitat protection are believed to be sufficient to protect EFH on the Tongass National Forest.

## 3 Environment and Effects

### Biodiversity

#### Affected Environment

The conservation of biological diversity, or biodiversity, is of national and global concern. Biodiversity may be defined as the variety of all of the plant and animal communities and species within an area, and associated ecological processes (Keystone Center, 1991). Biological diversity encompasses the variety of genetic stocks, plant and animal species and subspecies, ecosystems, and the ecological processes through which individual organisms interact with one another and their environments. The National Forest Management Act (NFMA) must provide for diversity of plant and animal communities based on the suitability and capability of specific land areas in order to meet overall multiple-use objectives.

The conservation of biological diversity commonly requires a dual strategy addressing both individual species, as well as entire ecosystems (Marcot et al., 1994). The traditional species-by-species approach is important for featured or management indicator species, sensitive or rare species, and for the recovery of federally designated threatened or endangered species. A more comprehensive strategy focused on higher levels of biological organization and ecosystems may, however, be necessary to conserve rare or declining habitats, such as old-growth forests and plant and animal communities and ecosystems, as well as the entire complement of associated biota and ecological processes (Noss, 1991; Scott et al., 1991; Franklin, 1992).

The ecosystem most at risk by resource management of the Tongass is the old-growth forest ecosystem. The biological diversity associated with these forests is only beginning to be recognized and described. For instance, Franklin (1993) estimated that invertebrate biota, creatures essential to ecosystem function through such processes as nitrogen fixation and decomposition, may represent more than 90 percent of the species diversity of old-growth forests in the Pacific Northwest.

Maintaining and/or enhancing habitat requirements needed for sustaining viable populations of individual species are addressed by guidelines for specific species or species groups. This "fine filter" approach to biological conservation is discussed in the *Fish*; *Wildlife*; and *Threatened, Endangered, and Sensitive Species* sections of this chapter. The most conceivable way to address conservation of these species and other elements of biodiversity is by using a broader "coarse filter," or ecosystem/landscape-based strategy for conserving biological diversity (Noss, 1991; Scott et al., 1991; Hunter, 1991; and Wilcove, 1993).

For this section, as in the 1997 Forest Plan Revision Final EIS, the old-growth ecosystem will be the primary focus for the analysis of biological diversity. For the effects analysis presented later, it is assumed that if a functional and inter-connected old-growth ecosystem is maintained across the Forest, then the closely associated components and ecological processes will also be maintained.

Biological diversity within any healthy forest ecosystem, from a regionally defined ecosystem (such as the Southeast Alaska temperate rain forest down to a province, island, watershed, riparian area, or individual stand of trees), can be described in terms of three components: composition, structure, and function. Composition refers to the numbers and types of species, plant communities, and smaller ecosystems within an area. Structure refers to the arrangement of these communities or ecosystems across a landscape, and how they are connected; and to variations in tree heights and diameters within a stand or between stands. Function refers to the interactions and influences between plant and animal species

within an area (how each species uses its environment) and to natural processes of change or disturbance (wind, aging, etc.). For additional discussion on composition, structure, and function components of biological diversity, see the 1997 Tongass Forest Plan Revision Final EIS.

**Biogeographic Provinces**

The Tongass itself can be subdivided on an ecosystem basis. A broad division that has been used on the Tongass for a number of years is that of the biogeographic province (USDA Forest Service, 1997a). These large-scale provinces are characterized by: 1) similar species composition, 2) similar patterns in distribution for many species, 3) geologic barriers and historical events, such as glaciation, and 4) generally more similar climatic conditions and physiographic characteristics within provinces. By subdividing on this scale, biogeographic provinces can assist land managers in broad-level assessment and planning.

Twenty-one biogeographic (ecological) provinces were identified for the Tongass National Forest (Table 3.2-9). Figure 3.2-1 shows their location, with the numbers corresponding to this list.

**Table 3.2-9  
Biogeographic Provinces Identified within the Tongass National Forest**

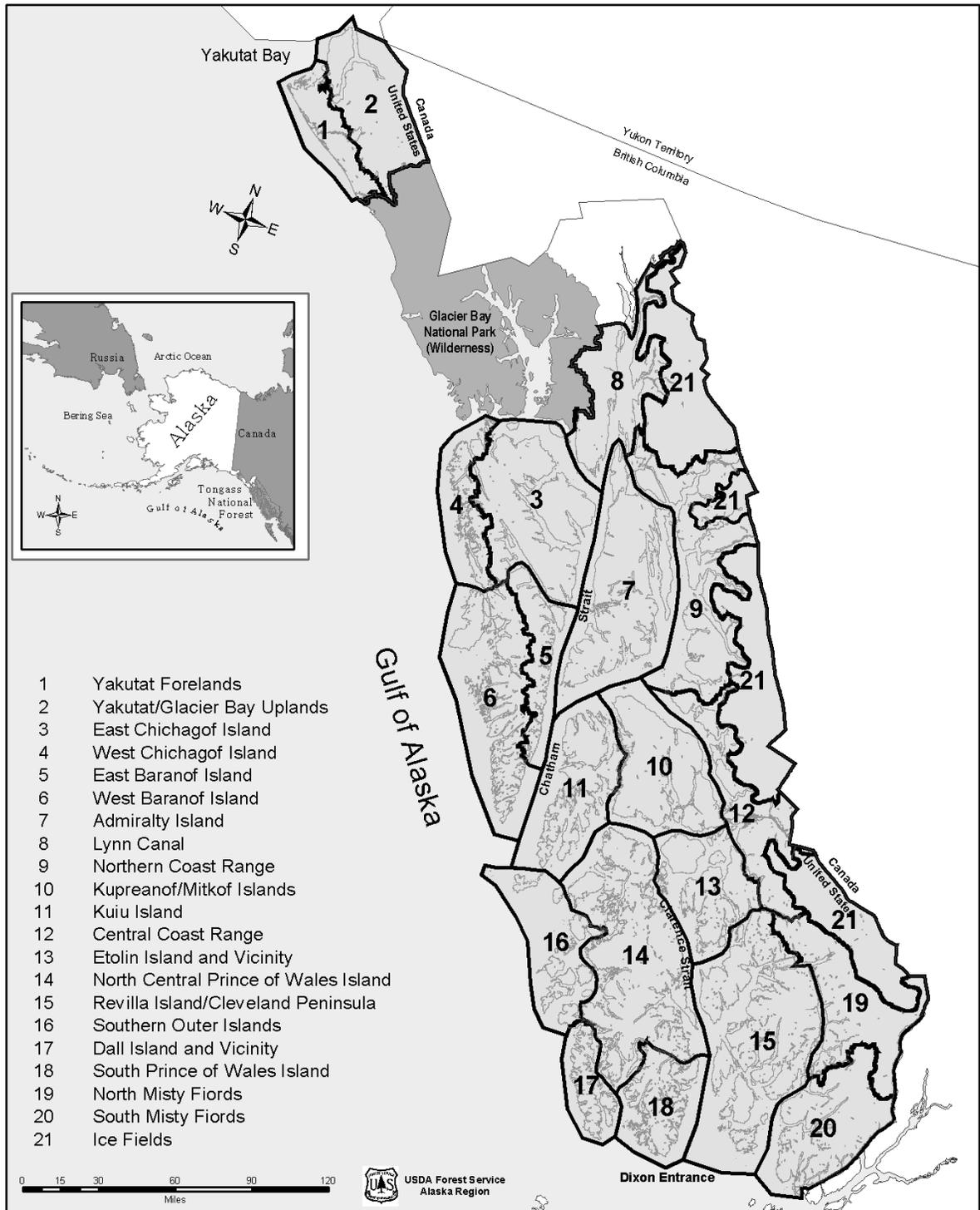
No.	Province	Description
1.	Yakutat Forelands	A very young, nearly flat landscape with extensive flooding and active isostatic rebound (uplifting of the ground after glaciers recede). Most surfaces vary from 200 to 1,500 years old. Dune formation and succession are ongoing processes due to glacial rebound and wave action. Plant community patterns reflect a diverse mosaic of naturally occurring older and young forests, shrublands, bogs, and meadows. Sitka spruce, alder, and cottonwood are abundant on well drained, recently deglaciated, and active fluvial surfaces.
2.	Yakutat/Glacier Bay Upland	The climate varies from very wet hypermaritime along the coast to very wet maritime inland. Mountains abruptly rising more than 10,000 feet from sea level, extensive active glaciers, and fiords dominate this landscape. Sitka spruce, alder, and cottonwood are abundant at lower elevations; alpine and lichen over rock plant communities dominate the land from 2,000 to over 10,000 feet elevation.
3.	East Chichagof Island	This province is drier and colder than the outer coast of Chichagof Island; the winter snow pack is generally greater. Chichagof Island is deeply dissected into three peninsulas, which may be functioning biologically more like separate islands. Vegetation in this province represents a modal condition similar to the Admiralty Island Province.
4.	West Chichagof Island	This province is dominated by a very wet hypermaritime climate and exposure to outer coastal storms. Hundreds of small islands dot the coast. Topography is gentle when compared to the mountains of Baranof Island and the coastline is highly irregular. The Sitka spruce/Pacific reedgrass plant association is abundant along the outermost coastal fringe; otherwise, vegetation is similar to the other northern islands.
5.	East Baranof Island	This province is colder than West Baranof or East Chichagof Island. Mountain glaciers occur along the divide between east and west Baranof. Topography is rugged and steep to saltwater, with little flat land. Plant associations on East Baranof are similar to much of the mainland due to the steep topography and cold environment. Spruce, devil's club, salmonberry forest associations are common on avalanche and steep erosional slopes; alpine and rock/lichen plant communities are abundant.
6.	West Baranof Island	This province is similar to the West Chichagof Island Province with the exception of southern Baranof where precipitation exceeds 250 inches per year. Topographically, Baranof Island is the most rugged of all the islands in Southeast Alaska. The southern half of this province is highly dissected by steep-sided fiords; the outer coast is dotted with hundreds of small islands. All forest plant associations except those in the Western redcedar series and those found around large mainland rivers occur in this province. Kruzof Island has some unique vegetation communities, which have not been classified.
7.	Admiralty Island	This province represents a modal environment, with relatively gentle topography and moderate rainfall. Winter conditions are moderated by the surrounding marine environment. Winds from Chatham and Icy Straits, Lynn Canal, and off the mainland are often severe. All forest plant associations except those in the Western redcedar series, those found around large mainland rivers, and those occurring only on outer coastal areas occur in this province. Forest productivity is high. Fresh and saltwater marshes in the numerous bays and inlets, and alpine and bog communities, are abundant.

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**Table 3.2-9 (continued)**  
**Biogeographic Provinces identified within the Tongass National Forest**

No.	Province	Description
8.	Lynn Canal	Rain shadows and the dominating influence of the continental climate make this the driest and seasonally warmest province in Southeast Alaska. Precipitation is generally less than 60 inches per year. The topography is rugged and glaciated. The southern portion of the Chilkat Peninsula is more similar to the East Chichagof Island Province. Western and mountain hemlock and Sitka spruce plant associations are common. Alpine tundra and extensive rock/lichen communities dominate much of the land from 2,000 to over 8,000 feet elevation.
9.	Northern Coast Range	This province has little maritime influence. Topography is rugged and glaciated. The Taku and Whiting Rivers extend into Canada. Yellow-cedar plant associations occur in this province.
10.	Kupreanof/Mitkof Islands	The climate is cooler and the winter snow pack greater than on the islands to the south. The eastern edge of this province is strongly influenced by wind-born loess (silt) coming from the Stikine River and the mainland. All forest plant associations except those in the Western redcedar series and those occurring only on outer coastal areas occur in this province. This province contains the highest percentage of muskeg wetlands within the Tongass.
11.	Kuiu Island	Kuiu Island is deeply dissected, creating several prominent peninsulas. The topography is gentle compared to neighboring Baranof Island or the mainland. The climate is cooler and winter snow pack greater than on islands to the south, yet milder than the mainland or islands nearer the mainland. The western portion of Kuiu Island is subject to severe windstorms from both the ocean and Chatham Strait. Most forested plant associations occur here, but those found in outer coastal environments dominate.
12.	Central Coast Range	This province is warmer than the Northern Coast Range Province. The topography is similar, but overall less precipitous. The Stikine River system is located in the center of this province and has a major continental influence, providing a migration corridor for plant and animal species. Plant associations found along saltwater are similar to those occurring elsewhere in northern Southeast Alaska except for those near the mouth of the Stikine River. Here, unique plant associations subject to high loess-carrying winds can be found.
13.	Etolin Island and Vicinity	Similar to the Kupreanof/Mitkof Islands Province, this province is also subject to continental influence from the mainland and the Stikine River. Glacial flour is present in the marine environment in the northern part of this province nearly year-round. All forest plant associations except those occurring only on outer coast areas are present.
14.	North Central Prince of Wales Island	Topography is relatively gentle, limestone is common, and precipitation is relatively low due to interception by lands to the south and southwest. All forest plant associations except those found around the mainland river systems occur in this province. Overall forest productivity is high. Karst topography and numerous caves are present.
15.	Revilla Island/Cleveland Peninsula	Climate is variable with warm and wet conditions predominating on land nearest the outer coast; much colder conditions occur near the mainland. Revilla, Gravina, and Annette Islands are influenced by human activities and populations, whereas the Cleveland Peninsula and Duke Island are generally in a natural condition. Revilla Island has many exceptional estuaries. Muskeg ponds are common on Duke Island, attracting many wintering and migratory birds.
16.	Southern Outer Islands	These islands are isolated and are subject to strong oceanic influences. Temperatures are moderate year-round. The topography is low-lying and gentle. These islands are relatively rich in endemic vertebrate, including dusky shrew, long-tailed vole, and ermine. Major coastal seabird colonies are present.
17.	Dall Island and Vicinity	These islands are subject to strong oceanic influences. Temperatures are moderate year-around. The topography is rugged and dissected, with abundant limestone outcrops. Dall Island appears to be a glacial refugia but inventories of plants and animals are limited. Major coastal seabird colonies are present on Dall Island.
18.	South Prince of Wales Island	The climate is warm and wet, and deep snow is rare or highly transient. The topography is steep and rugged and the coastline is highly dissected. The vegetation in this province is strongly influenced by southeasterly storms; mixed conifer and western hemlock-redcedar plant associations dominate.
19.	North Misty Fiords	This province has considerable topographic relief, compared to South Misty Fiords, which has a colder, mainland-type climate with many glaciers. Vegetation occurs in long, narrow strips along the valleys and lower slopes of fiords. Much of the vegetation is muskeg, with cottonwoods in some of the river bottoms and subalpine fir along the Canadian border.
20.	South Misty Fiords	South Misty Fiords is typical of the other mainland provinces and is the warmest. Topographic relief is lower in comparison with North Misty. Forest plant associations are more diverse than the other coastal provinces, and the vegetation is less fragmented by rock and ice than in North Misty Fiords. The southwestern portion of this province is rolling, nearly continuous muskeg with conifer forests in the bottoms and flats. This province is the northern limit of Pacific silver fir, yew, and honeysuckle.
21.	Ice Fields	Permanent ice fields, active glaciers (some advancing and some receding), and nunataks (mountain peaks between glaciers) dominate this province.

**Figure 3.2-1**  
**Map of Biogeographic Provinces of Southeast Alaska**



## 3 Environment and Effects

### Ecological Sections and Subsections

Nowacki et al. (2001) have recently subdivided the ecosystems of Southeast Alaska and adjoining areas of Canada according to the National Hierarchical Framework of Ecological Units (Cleland et al., 1997). The framework consists of eight nested mapping levels that serve a variety of purposes. Nowacki et al. (2001) subdivided the region into 19 ecological sections and 96 ecological subsections; 14 of the ecological sections and 73 of the ecological subsections occur on the Tongass. Within the hierarchy, ecological sections characterize medium to large ecosystems (on the order of 1,000 square miles) and ecological subsections characterize mid-sized ecosystems (10 to 1,000 square miles).

The ecological sections and subsections of the Tongass are listed in Table 3.2-10. Figure 3.2-2 maps the distribution of the ecological sections on the Tongass.

At the ecological subsection level, delineation factors include surficial geology, lithology, geomorphic process, soil groups, subregional climate, and potential natural communities (climax vegetation). Nowacki et al. (2001) emphasized physiography, lithology, and surficial geology as the primary factors for subsection delineation in Southeast Alaska.

### Old-growth Forest

Old-growth forests are ecosystems distinguished by old and typically large trees and related structural attributes. The old-growth forests of the Tongass are distinctively heterogeneous at the large, landscape scale down to an individual stand of old-growth trees with natural openings due to existing muskegs or wind disturbance.

In a very general way, old-growth forests can be divided into a productive and an unproductive component, based on the ability of specific areas to grow trees of a certain size. More than 95 percent of the trees sampled in uncut timber stands were greater than 150 years old. Most of these stands were well beyond 150 years old and were also classed as uneven-aged stands. Productive old growth (POG) shares many values for wood products, scenic quality, and recreation settings; as important wildlife habitat; and to maintain water quality and fish habitat. The Tongass contains approximately 9.4 million acres of old-growth conifer forests, of which 5.0 million are classified as productive and 4.4 million acres are classified as unproductive. There are also approximately 9,000 acres of non-conifer (cottonwood) old-growth forest.

Figure 3.2-3 graphically displays a breakdown of the old growth and other cover types on the Tongass.

#### High-Volume Old-growth Forest

These areas have an average timber volume of 35 thousand board feet (MBF) per acre. The average height of co-dominant trees is greater than 100 feet. Canopy cover is 65 to 95 percent, with western hemlock and/or Sitka spruce dominating most sites. Stands are typically uneven aged with small gaps in the overhead canopy. Understory production is moderate, but snow interception is high, making forage (for deer) more readily available during winter. Vaccinium is the dominant shrub. Herb cover is 20 to 30 percent and fern cover is 15 to 30 percent. Winter thermal cover for wildlife is good.

**Table 3.2-10  
Ecological Sections and Subsections of the Tongass National Forest**

<b>Ecological Sections</b>	<b>Ecological Subsection Number</b>	<b>Ecological Subsection Name</b>
St. Elias-Fairweather Icefields	M244Ca	St. Elias-Fairweather Icefields
	M244Cb	Puget Peninsula Metasediments
Northern Gulf Forelands	M245Bc	Yakutat-Lituya Forelands
Chilkat River Complex	M246Aa	Chilkat Complex
Boundary Ranges	M246Ba	Boundary Ranges Icefields
	M246Bb	Stikine-Taku River Valleys
Glacier Bay Fiordlands	M247Ac	Wachusett-Adams Hills
	M247Ag	Berg Bay Complex
	M247Ak	Chilkat Peninsula Carbonates
Baranof-Chichagof Fiordlands	M247Bb	North Chichagof Granitics
	M247Bc	Outer Coast Wave-cut Terraces
	M247Bd	West Chichagof Complex
	M247Be	Ushk-Patterson Bay Granitics
	M247Bf	Peril Strait Granitics
	M247Bg	North Baranof Complex
	M247Bh	Sitka Sound Complex
	M247Bi	Mount Edgecumbe Volcanics
	M247Bj	Central Baranof Metasediments
	M247Bk	Necker Bay Granitics
	M247Bl	South Baranof Sediments
Northeast Chichagof Fiordlands	M247Ca	Point Adolphus Carbonates
	M247Cb	Freshwater Bay Carbonates
	M247Cc	Kook Lake Carbonates
Kootznoowoo Fiordlands	M247Da	Stephens Passage Glaciomarine Terraces
	M247Db	North Admiralty Complex
	M247Dc	Stephens Passage Volcanics
	M247Dd	Thayer Lake Granitics
	M247De	Mitchell-Hasselborg Till Lowlands
	M247Df	Hood-Gambier Bay Carbonates
	M247Dg	South Admiralty Volcanics
Inside Passage Fiordlands	M247Ea	Holkham Bay Complex
	M247Eb	Cape Fanshaw Complex
	M247Ec	Thomas Bay Outwash Plains
	M247Ed	Wrangell Narrows Metasediments
	M247Ee	Eastern Passage Complex
	M247Ef	Stikine River Delta
	M247Eg	Bell Island Granitics
	M247Eh	Stikine Strait Complex
	M247Ei	Etolin Granitics
	M247Ej	Zimovia Strait Complex
	M247Ek	Clarence Strait Volcanics
	M247El	Ketchikan Mafics/Ultramafics
	M247Em	Vixen Inlet Till Lowlands
	M247En	Traitors Cove Metasediments
M247Eo	Behm Canal Complex	

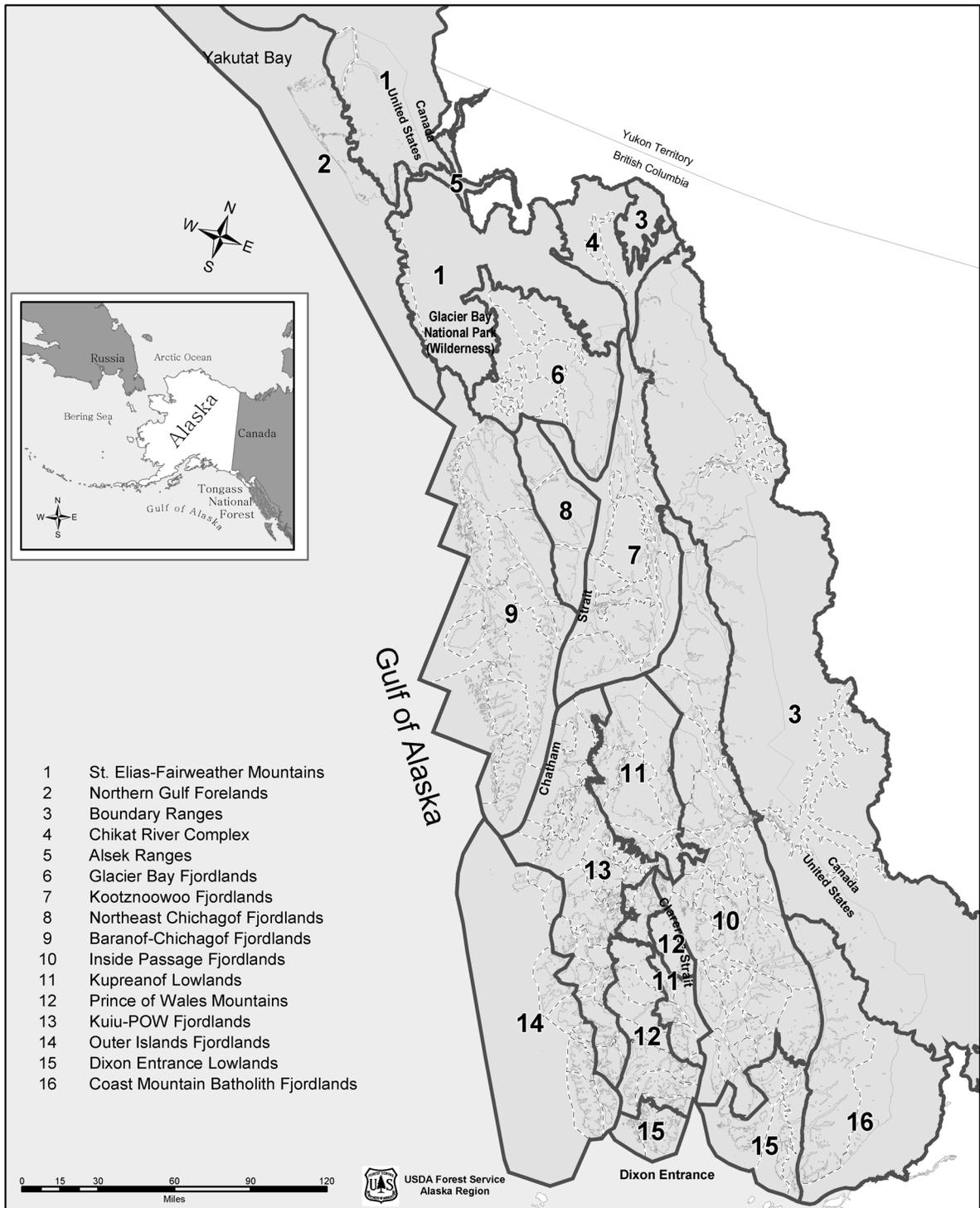
### 3 Environment and Effects

**Table 3.2-10 (continued)**  
**Ecological Sections and Subsections of the Tongass National Forest**

Ecological Sections	Ecological Subsection Number	Ecological Subsection Name
Kuiu-Prince of Wales Fiordlands	M247Fa	Kuiu-POW Granitics
	M247Fb	Rowan Sediments
	M247Fc	North POW-Kuiu Carbonates
	M247Fd	Alvin Bay Sediments
	M247Fe	Affleck Canal Till Lowlands
	M247Ff	North POW Complex
	M247Fg	Elevenmile Till Lowlands
	M247Fh	Gulf of Esquibel Till Lowlands
	M247Fi	Klawock Inlet Till Lowlands
	M247Fj	Soda Bay Till Lowlands
Kupreanof Lowlands	M247Ga	Kake Volcanics
	M247Gb	Duncan Canal Till Lowlands
	M247Gc	Sumner Strait Volcanics
	M247Gd	Central POW Till Lowlands
	M247Ge	Kasaan Peninsula Volcanics
	M247Gf	Skowl Arm Till Lowlands
Outer Islands Fiordlands	M247Ha	Outer Islands Complex
	M247Hb	Dall-Outside Complex
Prince of Wales Mountains	M247Ia	Central POW Volcanics
	M247b	Hetta Inlet Metasediments
	M247c	Moira Sound Complex
Dixon Entrance Lowlands	M247Ja	South POW Granitics
	M247Jb	Duke Island Till Lowlands
	M247Jc	Thorne Arm Granitics
	M247Jd	Princess Bay Volcanics
	M247Je	Foggy Bay Till Lowlands
	M247Jf	Boca De Quadra Complex
Coast Mountain Batholith Fiordlands	M247Ka	Misty Fiords Granitics

Source: Nowacki et al. (2001)

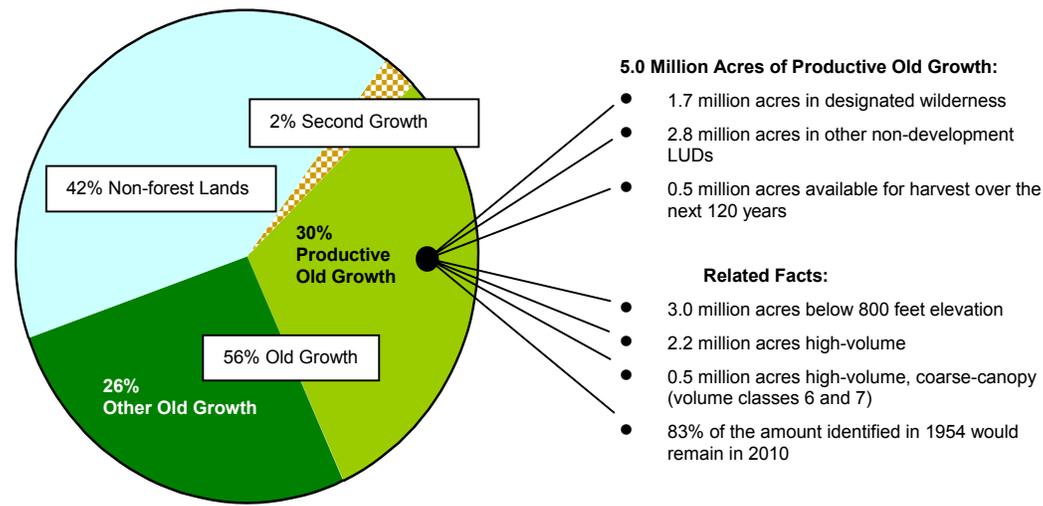
**Figure 3.2-2**  
**Ecological Sections (numbered areas) and Subsections (dashed lines) of Southeast Alaska**



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**Figure 3.2-3. Old Growth on the Tongass National Forest**



#### **Medium-Volume Old-growth Forest**

In these areas the average volume is 25 MBF per acre. Compared to the higher volume class, these stands have shorter trees (70 to 100 feet) and a more open canopy (40 to 75 percent). Western hemlock and/or Sitka spruce still dominate, but cedars can be a significant component in more southerly areas, and mountain hemlock at higher elevations. The stands are uneven aged, with numerous gaps in the overhead canopy. The more open canopy results in a more abundant understory, but it is subject to burial by snow in the winter. Vaccinium is more abundant on these sites, ferns are less common, and forbs are generally more common than ferns. Winter thermal cover for wildlife is moderate.

#### **Low-Volume Old-growth Forest**

The average volume is 16 MBF per acre. The overstory is relatively open, with 20 to 50 percent canopy closure. Tree height is typically less than 60 feet. Western hemlock and cedars predominate. The understory is very brushy, dominated by tall thickets of Vaccinium and Menziesia, which tend to diminish the production of herbs, ferns, half-shrubs, and forbs. Lichens are relatively abundant. Thermal cover for wildlife is poor.

#### **High-Volume, Coarse-Canopy Old-growth Forest**

Areas that are mapped as high-volume old growth typically contain large trees, but may be fairly uniform in structure. In order to consider areas with high habitat structure, a measure has been developed that is referred to as high-volume, coarse-canopy old growth (Caouette et al., 2000; Caouette and DeGayner, 2001). It is a measure of stands with many tall, large-diameter, widely spaced trees, typically located in areas of well-drained soils on unconsolidated sediments associated with alluvial fans, floodplains or toe slopes. They are referred to as coarse-canopy because, on aerial photographs, these stands exhibit coarse-textured canopies (many large crowns and frequent canopy gaps).

**Other Forest Lands**

These are classified as unproductive forest in the timber inventory. These lands have at least 10 percent tree cover, but are not capable of producing 20 cubic feet per acre per year. Many of these stands are consistent with old-growth definitions, but the trees are typically small and stunted (under 40 feet in height) and the canopy is open (10 to 40 percent cover). Hemlock, cedar, and lodgepole pine are the most common trees; Vaccinium and Menziesia the most common shrubs. Near wet bogs, or muskegs, heath family plants and grasses assume increasing dominance. Thermal cover for wildlife is poor.

**Elevational Distribution of Old Growth**

The old-growth forest resource can also be characterized by landscape "position," or the location of the old growth within a landscape. This is an important compositional component for biodiversity. Elevation is considered one of the most significant landscape variables influencing old-growth forest habitat value. Three elevational zones are described in Table 3.2-11 and the acreages for these components are divided between the productive and unproductive old growth. Note that the 1997 Forest Plan Revision Final EIS also considered old growth in the beach and estuary fringe and riparian zone; however, because the current (1997) Forest Plan protects these areas and the alternatives considered in this SEIS do not affect these landscape positions, they are not considered further here.

The percentage of the productive old-growth forest component is higher at lower elevations, where it accounts for approximately 60 percent. Forest-wide, productive old growth is approximately 53 percent of total old growth.

**Table 3.2-11  
Conifer Old-growth Acres of the Tongass within Three Elevational Zones**

Elevational Zone	Description	Productive Old Growth	Unproductive Old Growth	Total Old Growth
<800 feet	All upland old growth below 800 feet in elevation	2,998,879	2,029,177	5,028,055
800-1,500 feet	All upland old growth between 800 and 1,500 feet in elevation	1,414,917	1,030,302	2,445,219
>1,500 feet	All upland old growth more than 1,500 feet in elevation	577,391	1,399,031	1,976,422
<b>Total</b>		<b>4,991,187</b>	<b>4,458,510</b>	<b>9,449,696</b>

**Forest-Wide Distribution**

The distribution and condition of the old growth ecosystem across the Tongass can be examined by comparing various measures of old growth across biogeographic provinces and ecological subsections.

**Old-growth by Biogeographic Province**

Table 3.2-12 displays the total and current productive old-growth forest acres within each of the 21 biogeographic provinces, including high-volume old-growth, high-volume, low-elevation old growth, and high-volume, coarse-canopy old growth, and the amount of productive old growth that has been harvested, by category. Approximately 437,000 acres of the 1954 estimated amount of 5,428,000 acres of productive old growth on National Forest System lands have been harvested since 1954 (about 8 percent of the total). Note that most of the non-federal lands are also available for timber harvest and many have been heavily developed, which cumulatively affects old-growth forest resources (see the *Timber* section). These values serve as baselines for estimated future changes under the SEIS alternatives.

**Table 3.2-12**  
**Distribution of Acres of Total Land Area and Various Measures of Productive Old Growth (POG) and Percent Harvest of POG Across the 21 Biogeographic Provinces**

No.	Geographic Unit	National Forest System Land Area	Total Productive Old Growth	High-Volume Productive Old Growth	High-Volume POG <800 ft Elevation	High-Volume, Coarse-Canopy POG	Percent <sup>1</sup> of Original POG Harvested	Percent <sup>1</sup> of Original High-Volume POG Harvested	Percent <sup>1</sup> of High-Volume POG <800 ft Harvested
1	Yakutat Forelands	313,508	48,270	27,963	27,812	25,160	6%	9%	9%
2	Yakutat Uplands	916,848	23,498	11,392	10,911	2,000	4%	7%	8%
3	East Chichagof Island	1,045,004	396,171	150,901	93,357	34,088	10%	23%	29%
4	West Chichagof Island	282,930	72,659	19,115	15,525	2,007	0%	0%	0%
5	East Baranof Island	390,745	88,801	28,470	21,145	1,971	13%	32%	37%
6	West Baranof Island	764,119	216,482	58,082	43,605	4,144	7%	23%	27%
7	Admiralty Island	1,043,818	591,783	337,638	211,322	97,783	0%	0%	0%
8	Lynn Canal	634,759	154,527	62,844	38,541	11,881	3%	8%	10%
9	North Coast Range	996,800	320,773	131,705	65,043	22,755	0%	0%	0%
10	Kupreanof/Mitkof Island	756,910	306,894	104,796	61,279	19,648	10%	24%	31%
11	Kuiu Island	490,883	296,578	172,975	119,130	36,434	9%	14%	17%
12	Central Coast Range	717,046	246,981	116,362	71,875	20,035	3%	5%	8%
13	Etolin Island	501,913	224,012	84,026	49,752	12,793	14%	30%	36%
14	North Central Prince of Wales	1,207,928	521,210	273,647	172,739	118,151	26%	40%	45%
15	Revilla Island/Cleveland Pen.	1,165,608	506,272	264,471	138,350	31,315	8%	14%	19%
16	Southern Outer Islands	210,933	114,567	56,184	39,942	13,018	12%	21%	25%
17	Dall Island and Vicinity	117,744	69,926	36,406	25,157	8,705	1%	1%	2%
18	South Prince of Wales	362,879	163,813	83,174	57,851	43,850	2%	3%	4%
19	North Misty Fiords	969,661	199,483	69,938	40,888	12,778	1%	1%	2%
20	South Misty Fiords	905,896	311,596	111,853	74,438	14,139	0%	0%	0%
21	Ice Fields	3,004,975	116,890	39,811	18,653	6,204	3%	9%	15%
<b>Forest-wide</b>		<b>16,800,907</b>	<b>4,991,187</b>	<b>2,241,753</b>	<b>1,397,317</b>	<b>538,859</b>	<b>8%</b>	<b>16%</b>	<b>20%</b>

<sup>1</sup> Percentage of the original (1954) productive old-growth harvest between 1954 and 2001.

Across the Tongass, timber harvest has been concentrated in the higher volume classes (harvested stands have averaged 39 MBF per acre). In contrast to the approximately 92 percent of productive old growth remaining, a smaller percentage (about 84 percent) of the higher volume acres remains unharvested (this is under the worst-case assumption that all past harvest was high-volume old growth). To a lesser extent, timber harvest has also been concentrated at the lower elevations (e.g., approximately 80 percent of the high-volume, low elevation old growth remains unharvested). Timber harvest has occurred in a spatially clumped fashion across the Tongass, with activity concentrated on islands, such as Prince of Wales, Northeast Chichagof, and Zarembo. Very little activity has occurred on islands and parts of the mainland within the 19 wildernesses and 12 legislated LUD II areas.

Sixteen of the twenty-one biogeographic provinces currently have more than 100,000 acres of productive old growth, and three (Admiralty, North Central Prince of Wales, and Revilla/Cleveland) each have more than 500,000 acres. Six provinces: East Chichagof Island, East Baranof Island, Kupreanof/Mitkof Islands, Etolin Island, North Central Prince of Wales Island, and Southern Outer Islands, have had 10 percent or more of their original (1954) productive old growth harvested. Of these six, North Central Prince of Wales has had considerably more productive old growth harvested than the others (26%), and substantially more high-volume old growth (40%). In most cases, this harvest is a relatively small percentage of total province acres (for instance, the approximately 13,500 acres harvested in East Baranof are about 3 percent of that province's 396,000 acres). In one case, North Central Prince of Wales, the harvested area makes up 12 percent of total province acres.

Analysis of biodiversity across the forest assumes that the amount of old-growth timber harvest is a measure of potential effects on biodiversity. Since the 1997 Forest Plan Revision and the signing of the 1997 ROD (up to late 2001), lands within the Old-growth Habitat LUD have increased by 12,441 acres through reallocation, and now contain 4,944 more acres of productive old growth. Old-growth habitat reserves modified during Fiscal Years 1998, 1999, and 2000 exceed the productive old-growth requirements (see Appendix K of the 1997 Forest Plan) by 8,346 acres, or 49 percent (USDA Forest Service, 2001, Monitoring Report). This has resulted in a reduction of the timber base available for timber harvest by 2,452 acres (Table 3.2-13).

Table 3.2-14 summarizes the amount of timber harvest in Fiscal Years 1998, 1999, and 2000 by biogeographic province and volume strata. A total of 12,404 acres of POG were treated by some type of timber harvest method (clearcut, clearcut with reserves, or partial cutting). A total of 3,416 acres, 3,586 acres, and 5,402 acres were harvested in 1998, 1999, and 2000, respectively (USDA Forest Service, 2001, Monitoring Report). Of these acres, 7,291 acres were in the high volume stratum (59 percent of total harvested).

### ***Old-growth by Ecological Subsection***

Examining the distribution of old growth by ecological subsection, allows a finer-scale look. Table 3.2-15 displays the productive old-growth forest acres within each of the 73 ecological subsections on the Tongass. This table displays both productive old growth and high-volume, coarse-canopy productive old-growth for each subsection, as well as the percent of the productive old growth harvested and the percent of the remaining old growth that is suitable for timber management.

Distribution on National Forest System Land. Sixty of the 73 ecological subsections currently have more than 20,000 acres of productive old growth on National Forest System land and 65 of the ecological subsections have more than 10,000 acres. The 13 subsections that currently have less than 20,000 acres, also had less than

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**Table 3.2-13  
Summary of Acreage Changes in the Old-growth LUDs Documented in Project-level NEPA  
RODs During Fiscal Year 2000**

Project FY ROD Signed	VCU	1997 OGR Acres (POG)	Guideline OGR Acres (POG) <sup>1</sup>	Modified OGR Acres (POG)	Net Change OGR Acres (POG)	Net Change Suitable Acres <sup>2</sup>	Comments
Canal Hoya 1998	520	2,090 (1,630)	2,901 (1,450)	9,210 (2,740)	+7,120 (+1,110)	-151	1) Expanded to meet size requirement
Chasina 1998	680	1,525 (537) <sup>3</sup>	637 (318)	2,202 (842)	+667 (+305)	-78	1) Too small due to private lands 2) Expanded to meet size requirement
Control Lake 1998	597.2 597.1	5,073 (2,418) <sup>3</sup>	3,404 (1,702)	4,596 (2,359) <sup>3</sup>	-477 (-59)	+304	1) Remove 2nd growth 2) Improve connectivity 3) Includes small part of 5980
Crystal Creek (Delta Creek) 1998	487	2,800 (1,680)	3,195 (1,598)	4,100 (2,340)	+1,330 (+660)	+6	1) Include goat range 2) Maintain corridor along Paterson River 3) Reduce 2nd growth
Crystal Creek (Brown Cove) 1998	489	4,650 (2,550)	6,444 (3,222)	4,840 (2,640)	+190 (+90)	-372	1) Add goat range 2) Improve connectivity 3) Brown Cove in same VCU
CrystalCreek (Pt. Agassiz) 1998	489	2,350 (1,260)	Part of Brown Cove	2,270 (1,400)	-80 (+140)	-306	1) Reduce beach and riparian buffers 2) Add high volume stands
Todhal Back 1998	443	1,557 (687)	2,106 (1,598)	2,159 (1,090)	+602 (+403)	-361	1) Meet POG requirements
Niblack EA 1998	683	583 (344)	1,414 (707)	1,499 (828)	+916 (+484)	+252	1) Meet POG requirements
Nemo Loop Thoms Lake 1998	479	12,203 (7,157)	10,000 (5,000)	12,430 (7,917)	+227 (+760)	-755	1) Fixed mapping error to allow road corridor 2) Improve connectivity
Sea Level 1999	756	1,160 (800)	1,308 (654)	1,395 (716)	+235 (-84)	-315	1) Meet size requirement 2) Improve connectivity
Kuakan Timber Sale 2000	525	1,141 (931)	1,526 (763)	1,564 (999)	+423 (+68)	-126	1) Meet size requirement 2) Improve location
Doughnut Timber Sale 2000	476 477	2,001 (1,560)	3,090 (1,540)	3,090 (1,620)	+1,089 (+60)	+14	1) Meet size requirement
Luck Lake 2000	581 582 583	5,984 (2,884)	5,874 (3,015)	6,156 (3,841)	+172 (+957)	-537	1) Meet size requirement 2) Improve location
Salty Timber Sale 2000	747	2,576 (1,821)	2,580 (1,290)	2,603 (1,871)	+27 (+50)	-27	1) Meet size requirement 2) Improve connectivity
<b>Total</b>	<b>N/A</b>	<b>43,117 (24,438)</b>	<b>41,899 (21,567)</b>	<b>55,511 (29,332)</b>	<b>+12,414 (+4,894)</b>	<b>-2,452</b>	

<sup>1</sup> Required acreage (Appendix K of 1997 Forest Plan).

<sup>2</sup> Suitable acres are those that are suitable for timber harvest.

<sup>3</sup> Numbers not found in environmental document. It was determined by subsequent GIS analysis for this report.

Notes:

All numbers are in acres.

POG = volume strata H, M, L

OGR = Old-growth reserve

Source: USDA Forest Service, 2000 (Monitoring Report).

**Table 3.2-14  
Acres of Timber Harvest During Fiscal Year 1998, 1999, and 2000 by Province and Percentage of Total POG and High Volume POG Harvested**

	Province	Acres Harvested During FY 1998-2000	Current Total POG Acres	% POG Harvested in FY 1998-2000	Current High-Volume POG Acres	% High-Volume POG Harvested in FY 1998-2000
1	Yakutat Forelands	0	48,270	0	27,963	0
2	Yakutat Uplands	0	23,498	0	11,392	0
3	East Chichagof Island	46	396,171	<0.1	150,901	0
4	West Chichagof Island	0	72,659	0	19,115	0
5	East Baranof Island	445	88,801	0.5	28,470	0.9
6	West Baranof Island	0	216,482	0	58,082	0
7	Admiralty Island	0	591,783	0	337,638	0
8	Lynn Canal	0	154,527	0	62,844	0
9	North Coast Range	0	320,773	0	131,705	0
10	Kupreanof/Mitkof Island	1,563	306,894	0.5	104,796	0.8
11	Kuiu Island	1,187	296,578	0.4	172,975	0.6
12	Central Coast Range	0	246,981	0	116,362	0
13	Etolin Island	524	224,012	0.2	84,026	0.4
14	North Central Prince of Wales	5,656	521,210	1.1	273,647	1.3
15	Revilla Island/Cleveland	2,736	506,272	0.5	264,471	0.7
16	South Outer Islands	249	114,567	0.2	56,184	0.4
17	Dall Island and Vicinity	0	69,926	0	36,406	0
18	South Prince of Wales	0	163,813	0	83,174	0
19	North Misty Fjords	0	199,483	0	69,938	0
20	South Misty Fjords	0	311,596	0	111,853	0
21	Ice Fields	0	116,890	0	39,811	0
	<b>Total</b>	<b>12,403</b>	<b>4,991,187</b>	<b>0.2</b>	<b>2,241,753</b>	<b>0.3</b>

20,000 acres prior to 1954. Similarly, the eight with less than 10,000 acres had less than 10,000 prior to 1954.

Past Harvest on National Forest System Land. Past harvest has occurred in 55 ecological subsections and has amounted to more than 20,000 acres in five of them. Harvest in these five subsections represents approximately half of all harvest on National Forest System lands. The highest past harvest (80,579 acres) and percent (42%) of productive old growth harvested occurred in the North Prince of Wales–Kuiu Carbonates Ecological Subsection. Sixty-nine of the ecological subsections have had less than 20 percent of their productive old growth harvested and 53 have had less than 10 percent harvested.

Future Harvest on National Forest System Land. Under the current Forest Plan, only lands classified as suitable for timber production can be harvested in the future. An estimate of future cumulative percent harvest of productive old growth on National Forest System lands can be achieved by adding the percent past harvest to the percent of the remaining productive old growth that is suitable. Based on this approach, the future cumulative percent harvest of productive old growth on National Forest System lands would be approximately 17 percent across the Tongass. Thirty of the ecological subsections would have less than 10 percent of their productive old growth harvested, 49 would have less than 20 percent harvested. One subsection would have a future cumulative percent harvest of greater than 50 percent: North Prince of Wales-Kuiu Carbonates (56%). Two others would exceed 40 percent: Thomas Bay Outwash Plains (46%), and Central Prince of Wales Volcanics (45%).

High-Volume, Coarse-Canopy Old Growth. High quality old-growth habitat is often equated with high-volume old growth (as discussed in the Biogeographic Province

### 3 Environment and Effects

**Table 3.2-15  
Distribution of Acres of Total Land Area and Various Measures of Productive Old Growth (POG)  
and Percent Harvest of POG Across the 73 Ecological Subsections of the Tongass**

Ecolog. Subsec. Number	Ecological Subsection Name	National Forest System Land Area	Total Productive Old Growth	High-Volume, Coarse-Canopy Old Growth	Percent of Original POG Harvested	Percent of Remaining POG that is Suitable – based on Original POG
M244Ca	St. Elias-Fairweather Icefields	827,396	8,549	1,530	7%	7%
M244Cb	Puget Peninsula Metasediments	99,483	7,303	961	0%	0%
M245Bc	Yakutat-Lituya Forelands	353,526	59,503	25,548	6%	7%
M246Aa	Chilkat Complex	10,268	1,763	197	0%	0%
M246Ba	Boundary Ranges Icefields	4,106,213	244,841	11,520	2%	3%
M246Bb	Stikine-Taku River Valleys	75,876	33,775	1,896	0%	0%
M247Ac	Wachusett-Adams Hills	4,874	229	0	0%	0%
M247Ag	Berg Bay Complex	6,766	5,218	1,401	0%	0%
M247Ak	Chilkat Peninsula Carbonates	324,254	78,396	7,163	6%	10%
M247Bb	North Chichagof Granitics	398,682	96,591	6,119	3%	3%
M247Bc	Outer Coast Wave-cut Terraces	116,693	38,518	529	0%	0%
M247Bd	West Chichagof Complex	132,839	30,171	1,294	0%	0%
M247Be	Ushk-Patterson Bay Granitics	115,091	42,251	3,002	5%	5%
M247Bf	Peril Strait Granitics	232,362	101,674	5,146	10%	10%
M247Bg	North Baranof Complex	128,497	53,950	1,474	18%	10%
M247Bh	Sitka Sound Complex	170,059	75,360	1,162	10%	6%
M247Bi	Mount Edgecumbe Volcanics	72,768	23,779	361	14%	8%
M247Bj	Central Baranof Metasediments	345,558	37,772	635	11%	4%
M247Bk	Necker Bay Granitics	185,242	40,923	1,126	0%	0%
M247Bl	South Baranof Sediments	168,087	35,620	708	0%	0%
M247Ca	Point Adolphus Carbonates	86,395	42,002	8,215	5%	6%
M247Cb	Freshwater Bay Carbonates	217,900	98,066	6,618	15%	12%
M247Cc	Kook Lake Carbonates	93,756	48,647	4,421	18%	10%
M247Da	Stephens Passage Glaciomarine Terraces	233,398	130,936	11,660	0%	4%
M247Db	North Admiralty Complex	283,756	123,238	20,102	0%	0%
M247Dc	Stephens Passage Volcanics	80,461	48,907	7,318	2%	0%
M247Dd	Thayer Lake Granitics	71,817	45,757	7,330	0%	0%
M247De	Mitchell-Hasselborg Till Lowlands	92,485	63,099	6,015	0%	0%
M247Df	Hood-Gambier Bay Carbonates	215,255	144,684	30,724	0%	0%
M247Dg	South Admiralty Volcanics	187,096	99,827	19,780	0%	0%
M247Ea	Holkham Bay Complex	478,246	258,940	18,019	0%	9%
M247Eb	Cape Fanshaw Complex	64,656	43,272	7,050	1%	24%
M247Ec	Thomas Bay Outwash Plains	26,991	10,265	1,728	30%	16%
M247Ed	Wrangell Narrows Metasediments	279,113	133,342	11,424	16%	22%
M247Ee	Eastern Passage Complex	238,961	112,811	7,737	2%	15%
M247Ef	Stikine River Delta	41,726	21,101	2,528	16%	2%
M247Eg	Bell Island Granitics	330,723	136,483	4,644	3%	7%
M247Eh	Stikine Strait Complex	64,234	29,153	1,276	9%	18%
M247Ei	Etolin Granitics	88,760	30,480	1,235	6%	18%
M247Ej	Zimovia Strait Complex	206,064	97,704	5,117	10%	21%
M247Ek	Clarence Strait Volcanics	157,358	85,362	4,651	2%	6%
M247El	Ketchikan Mafics/Ultramafics	51,979	21,333	2,239	1%	17%
M247Em	Vixen Inlet Till Lowlands	26,637	10,145	781	0%	21%
M247En	Traitors Cove Metasediments	280,282	137,795	13,252	15%	15%

**Table 3.2-15 (continued)**  
**Distribution of Acres of Total Land Area and Various Measures of Productive Old Growth (POG)**  
**and Percent Harvest of POG Across the 73 Ecological Subsections of the Tongass**

Ecolog. Subsec. Number	Ecological Subsection Name	National Forest System Land Area	Total Productive Old Growth	High-Volume, Coarse-Canopy Old Growth	Percent of Original POG Harvested	Percent of Remaining POG that is Suitable – based on Original POG
M247Eo	Behm Canal Complex	231,706	87,403	5,999	5%	4%
M247Fa	Kuiu-POW Granitics	147,111	80,761	10,691	6%	5%
M247Fb	Rowan Sediments	130,105	93,323	19,608	15%	15%
M247Fc	North POW-Kuiu Carbonates	228,780	111,094	41,689	42%	14%
M247Fd	Alvin Bay Sediments	81,928	56,950	3,572	2%	9%
M247Fe	Affleck Canal Till Lowlands	56,307	27,566	1,043	0%	0%
M247Ff	North POW Complex	80,913	43,085	9,699	14%	16%
M247Fg	Elevenmile Till Lowlands	43,264	14,681	1,106	2%	15%
M247Fh	Gulf of Esquibel Till Lowlands	46,724	15,084	632	0%	0%
M247Fi	Klawock Inlet Till Lowlands	1,099	677	0	12%	0%
M247Fj	Soda Bay Till Lowlands	104,253	41,969	3,126	2%	12%
M247Ga	Kake Volcanics	82,392	34,208	2,414	17%	17%
M247Gb	Duncan Canal Till Lowlands	242,524	77,176	3,843	9%	21%
M247Gc	Sumner Strait Volcanics	359,639	156,372	8,877	7%	20%
M247Gd	Central POW Till Lowlands	224,229	103,117	19,824	24%	14%
M247Ge	Kasaan Peninsula Volcanics	10,193	4,241	517	0%	11%
M247Gf	Skowl Arm Till Lowlands	66,807	20,474	3,155	6%	19%
M247Ha	Outer Islands Complex	30,462	19,047	1,387	0%	0%
M247Hb	Dall-Outside Complex	205,237	126,494	13,993	1%	6%
M247Ia	Central POW Volcanics	425,512	179,101	38,708	27%	18%
M247Ib	Hetta Inlet Metasediments	149,942	73,337	27,823	14%	15%
M247Ic	Moira Sound Complex	119,764	58,090	12,694	0%	14%
M247Ja	South POW Granitics	139,984	49,315	8,199	0%	5%
M247Jb	Duke Island Till Lowlands	46,889	7,359	113	3%	0%
M247Jc	Thorne Arm Granitics	62,962	26,986	1,219	9%	7%
M247Jd	Princess Bay Volcanics	55,750	26,744	357	14%	9%
M247Je	Foggy Bay Till Lowlands	56,321	20,837	387	0%	0%
M247Jf	Boca De Quadra Complex	128,124	57,091	911	0%	0%
M247Ka	Misty Fiords Granitics	1,469,408	389,071	21,640	0%	0%
	<b>Total</b>	<b>16,800,907</b>	<b>4,991,187</b>	<b>538,859</b>	<b>8%</b>	<b>9%</b>

### 3 Environment and Effects

section above). Another measure of high habitat quality that is considered to be more reflective of high habitat structure is that of high-volume, coarse-canopy old growth (Caouette et al., 2000; Caouette and DeGayner, 2001). Approximately 11 percent (about 539,000 acres) of the productive old growth on the Tongass is mapped as high-volume, coarse-canopy. The majority (71%) of this high-structure habitat, or about 385,000 acres, is also at low elevation (< 800 ft.) Approximately 12 percent of the high-volume, coarse-canopy old growth is mapped as suitable for timber production; conversely, 88 percent is not considered suitable. Similarly, only about 10 percent of the low elevation portion is considered suitable and 90 percent is not suitable. A slightly higher percentage of this low-elevation habitat is considered unsuitable because the density of beach fringe and riparian buffers is higher at lower elevations.

Seven ecological subsections have more than 20,000 acres mapped as high-volume, coarse-canopy old growth. These include the Yakutat-Lituya Forelands, North Admiralty Complex, Hood-Gambier Bay Carbonates, North Prince of Wales-Kuiu Carbonates, Central Prince of Wales Volcanics, Hetta Inlet Metasediments, and the Misty Fiords Granitics.

#### Direct & Indirect Effects

#### Environmental Consequences

The previous discussions in this *Biodiversity* section emphasized old-growth forests as the key to describing and understanding the biological diversity of Southeast Alaska and the Tongass National Forest. These old-growth forests, which cover more than one half of the 16.8 million acres of the Tongass, are the primary habitat for the majority of the terrestrial wildlife species. As a result, the discussion of the potential consequences to biological diversity under the alternatives will focus on old-growth forests as wildlife habitat and as an ecosystem with uniquely defined characteristics. The discussion here focuses on general effects to the composition, structure, and functions of the old-growth forest ecosystem.

The 1997 Tongass Forest Plan Revision Final EIS considered the viability of old-growth associated species, the possible effects of the alternatives, and the likelihood of maintaining viable well-distributed populations. The assumption was made that if a functional interconnected old-growth ecosystem is maintained, then its component parts (composition and structure) and processes (function) are maintained. The likelihood of these outcomes was discussed in detail under the old-growth panel assessment in the *Biodiversity* section of the 1997 Final EIS.

The framework of the old-growth forest conservation strategy in the current Forest Plan consists of a network of small, medium, and large Old Growth Reserves (OGRs), specifically designed to conserve habitats of the species that have the greatest viability concerns. It was designed, in part, to recognize and account for current conditions within each biogeographic province, and to better maintain future old-growth forest in provinces where past harvest has been high. A second component of the old-growth forest conservation strategy in the 1997 Forest Plan is the set of standards and guidelines that protect specific areas (e.g., 1,000-foot-wide beach fringe) and provide habitat connectivity in those areas with LUD allocations that permit commercial timber harvest. It is important to note that the conservation measures associated with the selected alternative in the 1997 Forest Plan Revision Final EIS conserves plant and animal communities by maintaining large amounts of productive old growth (approximately 90 percent of existing) Forest-wide, in various landscape positions in each of the biogeographic provinces.

This strategy relative to wildlife viability is further described under the *Wildlife* section. As part of the 1997 Forest Plan Revision Final EIS, several species conservation assessments and/or panel assessments (e.g., marbled murrelet, northern goshawk,

Alexander Archipelago wolf, American marten, brown bear) were conducted to assess viability concerns. Research conducted for the 1997 Final EIS adequately assessed the viability concerns for the above species primarily through the reserve system. Everest et al. (1997) concluded that the management decisions made in developing the selected alternative achieved a high degree of consistency with the available scientific information.

Tables 3.2-16 and 3.2-17 give a picture of anticipated changes to the old-growth forest resource over time under each alternative. Tables 3.2-18 and 3.2-19 provide this same picture with regard to the high-volume portion of the old growth resource. Both sets of tables display the estimated productive old growth for 1954 and 2002. The information in these tables is stratified by biogeographic province.

The same picture for ecological subsections can be obtained by examining the trends exhibited in Tables 3.2-16 through 3.2-19 along with the last two columns of Table 3.2-15. Summing the last two columns of Table 3.2-15 together provides an estimate of the maximum percentage of the original productive old growth that would be harvested over time, under the existing Forest Plan in each ecological subsection. This represents Alternatives 1, 2, and 4. For the other alternatives, the maximum harvest would be less.

### Alternatives 1, 2, and 4

Alternatives 1, 2, and 4 are the same in terms of the estimated amount of productive old growth that would be suitable and available for harvest: approximately 483,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (57 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/Cleveland Peninsula, and Etolin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 83 percent of the original productive old growth that existed in 1954 would be remaining in 2120 (Table 3.2-17), and approximately 75 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 90 percent of the current amount of productive old growth.

As indicated above under *Affected Environment*, assuming that all suitable productive old growth is harvested by 2120, one ecological subsection would have greater than a 50-percent harvest of the original amount of productive old growth on National Forest System lands (Table 3.2-15). Two other subsections would have a 40 to 50-percent harvest, and eight others would have a 30 to 40 percent harvest. These subsections, along with their estimated future cumulative percent harvest, are as follows:

North POW - Kuiu Carbonates – 56%	Thomas Bay Outwash Plains – 46%
Central POW Volcanics – 45%	Wrangell Narrows Metasediments – 38%
Central POW Till Lowlands - 35%	Kake Volcanics – 34%
Zimovia Strait Complex – 31%	Duncan Canal Till Lowlands - 30%
North POW Complex – 30%	Rowan Sediments – 30%
Traitors Cove Metasediments – 30%	

Alternatives 1, 2, and 4 would have the same effect on biodiversity as does the current Forest Plan. The 1997 Tongass Forest Plan Revision Final EIS found that Alternative 11 (which forms the basis for the 1997 Forest Plan) ranked among the alternatives with the fewest reductions to biodiversity. The 1997 Forest Plan Revision Final EIS ROD concluded that because of its Forest-wide old-growth conservation strategy and Forest-wide standards and guidelines, Alternative 11

**Table 3.2-16  
Estimated Total POG for 1954 and 2002, and the Estimated Scheduled Suitable POG that can be Harvested within Each Biogeographic Province under Each Alternative**

No.	Biogeographic Province	Estimated POG		Estimated Scheduled Suitable POG by Alternative <sup>1</sup>									
		1954	2002	1	2	3	4	5	6	7	8		
1	Yakutat Forelands	51,186	48,270	4,566	4,566	4,566	4,566	4,566	4,566	4,566	1,482	3,761	1,482
2	Yakutat Uplands	24,400	23,498	94	94	94	94	94	94	94	26	28	26
3	East Chichagof Island	440,073	396,171	37,069	37,069	34,857	37,069	37,069	37,069	29,218	12,713	28,951	13,232
4	West Chichagof Island	72,659	72,659	2	2	-	2	2	2	2	-	-	-
5	East Baranof Island	102,172	88,801	7,907	7,907	7,907	7,907	7,907	7,907	6,424	2,425	6,424	2,708
6	West Baranof Island	233,423	216,482	8,730	8,730	8,730	8,730	8,730	8,730	8,730	1,959	8,730	1,959
7	Admiralty Island	592,739	591,783	0	0	0	0	0	0	0	0	0	0
8	Lynn Canal	159,888	154,527	13,526	13,526	13,526	13,526	13,526	13,526	13,526	2,861	4,236	2,861
9	North Coast Range	321,001	320,773	25,326	25,326	25,326	25,326	25,326	25,326	8,683	482	1,547	485
10	Kupreanof/Mitkof Island	340,785	306,894	70,279	70,279	59,382	70,279	53,637	70,279	23,313	38,289	24,213	38,289
11	Kuiu Island	324,334	296,578	38,837	38,837	26,070	38,837	28,070	38,837	15,580	27,591	18,616	38,837
12	Central Coast Range	253,500	246,981	29,486	29,486	27,468	29,486	29,486	29,486	1,038	14,465	1,038	29,486
13	Etolin Island	260,006	224,012	44,967	44,967	44,967	44,967	44,967	44,967	20,076	36,602	17,458	44,967
14	North Central Prince of Wales	702,720	521,210	106,003	106,003	106,003	106,003	106,003	106,003	64,222	99,633	65,785	106,003
15	Revilla Island/Cleveland Pen.	549,539	506,272	55,604	55,604	40,127	55,604	40,105	55,604	15,234	40,105	16,123	55,604
16	Southern Outer Islands	129,887	114,567	10,600	10,600	10,600	10,600	10,600	10,600	6,537	10,600	6,908	10,600
17	Dall Island and Vicinity	70,316	69,926	3,153	3,153	3,153	3,153	615	3,153	-	615	-	3,153
18	South Prince of Wales	166,466	163,813	19,042	19,042	19,042	19,042	14,503	19,042	2,481	6,667	2,882	19,042
19	North Misty Fjords	200,548	199,483	0	0	3,770	0	3,770	0	1,173	3,770	2,565	3,770
20	South Misty Fjords	311,596	311,596	3,770	3,770	-	3,770	-	3,770	-	-	-	3,770
21	Ice Fields	120,953	116,890	3,569	3,569	3,569	3,569	3,569	3,569	825	2,180	825	3,569
	<b>Forest-wide</b>	<b>5,428,190</b>	<b>4,991,187</b>	<b>482,530</b>	<b>482,530</b>	<b>439,157</b>	<b>482,530</b>	<b>400,199</b>	<b>482,530</b>	<b>172,428</b>	<b>334,197</b>	<b>179,165</b>	<b>482,530</b>

**Table 3.2-17**  
**Percentage of Original (1954) Productive Old Growth Remaining after all Suitable<sup>1</sup> Productive Old Growth is Harvested (approximately the year 2120)**

Biogeographic Province	Productive Old Growth		Remaining Productive Old Growth in Year 2120 <sup>2</sup> by Alternative							
	1954 (Acres)	2002 (Acres)	1	2	3	4	5	6	7	8
1 Yakutat Forelands	51,186	48,270	85%	85%	85%	85%	85%	91%	87%	91%
2 Yakutat Uplands	24,400	23,498	96%	96%	96%	96%	96%	96%	96%	96%
3 East Chichagof Island	440,073	396,171	82%	82%	82%	82%	83%	87%	83%	87%
4 West Chichagof Island	72,659	72,659	100%	100%	100%	100%	100%	100%	100%	100%
5 East Baranof Island	102,172	88,801	79%	79%	79%	79%	81%	85%	81%	84%
6 West Baranof Island	233,423	216,482	89%	89%	89%	89%	89%	92%	89%	92%
7 Admiralty Island	592,739	591,783	100%	100%	100%	100%	100%	100%	100%	100%
8 Lynn Canal	159,888	154,527	88%	88%	88%	88%	88%	95%	94%	95%
9 North Coast Range	321,001	320,773	92%	92%	92%	92%	97%	100%	99%	100%
10 Kupreanof/Mitkof Island	340,785	306,894	69%	69%	73%	69%	74%	83%	79%	83%
11 Kuiu Island	324,334	296,578	79%	79%	83%	79%	83%	87%	83%	86%
12 Central Coast Range	253,500	246,981	86%	86%	87%	86%	86%	97%	92%	97%
13 Etoin Island	260,006	224,012	69%	69%	69%	69%	69%	78%	72%	79%
14 North Central Prince of Wales	702,720	521,210	59%	59%	59%	59%	60%	65%	60%	65%
15 Revilla Island/ Cleveland Pen.	549,539	506,272	82%	82%	85%	82%	85%	89%	85%	89%
16 Southern Outer Islands	129,887	114,567	80%	80%	80%	80%	80%	83%	80%	83%
17 Dall Island and Vicinity	70,316	69,926	95%	95%	95%	95%	99%	99%	99%	99%
18 South Prince of Wales	166,466	163,813	87%	87%	87%	87%	90%	97%	94%	97%
19 North Misty Fjords	200,548	199,483	99%	99%	98%	99%	98%	99%	98%	98%
20 South Misty Fjords	311,596	311,596	99%	99%	100%	99%	100%	100%	100%	100%
21 Ice Fields	120,953	116,890	94%	94%	94%	94%	94%	96%	95%	96%
<b>Forest-wide</b>	<b>5,428,190</b>	<b>4,991,187</b>	<b>83%</b>	<b>83%</b>	<b>84%</b>	<b>83%</b>	<b>85%</b>	<b>89%</b>	<b>86%</b>	<b>89%</b>

<sup>1</sup> The estimated suitable incorporates reduction factors for MIRF and scheduling (see the *Timber* section).

<sup>2</sup> Percentage of original (1954) productive old growth. Harvest of suitable old growth is estimated to occur until approximately 2120.

would provide an amount and distribution of habitat adequate to maintain viable populations of vertebrate species across the Tongass and to maintain the diversity of plant and animal communities. Alternatives 1, 2, and 4 of this SEIS are expected to result in similar conclusions.

**Alternative 3**

Alternative 3 has the next lowest estimated amount of productive old growth that would be suitable and available for harvest: approximately 439,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (57 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/ Cleveland Peninsula, and Etoin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 84 percent of the original productive old growth that existed in 1954

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**Table 3.2-18**  
**Estimated High Volume POG for 1954 and 2002, and the Estimated Scheduled Suitable High Volume POG that can be Harvested within Each Biogeographic Province under Each Alternative**

No.	Biogeographic Province	Estimated High-Volume POG in 1954	Estimated High-Volume POG in 2002	Estimated Scheduled Suitable High-Volume POG by Alternative <sup>1</sup>								
				1	2	3	4	5	6	7	8	
1	Yakutat Forelands	30,878	27,963	4,205	4,205	4,205	4,205	4,205	4,205	1,433	3,541	1,433
2	Yakutat Uplands	12,294	11,392	73	73	73	73	73	73	26	28	26
3	East Chichagof Island	194,802	150,901	10,948	10,948	10,400	10,948	9,035	4,075	8,919	4,285	
4	West Chichagof Island	19,115	19,115	-	-	-	-	-	-	-	-	
5	East Baranof Island	41,841	28,470	2,390	2,390	2,390	2,390	1,834	808	1,834	884	
6	West Baranof Island	75,023	58,082	2,326	2,326	2,326	2,326	2,326	582	2,326	582	
7	Admiralty Island	338,594	337,638	0	0	0	0	0	0	0	0	
8	Lynn Canal	68,205	62,844	5,905	5,905	5,905	5,905	5,905	1,207	1,615	1,207	
9	North Coast Range	131,933	131,705	9,757	9,757	9,757	9,757	3,318	238	314	238	
10	Kupreanof/Mitkof Island	138,687	104,796	26,205	26,205	21,828	26,205	19,817	9,395	14,855	9,486	
11	Kuiu Island	200,732	172,975	27,200	27,200	18,989	27,200	20,118	11,516	19,813	13,802	
12	Central Coast Range	122,880	116,362	13,079	13,079	12,406	13,079	13,079	767	7,269	767	
13	Etolin Island	120,019	84,026	17,188	17,188	17,188	17,188	17,188	8,422	14,032	7,408	
14	North Central Prince of Wales	455,157	273,647	56,174	56,174	56,174	56,174	52,870	37,625	52,870	38,060	
15	Revilla Island/Cleveland Pen.	307,739	264,471	26,077	26,077	18,885	26,077	18,876	7,944	18,876	8,515	
16	Southern Outer Islands	71,504	56,184	5,958	5,958	5,958	5,958	5,958	4,214	5,958	4,345	
17	Dall Island and Vicinity	36,795	36,406	1,063	1,063	1,063	1,063	167	-	167	-	
18	South Prince of Wales	85,826	83,174	9,872	9,872	9,872	9,872	7,267	1,754	4,145	1,874	
19	North Misty Fiords	71,003	69,938	1,752	1,752	1,752	1,752	1,752	719	1,752	1,262	
20	South Misty Fiords	111,853	111,853	-	-	-	-	-	-	-	-	
21	Ice Fields	43,874	39,811	1,242	1,242	1,242	1,242	1,242	326	662	326	
	<b>Forest-wide</b>	<b>2,678,755</b>	<b>2,241,753</b>	<b>221,416</b>	<b>221,416</b>	<b>200,415</b>	<b>221,416</b>	<b>185,032</b>	<b>91,051</b>	<b>158,974</b>	<b>94,501</b>	

**Table 3.2-19**  
**Percentage of Original (1954) High-Volume Productive Old Growth Remaining after all Suitable<sup>1</sup>**  
**Productive Old Growth is Harvested (approximately the year 2120)**

Biogeographic Province	High-Volume Productive Old Growth		Remaining Productive Old Growth in Year 2120 <sup>2</sup> by Alternative							
	1954 (Acres)	2002 (Acres)	1	2	3	4	5	6	7	8
	1 Yakutat Forelands	30,878	27,963	77%	77%	77%	77%	77%	86%	79%
2 Yakutat Uplands	12,294	11,392	92%	92%	92%	92%	92%	92%	92%	92%
3 East Chichagof Island	194,802	150,901	72%	72%	72%	72%	73%	75%	73%	75%
4 West Chichagof Island	19,115	19,115	100%	100%	100%	100%	100%	100%	100%	100%
5 East Baranof Island	41,841	28,470	62%	62%	62%	62%	64%	66%	64%	66%
6 West Baranof Island	75,023	58,082	74%	74%	74%	74%	74%	77%	74%	77%
7 Admiralty Island	338,594	337,638	100%	100%	100%	100%	100%	100%	100%	100%
8 Lynn Canal	68,205	62,844	83%	83%	83%	83%	83%	90%	90%	90%
9 North Coast Range	131,933	131,705	92%	92%	92%	92%	97%	100%	100%	100%
10 Kupreanof/Mitkof Island	138,687	104,796	57%	57%	60%	57%	61%	69%	65%	69%
11 Kuiu Island	200,732	172,975	73%	73%	77%	73%	76%	80%	76%	79%
12 Central Coast Range	122,880	116,362	84%	84%	85%	84%	84%	94%	89%	94%
13 Etolin Island	120,019	84,026	56%	56%	56%	56%	56%	63%	58%	64%
14 North Central Prince of Wales	455,157	273,647	48%	48%	48%	48%	49%	52%	49%	52%
15 Revilla Island/ Cleveland Pen.	307,739	264,471	77%	77%	80%	77%	80%	83%	80%	83%
16 Southern Outer Islands	71,504	56,184	70%	70%	70%	70%	70%	73%	70%	72%
17 Dall Island and Vicinity	36,795	36,406	96%	96%	96%	96%	98%	99%	98%	99%
18 South Prince of Wales	85,826	83,174	85%	85%	85%	85%	88%	95%	92%	95%
19 North Misty Fjords	71,003	69,938	96%	96%	96%	96%	96%	97%	96%	97%
20 South Misty Fjords	111,853	111,853	100%	100%	100%	100%	100%	100%	100%	100%
21 Ice Fields	43,874	39,811	88%	88%	88%	88%	88%	90%	89%	90%
<b>Forest-wide</b>	<b>2,678,755</b>	<b>2,241,753</b>	<b>75%</b>	<b>75%</b>	<b>76%</b>	<b>75%</b>	<b>77%</b>	<b>80%</b>	<b>78%</b>	<b>80%</b>

<sup>1</sup> The estimated suitable incorporates reduction factors for MIRF and scheduling (see the *Timber* section).

<sup>2</sup> Percentage of original (1954) productive old growth. Harvest of suitable old growth is estimated to occur until approximately 2120.

would be remaining in 2120 (Table 3.2-17), and approximately 76 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 91 percent of the current amount of productive old growth. Because of the reduction in harvest of productive old growth relative to the 1997 Forest Plan (about 9 percent less), Alternative 3 would have slightly fewer effects on biodiversity.

In general, the reduced effects would be most noticeable in the Kuiu Island, Kupreanof/Mitkof Island, and Revilla Island/Cleveland Peninsula Biogeographic Provinces, where the percentage of 1954 productive old growth remaining in 2120 would be at least 3 percent greater than under the current 1997 Forest Plan (Table 3.2-17).

As noted above under the discussion for Alternatives 1, 2, and 4, the 1997 Forest Plan Revision Final EIS and ROD concluded that the 1997 Forest Plan would result in relatively low reductions in biodiversity and would provide for the maintenance of

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viable populations. In general, Alternative 3 would result in fewer effects on biodiversity than the current Forest Plan and Alternatives 1, 2, and 4, but more effects than the other alternatives.

### Alternative 5

Alternative 5 is intermediate between Alternatives 3 and 7 in terms of the estimated amount of productive old growth that would be suitable and available for harvest: approximately 400,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (60 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/Cleveland Peninsula, and Etohin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 85 percent of the original productive old growth that existed in 1954 would be remaining in 2120 (Table 3.2-17) and approximately 77 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 92 percent of the current amount of productive old growth. Because of the reductions in harvest of productive old growth relative to the 1997 Forest Plan (about 17 percent less), Alternative 5 would have fewer effects on biodiversity. In general, the reduced effects would be most noticeable in the North Coast Range, Kupreanof/Mitkof Island, Dall Island and Vicinity, Kuiu Island, Revilla Island/Cleveland Peninsula, and South Prince of Wales Provinces, where the percentage of 1954 productive old growth remaining in 2120 would be at least 3 percent greater than under the current Forest Plan (Table 3.2-17).

As noted above under the discussion for Alternatives 1, 2, and 4, the 1997 Forest Plan Revision Final EIS and ROD concluded that the 1997 Forest Plan would result in relatively few reductions in biodiversity and would provide for the maintenance of viable populations. In general, Alternative 5 would result in fewer effects on biodiversity than the current Forest Plan and Alternatives 1, 2, 3, and 4, but more effects than Alternatives 6, 7, and 8.

### Alternative 6

Alternative 6 would have the lowest estimated amount of productive old growth that would be suitable and available for harvest: approximately 172,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (71 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/Cleveland Peninsula, and Etohin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 89 percent of the original productive old growth that existed in 1954 would be remaining in 2120 (Table 3.2-17); approximately 80 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 97 percent of the current amount of productive old growth. Because of the reductions in harvest of productive old growth relative to the 1997 Forest Plan (about 64 percent less), Alternative 6 would have fewer effects on biodiversity. In general, the reduced effects would be most noticeable in 14 of the 21 provinces, where the percentage of 1954 productive old growth remaining in 2120 would be at least 3 percent greater than under the current Forest Plan (Table 3.2-17).

As noted above under the discussion for Alternatives 1, 2, and 4, the 1997 Forest Plan Revision Final EIS and ROD concluded that the 1997 Forest Plan would result in relatively few reductions in biodiversity and would provide for the maintenance of

viable populations. In general, Alternative 6 would result in the fewest effects on biodiversity among the alternatives.

### Alternative 7

Alternative 7 is intermediate between Alternatives 5 and 8 in terms of the estimated amount of productive old growth that would be suitable and available for harvest: approximately 334,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (64 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/Cleveland Peninsula, and Etolin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 86 percent of the original productive old growth that existed in 1954 would be remaining in 2120 (Table 3.2-17); approximately 78 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 93 percent of the current amount of productive old growth. Because of the reductions in harvest of productive old growth relative to the 1997 Forest Plan (about 31 percent less), Alternative 7 would have fewer effects on biodiversity. In general, the reduced effects would be most noticeable in 8 of the 21 provinces, where the percentage of 1954 productive old growth remaining in 2120 would be at least 3 percent greater than under the current Forest Plan (Table 3.2-17).

As noted above under the discussion for Alternatives 1, 2, and 4, the 1997 Forest Plan Revision Final EIS and ROD concluded that the 1997 Forest Plan would result in relatively few reductions in biodiversity and would provide for the maintenance of viable populations. In general, Alternative 7 would result in fewer effects on biodiversity than the current Forest Plan and Alternatives 1, 2, 3, 4, and 5, but more effects than Alternatives 6 and 8.

### Alternative 8

Alternative 8 is intermediate between Alternatives 6 and 7 in terms of the estimated amount of productive old growth that would be suitable and available for harvest: approximately 179,000 acres across all biogeographic provinces (Table 3.2-16). Most of this harvest (69 percent) would come from four biogeographic provinces in the south-central portion of the Tongass (North Central Prince of Wales Island, Kupreanof/Mitkof Island, Revilla Island/Cleveland Peninsula, and Etolin Island). Assuming that all suitable and available productive old growth is eventually harvested (about 120 years from now), approximately 89 percent of the original productive old growth that existed in 1954 would be remaining in 2120 (Table 3.2-17); approximately 80 percent of the high-volume productive old growth would remain (Table 3.2-19). The remaining productive old growth in 2120 would represent approximately 97 percent of the current amount of productive old growth. Because of the reductions in harvest of productive old growth relative to the 1997 Forest Plan (about 63 percent less), Alternative 8 would have fewer effects on biodiversity. In general, the reduced effects would be most noticeable in 14 of the 21 provinces, where the percentage of 1954 productive old growth remaining in 2120 would be at least 3 percent greater than under the current Forest Plan (Table 3.2-17).

As noted above under the discussion for Alternatives 1, 2, and 4, the 1997 Forest Plan Revision Final EIS and ROD concluded that the 1997 Forest Plan would result in relatively few reductions in biodiversity and would provide for the maintenance of viable populations. In general, Alternative 8 would result in fewer effects on biodiversity than the current Forest Plan and Alternatives 1, 2, 3, 4, 5, and 7, but slightly more effects than Alternative 6.

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#### Cumulative Effects

When considering biodiversity and the distribution of old growth across the Tongass, it is important to consider non-National Forest System lands (which include private, city, and state lands) as well. The majority of productive old growth on non-National Forest System lands has been harvested over the past 40 years. These lands represent 6 percent of the lands within the Tongass boundary; however, they are not uniformly distributed. Nineteen of the ecological subsections consist of more than 10 percent non-National Forest System lands, 11 of them consist of more than 20 percent non-National Forest-System land, and 6 of them consist of more than 30 percent (Table 3.2-20). Of special note are two small subsections, the Klawock Inlet Till Lowlands (15,942 acres) and the Kasaan Peninsula Volcanics (35,768 acres), which are 93 and 72 percent non-National Forest System lands, respectively. These two subsections have had less than 100 acres of combined harvest on National Forest System lands.

If it is assumed that productive old growth originally occupied 50 percent of all non-National Forest System lands and that 90 percent of it has been or will be harvested, then a worst-case estimate of the total percent harvest of productive old growth on all lands within each ecological subsection can be calculated. Given this assumption and combining the expected future harvest on National Forest System lands with that on non-National Forest System lands, approximately 23 percent of all productive old growth within the Tongass boundary (on National Forest, state, city, and private lands combined) will be harvested over the long term. Eleven out of the 73 ecological subsections will have had no harvest of productive old growth and 36 of the 73 will have had less than 20 percent of their productive old growth harvested over the long term. Twenty-two would experience a harvest of greater than 30 percent, 12 would exceed 40 percent, and seven would exceed 50 percent. The seven subsections with at least a 50-percent harvest over the long term include:

- ◆ Klawock Inlet Till Lowlands (83% harvest)
- ◆ Kasaan Peninsula Volcanics (70% harvest)
- ◆ North POW-Kuiu Carbonates (58% harvest)
- ◆ Kake Volcanics (56% harvest)
- ◆ Central POW Volcanics (51% harvest)
- ◆ Thomas Bay Outwash Plains (50% harvest)
- ◆ Duke Island Till Lowlands (50% harvest).

The high percent harvest on the first two areas is due to their high percentage of non-National Forest System lands (93% and 72%, respectively). Similarly, essentially all of the harvest in the Duke Island Till Lowlands is on non-National Forest System lands.

These estimates of cumulative harvest of productive old growth by ecological subsection represent maximum estimates and correspond with Alternatives 1, 2, and 4. Under the other alternatives, the cumulative harvest would be lower; it would be lowest under Alternatives 6 and 8.

**Table 3.2-20**  
**Distribution of Acres of Total Land Area and Various Measures of Productive Old Growth (POG)**  
**and Percent Harvest of POG Across the 73 Ecological Subsections of the Tongass**

Ecolog. Subsec. Number	Ecological Subsection Name	Private, City, & State Land Area	National Forest System Land Area	Estimated Original POG on all Lands Combined	Estimated Maximum Long-term POG Harvest on all Lands Combined	Maximum Long-term Percent of Original POG to be Harvested for all Lands Combined
M244Ca	St. Elias-Fairweather Icefields	1	827,396	9,168	1,271	14%
M244Cb	Puget Peninsula Metasediments	211	99,483	7,409	95	1%
M245Bc	Yakutat-Lituya Forelands	31,925	353,526	79,283	22,844	29%
M246Aa	Chilkat Complex	519	10,268	2,022	234	12%
M246Ba	Boundary Ranges Icefields	34,733	4,106,213	266,194	26,616	10%
M246Bb	Stikine-Taku River Valleys	2,531	75,876	35,040	1,139	3%
M247Ac	Wachusett-Adams Hills		4,874	229	-	0%
M247Ag	Berg Bay Complex	53	6,766	5,244	24	0%
M247Ak	Chilkat Peninsula Carbonates	12,598	324,254	89,405	19,064	21%
M247Bb	North Chichagof Granitics	3,842	398,682	101,378	7,542	7%
M247Bc	Outer Coast Wave-cut Terraces	4,255	116,693	40,765	2,142	5%
M247Bd	West Chichagof Complex	668	132,839	30,505	301	1%
M247Be	Ushk-Patterson Bay Granitics	161	115,091	44,441	4,426	10%
M247Bf	Peril Strait Granitics	807	232,362	113,366	23,186	20%
M247Bg	North Baranof Complex	200	128,497	65,735	18,351	28%
M247Bh	Sitka Sound Complex	17,399	170,059	92,460	20,977	23%
M247Bi	Mount Edgecumbe Volcanics	440	72,768	27,745	6,264	23%
M247Bj	Central Baranof Metasediments	12,569	345,558	48,611	11,782	24%
M247Bk	Necker Bay Granitics	5	185,242	41,045	162	0%
M247Bl	South Baranof Sediments	511	168,087	35,876	230	1%
M247Ca	Point Adolphus Carbonates	31,128	86,395	59,574	18,644	31%
M247Cb	Freshwater Bay Carbonates	43,648	217,900	136,563	49,601	36%
M247Cc	Kook Lake Carbonates	8,509	93,756	63,544	20,177	32%
M247Da	Stephens Passage Glaciomarine Terraces	49,806	233,398	155,871	27,309	18%
M247Db	North Admiralty Complex	28,700	283,756	137,588	12,915	9%
M247Dc	Stephens Passage Volcanics	15,489	80,461	57,611	7,929	14%
M247Dd	Thayer Lake Granitics		71,817	45,757	-	0%
M247De	Mitchell-Hasselborg Till Lowlands	402	92,485	63,301	181	0%
M247Df	Hood-Gambier Bay Carbonates	3,943	215,255	146,656	1,775	1%
M247Dg	South Admiralty Volcanics	472	187,096	100,063	212	0%
M247Ea	Holkham Bay Complex	31,675	478,246	275,008	37,703	14%
M247Eb	Cape Fanshaw Complex	3,551	64,656	45,397	12,491	28%
M247Ec	Thomas Bay Outwash Plains	3,736	26,991	16,485	8,315	50%
M247Ed	Wrangell Narrows Metasediments	35,363	279,113	175,596	75,495	43%
M247Ee	Eastern Passage Complex	4,858	238,961	117,576	21,596	18%
M247Ef	Stikine River Delta	1,082	41,726	25,783	5,027	19%

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**Table 3.2-20 (continued)**  
**Distribution of Acres of Total Land Area and Various Measures of Productive Old Growth (POG)**  
**and Percent Harvest of POG Across the 73 Ecological Subsections of the Tongass**

Ecolog. Subsec. Number	Ecological Subsection Name	Private, City, & State Land Area	National Forest System Land Area	Estimated Original POG on all Lands Combined	Estimated Maximum Long-term POG Harvest on all Lands Combined	Maximum Long-term Percent of Original POG to be Harvested for all Lands Combined
M247Eg	Bell Island Granitics	65	330,723	140,942	14,094	10%
M247Eh	Stikine Strait Complex	0	64,234	32,024	8,750	27%
M247Ei	Etolin Granitics	0	88,760	32,269	7,643	24%
M247Ej	Zimovia Strait Complex	16,614	206,064	116,357	40,233	35%
M247Ek	Clarence Strait Volcanics	101,540	157,358	137,959	52,845	38%
M247El	Ketchikan Mafics/Ultramafics	17,021	51,979	30,109	11,574	38%
M247Em	Vixen Inlet Till Lowlands	759	26,637	10,525	2,503	24%
M247En	Traitors Cove Metasediments	42,756	280,282	182,890	67,336	37%
M247Eo	Behm Canal Complex	2,429	231,706	93,513	9,931	11%
M247Fa	Kuiu-POW Granitics	446	147,111	86,454	10,314	12%
M247Fb	Rowan Sediments	1,208	130,105	109,790	32,674	30%
M247Fc	North POW-Kuiu Carbonates	26,284	228,780	204,815	118,621	58%
M247Fd	Alvin Bay Sediments	89	81,928	58,153	6,296	11%
M247Fe	Affleck Canal Till Lowlands	0	56,307	27,656	90	0%
M247Ff	North POW Complex	924	80,913	50,842	15,604	31%
M247Fg	Elevenmile Till Lowlands	4,594	43,264	17,291	4,636	27%
M247Fh	Gulf of Esquibel Till Lowlands	76	46,724	15,123	34	0%
M247Fi	Klawock Inlet Till Lowlands	14,843	1,099	8,188	6,770	83%
M247Fj	Soda Bay Till Lowlands	45,888	104,253	65,760	26,504	40%
M247Ga	Kake Volcanics	51,665	82,392	67,081	37,448	56%
M247Gb	Duncan Canal Till Lowlands	1,980	242,524	85,841	26,333	31%
M247Gc	Sumner Strait Volcanics	600	359,639	168,911	46,880	28%
M247Gd	Central POW Till Lowlands	20,781	224,229	146,456	61,690	42%
M247Ge	Kasaan Peninsula Volcanics	25,575	10,193	17,028	11,984	70%
M247Gf	Skowl Arm Till Lowlands	22,415	66,807	32,923	15,365	47%
M247Ha	Outer Islands Complex	5	30,462	19,049	2	0%
M247Hb	Dall-Outside Complex	84,304	205,237	170,342	47,619	28%
M247Ia	Central POW Volcanics	75,580	425,512	283,069	144,182	51%
M247Ib	Hetta Inlet Metasediments	79,765	149,942	125,474	60,909	49%
M247Ic	Moir Sound Complex	2,489	119,764	59,479	9,494	16%
M247Ja	South POW Granitics	835	139,984	49,803	2,827	6%
M247Jb	Duke Island Till Lowlands	17,637	46,889	16,401	8,160	50%
M247Jc	Thorne Arm Granitics	496	62,962	29,859	4,843	16%
M247Jd	Princess Bay Volcanics	99	55,750	31,185	7,113	23%
M247Je	Foggy Bay Till Lowlands	9	56,321	20,841	4	0%
M247Jf	Boca De Quadra Complex	6	128,124	57,094	3	0%
M247Ka	Misty Fiords Granitics	4,454	1,469,408	392,367	3,673	1%
	<b>Total</b>	<b>1,050,023</b>	<b>16,800,907</b>	<b>5,952,157</b>	<b>1,390,999</b>	<b>23%</b>

## Wildlife

### Affected Environment

The Tongass National Forest provides habitat for 54 species of mammals, 231 species of birds, and five species of amphibians and reptiles. There are an additional 18 species of marine mammals found in Southeast Alaska that depend entirely on the ocean environment, and 45 bird and 3 amphibian or reptile species considered casual or accidental visitors to Southeast Alaska. These species provide many opportunities for consumptive and nonconsumptive uses, including commercial, sport, and subsistence hunting, and photographic and viewing activities.

The *Affected Environment* portion of this *Wildlife* section is divided into two parts: a discussion of important wildlife species and their habitat and a short discussion of consumptive uses of wildlife (primarily hunting and trapping). The *Affected Environment* section includes a summary of the needs of management indicator species and other species of concern, and information on key wildlife species and habitats. Species and habitat information from several assessments and reports is included. (See 1997 Tongass Forest Plan Revision Final EIS for additional details.)

### Management Indicator Species

Management indicator species (MIS) are vertebrate or invertebrate species whose response to land management activities can be used to predict the likely response of other species with similar habitat requirements.

The spruce and hemlock forests represent 98 percent of the productive old-growth forests of the Tongass. Although some of the MIS are associated with several habitat types, all are associated with the spruce/hemlock forest types. Table 3.2-21 indicates the relative importance of conifer successional stages as habitat for the MIS. Productive old-growth habitat (that is, conifer stands greater than 250 years in age and having a volume of 8,000 board feet per acre or higher) provides essentially all of the highly important habitats, and the preponderance of the moderately important habitats, for all the MIS.

For the Tongass Forest Plan Revision, 13 management indicator species were identified and are discussed in this *Indicator Species* section. Four MIS species with special management concerns (brown bear, marten, Sitka black-tailed deer, and Alexander Archipelago [gray] wolf) are discussed in more detail.

Following the MIS discussion, three other species are addressed under *Other Species of Concern*. Two of them—northern goshawk and marbled murrelet—are also discussed in more detail because they have special management concerns. Table 3.2-22 summarizes some of the habitat requirements for these six species with special management concerns based on previous panel discussions, conservation assessments, and viability synthesis analyses. (See 1997 Tongass Forest Plan Revision Final EIS for additional details.)

Table 3.2-22 summarizes some of the habitat information for the six "species of concern" (Alexander Archipelago wolf, northern goshawk, marbled murrelet, Sitka black-tailed deer, brown bear, and marten) and presents additional information on habitat and possible conservation approaches from a Viability Synthesis Workshop (June 1995). Table 3.2-8 in the *Biodiversity* section provides general estimates of the amounts of productive and unproductive old growth based on different elevational constraints thought important for most of the species discussed in this section.

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**Table 3.2-21**

**Relative Importance of Conifer Successional Stages as Habitats for Management Indicator Species<sup>1</sup>**

Species	Season <sup>2</sup>	Successional Stages					
		Early (in years)			Late (>200 years)		
		0-25	26-150	150-200	Unproductive Old Growth	Productive Old Growth	
					Low-Med	High	
Mountain Goat	1	L	L	L	L	M-H	H
Sitka B-t Deer	1	L-M	L	L-M	L-M	M	H
River Otter	2,3	L	L	M	L	H	H
Marten	1	L	L	L	L	M	H
Brown Bear	3	L	L	L	M-H	M-H	M-H
Black Bear	2,3,4	M	L	L	M	M-H	M-H
Gray Wolf <sup>3</sup>	5	-	-	-	-	-	-
Red Squirrel	5	L	L-H	H	L	M-H	M-H
Bald Eagle	2,3	L	L	L	L	H	H
Red-br. Sapsucker	2,3	L	L	L	L	H	M
Hairy Woodpecker	1	L	L	L	L	L	M-H
Brown Creeper	1	L	L	L	L	L	L-H
Van. Can. Goose	2,3	L	L	L	H	H	H

<sup>1</sup> H = Highest importance, high population densities

M = Moderate importance, moderate population densities

L = Least importance, low population densities

<sup>2</sup> Season codes: 1 = winter, 2 = spring, 3 = summer, 4 = fall, 5 = all year

<sup>3</sup> Gray wolves use habitats according to the abundance and availability of prey species (primarily Sitka black-tailed deer).

**Table 3.2-22**

**Some Important Habitat Components and Conservation Options for the Species of Concern**

Habitat Components or Considerations	Conservation Options
<b>Marten</b>	
High-volume old growth Mean dispersal range = 16 miles Forested riparian corridors and beach fringe Other considerations: Roaded access/level of trapping	Large, medium, and small habitat areas: areas of 34,000 acres, 25 miles apart; areas of 6,800 acres, 9 miles apart, or 13,600 acres, 16 miles apart; and areas of 2,100 acres, 1 large watershed. Consider road density and management.
<b>Northern Goshawk</b>	
Productive old growth Nest sites below 800 ft. elevation Large (10,000-30,000 acres) use areas of mixed habitats	Maintain productive old growth within large watersheds so that at least 33 percent is 100 to 200 years old, and 33 percent is 200 to 300 years old. Nesting habitat (600+ acres) available in each 10,000 to 30,000-acre watershed.
<b>Marbled Murrelet</b>	
Productive old growth within 31 miles of the ocean, and at lower elevations in heads of bays Other considerations: Gillnet mortality and other at-sea effects	Maintain productive old growth in heads of bays, emphasizing those near aquatic or terrestrial concentration areas.
<b>Alexander Archipelago (Gray) Wolf<sup>1</sup></b>	
Suitable habitat for prey species, especially Sitka black-tailed deer Other considerations: Road density and roaded access for trapping	Maintain habitat to support ample prey populations. For deer, maintain High-volume old growth in winter range. Consider a deer-density objective within wolf range; control roaded access and work with ADF&G to manage illegal kills.
<b>Brown Bear</b>	
Productive anadromous fish habitat Large unroaded areas with availability of summer alpine habitat Other considerations: Road density and roaded access; camp and community waste disposal sites.	Unroaded areas of 40,000 acres containing productive fisheries, 20 miles apart. 333-foot buffers on low-gradient anadromous fish streams to provide screened foraging habitat. Manage human activity to minimize encounters and illegal kills; consider ways to concentrate human activity within landscapes.

<sup>1</sup> Sitka black-tailed deer is not listed separately, but is included under gray wolf because of the direct predator-prey relationship.

Source: Viability Synthesis Workshop, June 1995.

### **Mountain Goat**

Mountain goats represent species using cliffs, alpine and subalpine, and old-growth forest habitats. The quantity and quality of winter habitat is the most limiting factor for mountain goats in Southeast Alaska. Lack of snow interception in early successional stages and lack of forage in middle successional stages reduces the value of winter habitat. Historically, mountain goats in Southeast Alaska were present only on the mainland, but they have more recently been transplanted to many of the islands.

### **Sitka Black-Tailed Deer**

Sitka black-tailed deer are indigenous to the coastal regions of Southeast Alaska and northwest British Columbia. This subspecies of mule deer occupies the northernmost extreme of black-tailed deer habitat. Deer are strong swimmers, and have occupied almost all islands of the Alexander Archipelago capable of supporting them. On the mainland, deep snow and harsh winters limit populations more than on the islands.

Sitka black-tailed deer are the wildlife species receiving the highest sport hunting and subsistence use of all terrestrial species in Southeast Alaska. They represent species using lower elevation old-growth forest habitats during the winter period. The quantity and quality of winter habitat is considered the most limiting factor for Sitka black-tailed deer in Southeast Alaska. There are about 7.5 million acres of forested land (all age classes and types of conifer forests) below 1,500 feet elevation within occupied deer habitat on the Tongass National Forest.

The deer winter habitat capability model (as discussed in more detail in the 1997 Forest Plan Revision Final EIS) takes into account snow depths/winter severity, the value of lower elevations and the more-southerly aspects, and conifer forest successional stages. Old-growth forests have the highest value because they intercept snow and provide understory forage plants. Predation can act as a significant controlling factor on deer populations. Deer are the primary prey of wolves in Southeast Alaska, and the significance of predator/prey interactions on wolf populations led to the conclusion that wolf persistence was directly linked to deer habitat capability.

### **River Otter**

River otters are associated with coastal and fresh water aquatic environments and the immediately adjacent (within 100 to 500 feet) upland habitats. Their distribution is Forest-wide in suitable habitats. Beach characteristics affect the availability of food and cover, and adjacent upland vegetation is also important in providing cover for otters. Old-growth forests have the highest habitat value, providing canopy cover, large-diameter trees and snags, and burrow and den sites. Younger successional stages provide lower quality habitat.

### **Marten**

Marten naturally inhabit the mainland of Southeast Alaska and natural populations occur on Kuiu, Kupreanof, Mitkof, and Revillagigedo Islands. Marten were transplanted to Prince of Wales, Chichagof, and Baranof Islands between 1930 and 1950; whether these transplants were new introductions or just supplemented existing populations is unknown. The quantity and quality of winter habitat is the most limiting factor for marten in Southeast Alaska. There are about 7.5 million acres of forested land (all age classes and types of conifer forests) below 1,500 feet elevation within occupied marten habitat on the Tongass. Due to lower snow accumulation, habitats at lower elevations have higher value for wintering marten. Coastal habitats

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(beach fringe) and riparian areas have the highest value, followed by upland habitats below 1,500 feet in elevation. Of the successional stages, old-growth forests have the highest value because they intercept snow, provide cover and denning sites, and provide habitat for prey species used by marten. Early successional stages do not provide these habitat components and have lower habitat value. Dispersal between islands is limited, but marten are fairly mobile on land.

Marten are easily trapped and can be overharvested. Forest management activities resulting in increasing access may result in the potential for overtrapping. New roads provide additional access for trappers and may indirectly cause increased harvests.

### **Brown Bear**

Brown bears are present on the mainland and on the islands north of Frederick Sound. They are occasionally reported on Mitkof, Etolin, and Wrangell Islands south of Frederick Sound, but are not found on any of the other islands in Southeast Alaska. Brown bear use areas from sea level to the alpine. Some of the highest brown bear population densities in the world are found within the Tongass. There are about 7.9 million acres (excluding rock, permanent ice fields, and acres of lakes) within occupied brown bear habitat on the Tongass; 7.5 million acres of that 7.9 million acres are considered to be roadless.

The late-summer season has been identified as the most critical or limiting period for brown bears. During this season, many brown bears concentrate along low-elevation valley bottoms and salmon streams. These are often the same areas of highest human use and most intense resource development activities. Streams and rivers that produce anadromous fish have a higher value for brown bears than resident fish streams. Brown bears have not been identified as a species requiring minimum patch sizes of a particular habitat type.

Increases in human activity in an area may result in increased direct human-induced deaths of bears. This can result from increased legal hunting, illegal kills, wounding losses, and from the defense of life or property.

### **Black Bear**

Black bear are present throughout the mainland and on the islands south of Frederick Sound. They use habitats from sea level to the alpine. There are about 9.4 million acres (excluding rock, permanent ice fields, and acres of lakes) within occupied black bear range on the Tongass National Forest. Estuarine, riparian, and forested coastal habitats receive the highest use by black bears and appear to have the highest habitat values. Within forested areas, both early and late (old-growth) successional stages provide the best forage and/or cover for black bears.

### **Gray (Alexander Archipelago) Wolf**

Two Alaskan subspecies of the gray wolf are currently recognized. The wolf found in Southeast Alaska is known as the Alexander Archipelago wolf (*Canis lupus ligoni*). It inhabits the mainland and the islands south of Frederick Sound. Wolves require an adequate prey base of ungulates, beaver, and salmon; in most areas of Southeast Alaska the Alexander Archipelago wolf depends heavily on deer. Suitable habitats for wolves equate to areas capable of supporting this prey base. Wolves use a wide variety of habitats when prey are present, and can affect prey populations in those areas.

Due to social interactions, wolf densities do not exceed certain levels even when prey abundance is high. Densities of 0.1 adult wolf per square mile are considered

high, and this density is often considered as a saturation point beyond which wolf populations would not expand. Wolves have large home ranges (about 100 square miles per pack), use a wide variety of habitats, and are very mobile.

A petition to list the Alexander Archipelago wolf as Threatened under the Endangered Species Act illustrated a concern for the viability of this subspecies. The U.S. Fish and Wildlife Service accepted the petition, confirming the concern, but concluded that listing was not warranted at this time. However, an interagency wolf conservation assessment was conducted to synthesize available information on wolf ecology and identify management considerations for sustaining viable wolf populations on the Tongass (Person et al., 1996). The assessment concluded that wolf densities are generally lower on the mainland and higher on islands in the southern half of the Tongass. Most of the wolves in Southeast Alaska occur on the large islands south of Frederick Sound. These islands (Game Management Unit [GMU] 2 and 3) support approximately 60 to 70 percent of the total wolf population (Person et al., 1996). Principal concerns exist on Prince of Wales and Kosciusko Islands, where past timber harvest has reduced deer habitat capability and resulted in road densities exceeding 0.7 road miles/square mile of land. Trapping and hunting harvest rates have been positively correlated with road density. Important components of a wolf conservation strategy include providing minimally roaded core habitats, maintaining wolf harvest within sustainable limits through regulations, and providing adequate deer habitat to support an abundant and stable deer population.

### **Red Squirrel**

Before 1930, red squirrels in Southeast Alaska existed only on the mainland. In 1930 and 1931 they were introduced to Baranof and Chichagof Islands as a potential prey species for the transplanted marten, and today red squirrels are abundant on many of the islands and the mainland. Red squirrels require forests with cone-producing trees and cavities in trees and snags. They represent a species that can do fairly well in seed-producing second-growth timber stands. There are about 8.4 million acres of forested land (including all age classes and types of conifer forests) within occupied red squirrel habitat on the Tongass National Forest. Optimum habitat use is believed to occur when patches of preferred habitat are greater than 30 acres.

### **Bald Eagle**

North America's bald eagle population reaches its highest density in Southeast Alaska. In 1992 the population was estimated at over 13,000 adult birds; more than 8,000 nest sites were identified through 1996. Their nesting habitat is primarily old-growth trees along the coast and within riparian areas. The U.S. Fish and Wildlife Service and Forest Service maintain an interagency agreement for bald eagle habitat management in the Alaska Region, which includes standards and guidelines for regulating human disturbance within identified bald eagle use areas. A minimum 330-foot radius protective habitat management zone surrounds all identified eagle nest trees.

### **Red-breasted Sapsucker**

The red-breasted sapsucker is found throughout Southeast Alaska during the spring, summer, and early fall seasons, wintering in the coastal portion of its breeding range as far north as Prince of Wales Island. Red-breasted sapsuckers are summer residents. They use old-growth forest habitats with snags. They are called primary excavators because they create cavities for other cavity-using wildlife species. There are about 9.9 million acres of forested land (includes all age classes and types

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of conifer forests) within occupied red-breasted sapsucker habitat on the Tongass National Forest. Old-growth forests provide the best snag habitat over the long term, with the low-volume classes of old growth receiving more use than high-volume classes. Optimum habitat use is believed to occur when patches of preferred habitat are greater than 250 acres.

#### **Hairy Woodpecker**

The hairy woodpecker is considered an uncommon, permanent resident throughout Southeast Alaska. Hairy woodpeckers use old-growth forest habitats with snags and partially dead trees for foraging and nesting. Like the red-breasted sapsucker, hairy woodpeckers are primary cavity excavators for other cavity-using wildlife species. Their winter habitat may be their most limiting. There are about 9.9 million acres of forested land (includes all age classes and types of conifer forests) within occupied hairy woodpecker habitat on the forest. Old-growth forests provide the best long-term snag habitat, with high-volume old-growth stands receiving more use than low-volume stands. Optimum habitat use is believed to occur when patches of preferred habitat are greater than 500 acres.

#### **Brown Creeper**

The brown creeper is considered an uncommon, permanent resident throughout Southeast Alaska. This species is most closely associated with high-volume old growth. There are about 9.9 million acres of forested land (includes all age classes and types of conifer forests) within occupied brown creeper habitat on the Forest. Winter habitat has been suggested as the limiting factor for cavity-nesting birds, including the brown creeper. Optimum habitat use is believed to occur when patches of preferred habitat are greater than 15 acres.

#### **Vancouver Canada Goose**

Vancouver Canada geese are distributed throughout the Alexander Archipelago of Southeast Alaska, with an estimated resident population of 10,000 birds in the northern half of Southeast Alaska. This population is relatively non-migratory, with the majority of birds moving only locally between nesting, brood rearing, molting, and winter concentration areas. Vancouver Canada geese use wetlands (both forested and non-forested) in the estuary, riparian, and upland areas of the Forest. Nesting and brood rearing habitats (estuaries, non-forested wetlands, and certain old-growth forest types) are potentially affected by various Forest management activities. Vancouver Canada geese are highly mobile and are found throughout the islands of Southeast Alaska.

#### **Other Species of Concern**

Although moose is not a management indicator species, information on moose habitats and populations has been included at the request of the ADF&G. Two other wildlife species are currently species of concern for which recent assessments (similar to the one for the Alexander Archipelago wolf) have been conducted. These are the Queen Charlotte (or northern) goshawk, and the marbled murrelet.

#### **Moose**

All moose in Southeast Alaska resulted from natural migrations down the major river systems from Canada during the early Twentieth Century, except those at Berner's Bay, which were transplanted there in the mid-1960s. The current post-hunt moose population for Southeast Alaska is estimated to be between 2,700 to 3,000 animals (2002), with about 1,900 (63 to 70 percent) of them residing on the Tongass National

Forest (personal communication, Tom Paul, Research Analyst, ADF&G-Division of Wildlife Conservation, January 10, 2002).

Moose habitat in Southeast Alaska is associated primarily with riparian and post-glacial early-successional vegetation types. In most areas, much of the moose habitat is declining as a result of natural plant succession. Succession in some areas is transforming deciduous vegetation types (cottonwood, willow, etc.) into conifer stands. In other areas, climax deciduous vegetation is growing to sizes less valuable as moose browse. In some moose habitat areas, clearcut logging has returned conifer stands to early successional vegetation types, which may temporarily (for about 25 years) create or enhance forage for moose. These short-term advantages of clearcutting may be offset by the longer period of reduced forage in the second-growth conifer forest.

### **Queen Charlotte (Northern) Goshawk**

The northern goshawk inhabits forested lands throughout North America, favoring dense stands of conifer or deciduous old growth for nesting habitat. The Queen Charlotte goshawk is recognized as a distinct subspecies, and as such is found only in coastal areas of British Columbia and in Southeast Alaska. Within Southeast Alaska, the goshawk appears to be non-migratory, although it may occupy different, or overlapping, winter and breeding territories. Common prey species within Southeast Alaska include other birds, particularly Steller's jay and varied thrush.

Prior to studies during the past decade, very little was known about goshawks on the Tongass. There are currently 61 confirmed goshawk nesting areas known on the Tongass National Forest (through summer 2001). A nesting area is defined as the area containing all nests used by a pair of goshawks; it is the portion of a pair's home range that contains all active and inactive nests. Based on one study of nesting goshawks using radio-telemetry, a nesting area on the Tongass may be up to 800 hectares (1,975 acres) in size (personal communication, C. Flatten, ADF&G).

A viability concern exists for the northern goshawk in Southeast Alaska due to its association with mature and old-growth forests and the decline in these habitats from timber harvesting. This concern was highlighted when the U.S. Fish and Wildlife Service received and accepted a petition to list the Queen Charlotte goshawk as endangered under the Endangered Species Act. Although listing was determined to be not warranted at this time, concern was expressed over goshawk population viability.

A conservation assessment was conducted to synthesize literature and original data from Southeast Alaska to describe the habitat relationships and conservation status of the northern goshawk (Iverson et al., 1996). Productive old-growth forest is an important component of goshawk habitat use patterns. Radio-marked goshawks consistently select this forest habitat type relative to availability, with 68 percent of all relocations occurring in productive old-growth forest. Most other habitat types (such as alpine, subalpine, peatland (muskeg), and clearcuts) were used infrequently or avoided by goshawks. Timber harvesting on the Tongass (and on private lands in Southeast Alaska) results in the conversion of old-growth forest (a selected habitat type), to young-growth forest (an avoided habitat type), and thus suggests decline in goshawk habitat capability.

Iverson et al. (1996) concluded that goshawk habitat theoretically could be maintained across the landscape under a 300-year rotation. A risk assessment using a conceptual 300-year rotation revealed that several landscapes (including the North Prince of Wales Biogeographic Province) within the Tongass may be at increased risk of not sustaining goshawks. The assessment suggested that a

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combination of reserve-based and dynamic-landscape management approaches could sustain well-distributed viable populations of goshawks across the Tongass.

The current Forest Plan incorporates both a Forest-wide system of old-growth reserves, as well as a system of standards and guidelines which address connectivity and stand structure. In addition, on central and northern Prince of Wales Island, where harvest has been relatively extensive, the Forest Plan designates several very large old-growth reserves. Also, in value comparison units where more than 33 percent of the productive old-growth goshawk foraging habitat has been converted to young conifer stands, timber harvest units must meet certain minimum criteria designed to maintain forest stand structure characteristics beneficial to goshawks.

#### **Marbled Murrelet**

The marbled murrelet is a robin-sized seabird. It feeds below the water's surface on small fish and invertebrates, and is usually found within 5 miles of shore. Throughout much of its range in the Pacific Northwest, British Columbia, and Alaska, the marbled murrelet nests in large, mature coniferous trees within stands of structurally complex, coastal old-growth forest. Marbled murrelet nesting habitat relationships are poorly understood in Southeast Alaska. Data from forested areas elsewhere within their range indicate that high-volume stands of old-growth conifer forests in relatively close proximity to the coast are essential nesting habitat. (See also Table 3.2-22.)

Recent surveys suggest that marbled murrelets are numerous and widespread throughout the coastal waters of Southeast Alaska, with estimates generally ranging from 70,000 to 250,000, but up to 434,000 birds. Population trends are generally unknown, but published estimates indicate a 4 to 6 percent annual decline range-wide to a 50 percent decline over 20 years throughout Alaska. However, recent analysis of data from Southeast Alaska does not indicate population declines. Possible causes of estimated overall Alaska declines are oil spills, mortality from gill netting, cyclic changes in marine food productivity, and the harvesting of productive old-growth forests (which are likely their primary nesting habitat).

The listing of this species as threatened in Washington, Oregon, and California, and the reductions in habitat from timber harvesting, have raised concerns for the viability of this species in Southeast Alaska. An interagency conservation assessment (DeGange, 1996) was conducted to synthesize literature and data from Southeast Alaska to describe the natural history, habitat relationships, and conservation status of the marbled murrelet. The assessment noted the uncertainties over how best to maintain habitat for viable, well-distributed populations of marbled murrelets in Southeast Alaska. Conceptually, uneven-aged silvicultural practices or extended harvest rotations may maintain sufficient forest structure to support nesting murrelets. However, given the uncertainties, the assessment concluded that a murrelet conservation strategy should consider a reserve-based approach, especially in those biogeographic provinces where substantial timber harvest has been concentrated and is projected to continue. The current Forest Plan satisfies many of the measures identified in the assessment, including a Forest-wide system of old-growth reserves and uneven-aged management in many areas that allow timber harvest. In addition, a 600-ft. radius circular nest buffer is maintained around identified murrelet nest sites.

#### **Consumptive Use of Wildlife**

A number of the wildlife species on the Tongass are important for subsistence and sport hunting, and some for trapping. Sitka black-tailed deer, mountain goat, brown bear, black bear, moose, wolf, marten, river otter, and waterfowl (collectively) are all species with hunting and/or trapping seasons managed by the ADF&G; however, the Federal Subsistence Board has recently assumed management of subsistence

taking of fish and wildlife, including subsistence hunting. The primary source of information on annual hunting and trapping is the ADF&G. Except for a summary for Sitka black-tailed deer, consumptive use information is not repeated here. (See also the *Subsistence* section for more information on subsistence uses of wildlife.)

Sitka black-tailed deer is by far the most important, and most "harvested," terrestrial wildlife species for subsistence purposes, and for sport hunting. Between 1987 and 1995, an average of 14,823 deer were killed annually on the Tongass National Forest.

The following information is summarized from Iverson (1996a). Over the past 15 years, deer harvests in Southeast Alaska have increased by 170 percent. Deer harvests have not been evenly distributed throughout Southeast Alaska. Of the total deer harvested between 1980 and 1990, approximately 73 percent were taken from Admiralty, Baranof, and Chichagof Islands, including adjacent smaller islands (this is ADF&G GMU 4). Another 18 percent came from Prince of Wales Island and adjacent islands (GMU 2). Only 1 percent of the deer harvest occurred in the central portion of the Tongass (GMU 3, including Kuiu, Kupreanof, Mitkof, Zarembo, Etolin, and Wrangell Islands); however, much of that area was closed to deer hunting during the 1980s. The other 8 percent of the deer harvest occurred on the mainland (GMU 1). Total annual deer harvest has remained stable in GMU 4 since 1987, but has increased over the same period in GMUs 1, 2, and 3.

The number of deer hunters increased with the number of deer killed, from 5,110 in 1980 to 10,147 in 1987. In 1990, there were 8,449 deer hunters. Although it varies from year to year, the average success rate for deer hunting from 1980 to 1990 was about 1.6 deer per hunter. In 1987-1988, the ADF&G conducted a survey within Southeast Alaska, asking deer hunters how many deer they desired to harvest (annually). The average from this survey was 4.2 deer, but respondents indicated they would be satisfied with an average of 2.7 deer.

It has been estimated that a deer population at carrying capacity could support an annual harvest (i.e., kill) by hunters of up to about 10 percent of winter carrying capacity, with the population remaining stable and hunter satisfaction (success/effort) remaining fairly high (Flynn and Suring, 1993). When harvest approaches 20 percent of carrying capacity, hunter satisfaction may diminish, and the harvest may be unsustainable over time, particularly in areas with high predator populations. If deer populations are above long-term carrying capacity, such as after several mild winters, hunter success may remain temporarily high.

### Environmental Consequences

#### Introduction

This section builds on the effects analysis conducted for the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a). It is based on the known (or estimated) requirements of several wildlife species with varying needs related to old-growth forest; there is no assurance that all or even most other old-growth associated species have similar needs or are adequately represented. Our knowledge of the specific viability requirements of most Tongass wildlife species is limited. We do know that the old-growth forest ecosystem is the dominant forest system in Southeast Alaska and provides habitat for most of these species. Therefore, an analysis that focuses primarily on the old-growth ecosystem is likely to better address or capture the requirements of all the old-growth associated species. This latter analysis is often called the "coarse filter" approach, as contrasted to the "fine filter" analysis of individual species. The coarse filter, old-growth ecosystem, is discussed in general in the section on *Biodiversity*, but is briefly addressed here relative to the Forest-wide old-growth habitat conservation strategy to maintain viable populations of old-growth associated species.

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All MIS, however, are given at least a brief fine filter analysis here (see *Management Indicator Species* subsection below). In addition, there are several species (some MIS, some not) that have been identified as species of special management concern, and for which a more in-depth fine filter analysis is necessary. As discussed under *Affected Environment*, these include two species recently evaluated for possible listing under the Endangered Species Act (Alexander Archipelago wolf and northern goshawk), one species that is federally listed in its range outside of Alaska (marbled murrelet), the most important wildlife species for consumptive use (Sitka black-tailed deer, also important as the principal prey for the wolf), and two other species important as old-growth habitat indicator species and long-term viability concerns (brown bear and marten). In efforts to maintain consistency between the 1997 Forest Plan Revision Final EIS and this SEIS, the above six species are each evaluated individually. The group of species consisting of all other terrestrial mammals inhabiting the Tongass, is also evaluated as an individual unit.

In order to accomplish the wildlife analyses, the 1997 Forest Plan Revision Final EIS relied in part upon expert panel evaluations of alternatives in terms of the estimated relative risks to the species or habitat of concern. Eight "panel assessments" were conducted, one each for the six species listed above, one for "other terrestrial mammals," and one for the old-growth ecosystem. The old-growth ecosystem panel results are addressed in the *Biodiversity* section, and the other seven are included here. Six of these seven are addressed below under the *Wildlife Species Viability* heading. The seventh, Sitka black-tailed deer, is discussed under the *Management Indicator Species* heading because the viability of deer populations is not an issue in itself.

#### Framework for Effects Analysis

The framework of the old-growth forest conservation strategy in the current Forest Plan consists of a network of small, medium, and large old-growth reserves (OGRs), specifically designed to conserve habitats of the species that have the greatest viability concerns. It was designed in part to recognize and account for current conditions within each biogeographic province, and to better maintain future old-growth forest in provinces where past harvest has been high. A second component of the old-growth forest conservation strategy in the Forest Plan is the set of standards and guidelines that protect specific areas (e.g., 1,000-foot wide beach fringe) and provide habitat connectivity in those areas with LUD allocations that permit commercial timber harvest. It is important to note that the conservation measures associated with the selected alternative in the 1997 Forest Plan Revision Final EIS conserve plant and animal communities by maintaining large amounts of productive old growth (approximately 90 percent of existing) Forest-wide, in various landscape positions in each of the biogeographic provinces.

Many of the MIS, as well as the other species of concern, are covered by specific and general standards and guidelines in the Forest Plan (Chapter 4, *Wildlife Forest-Wide Standards and Guidelines*). These are designed to reduce, minimize, or avoid adverse effects potentially occurring at the project level during Forest Plan implementation. For several of the MIS, a Forest-wide analysis based on general habitat changes can not provide enough detail or "fine-tuning" to reliably predict alternative consequences. However, as discussed below, the species-specific and other standards and guidelines can be relied upon to maintain some of the habitat features and other factors necessary for these species. For most old-growth-associated species not specifically assessed here, it can be assumed that, to the extent that functional and inter-connected old-growth ecosystems are maintained, the various specific habitats within them important to these species will also be maintained.

The 1997 Tongass Forest Plan Revision Final EIS found that Alternative 11 (which forms the basis for the current Forest Plan) ranked among the alternatives most likely to maintain suitable distributed habitats to ensure species viability. The 1997

Forest Plan Revision Final EIS Record of Decision (ROD) concluded that because of its Forest-wide old-growth conservation strategy and Forest-wide standards and guidelines, Alternative 11 would provide an amount and distribution of habitat adequate to maintain viable populations of vertebrate species across the Tongass and to maintain the diversity of plant and animal communities. All alternatives presented in this SEIS are at least as protective as the 1997 Forest Plan.

### Management Indicator Species

#### **Bald Eagle**

Eagle nesting habitat is primarily old-growth trees along the coast and within riparian areas. Over 90 percent of the known nests on the Tongass are within 500 feet of the saltwater beach. The bald eagle and riparian Forest-wide standards and guidelines are specifically designed to protect nesting habitat. The current Forest Plan already has 1,000-foot beach and estuary buffer standards and guidelines. All of the alternatives considered here would maintain at least the same level of protection as the current Forest Plan and, therefore, no effects are expected.

#### **River Otter**

River otters prefer habitats immediately adjacent to coastal and fresh water aquatic environments. Old-growth forests in these areas provide the highest value habitat, providing cover and burrow and den sites. The majority of otter habitat is secure under the existing Forest Plan because of beach and estuary and riparian Forest-wide standards and guidelines; therefore, as for the bald eagle, there is no increased risk associated with any of the alternatives.

#### **Vancouver Canada Goose**

Vancouver Canada Geese use wetlands (forested and non-forested) in the estuary, riparian, and uplands areas of the forest. Habitat needs for these species are specifically provided for under the waterfowl standards and guidelines. Additional levels of protection providing for less risk to habitat are offered by implementing the beach and estuary and riparian Forest-wide standards and guidelines. Again, as for the river otter and bald eagle, there is no increased risk associated with any alternative considered in this SEIS.

#### **Red-Breasted Sapsucker, Brown Creeper, Hairy Woodpecker, and Red Squirrel**

Applying the reserve tree/cavity-nesting habitat standards and guidelines, and the two-aged and uneven-aged management that are currently being applied under the current Forest Plan conserves habitats for these species. Additional protection is provided by the application of Forest-wide standards and guidelines and LUDs that retain patches of old-growth forest, which contain such features as large live and dead trees. Under the action alternatives, increased protection would occur as a result of reductions in old-growth harvest levels. A simple index of the amount of increased protection provided by each alternative is the amount of productive old-growth conserved in 120 years (2120) after harvest of all scheduled suitable old growth (see Table 3.2-13 in the *Biodiversity* section).

#### **Mountain Goats and Black Bears**

These species have differing niches but both are associated with old-growth forest and can be potentially over-hunted if roaded access is improved. The amount of roaded access is assumed to be inversely related to the amount of productive old-

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growth conserved in 120 years. This only provides a rough index to access risk, since roads can be designed (or closed) at the project level to avoid key habitats. Transportation Forest-wide standards and guidelines provide that travel access road objectives be developed for all roads. Mountain goat and bear Forest-wide standards and guidelines provide for site-specific analysis to assess and minimize disturbance and access to meet management objectives. None of the action alternatives offer added risk to these species. Further, all of the action alternatives would provide additional lands where roaded access is either not permitted or is curtailed.

### Sitka Black-Tailed Deer

The deer capability model was developed and refined for the 1997 Forest Plan Revision. The panel evaluated high-, medium-, and low-volume old-growth forest types, and also younger-growth types for their general capability as deer habitat. Deer habitat considerations were existing snow accumulation, elevation, and aspect information. A full discussion of the model components and outputs can be found in the *Wildlife* section of the 1997 Forest Plan Revision Final EIS; a brief summary is provided here.

Forest-wide, Alternative 11 (the basis of the current Forest Plan) received a habitat capability score of 83 percent. Of the alternatives analyzed in the 1997 Forest Plan, the range in scores was estimated to retain from 89 to 73 percent of the 1954 habitat capability in 2095.

Alternative 11 ranked relatively high in the conservation of deer habitat, protects most of the highest quality deer winter range, and maintains relatively high deer densities. These high scores are attributed to protection of the 1,000-foot beach fringe; larger riparian reserves; large, medium, and small old-growth habitat reserves; and other aspects of the Forest Plan. Deer densities in relation to wolf viability are discussed in the *Wildlife Species Viability* section under *Alexander Archipelago Wolf*.

The deer model was not used to estimate habitat capability under any of the SEIS alternatives. However, each of them would provide similar or better results than Alternative 11 in the 1997 Forest Plan Revision Final EIS, and the amount of additional protection of deer habitat would be roughly proportional to the amount of land converted from development to non-development LUD status. Alternatives 1, 2, and 4 would be the same as the current Forest Plan in terms of the area in development LUDs. The other alternatives would each protect additional important deer habitat throughout the Forest.

### Wildlife Species Viability

#### Evaluating Viability

The National Forest Management Act (NFMA) requires that the Forest Service provide for the diversity of plants and animals, based upon the suitability and capability of each National Forest, as a part of meeting overall multiple-use objectives (16 USC 1604(g)(3)(B)). NFMA implementing regulations define diversity as "the distribution and abundance of different plant and animal communities and species within the area covered by a [forest plan]" (219.3). In addition to providing diversity direction (at 219.26), NFMA regulations include the following provisions for managing habitat to maintain viable populations of wildlife species:

Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers

and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area. (36 CFR 219.3)

### **Old-growth Forest Conservation Strategy—The “Coarse” Filter Analysis**

When considering the viability of old-growth associated species, the possible effects of alternatives, and the likelihood of maintaining viable well-distributed populations, the assumption is made that if a functional interconnected old-growth ecosystem is maintained then its component parts (composition and structure) and processes (function) are maintained. The likelihood of these outcomes was discussed in detail in the *Biodiversity* section. The framework of the old-growth forest conservation strategy relative to wildlife viability is now further described as two basic components: 1) Reserve system to effectively maintain the integrity of the old-growth forest ecosystem such as wilderness monument, research natural areas, remote and semi-remote recreation, old growth habitat, etc., and 2) the forested lands where “development” is permitted that will alter the old-growth forest ecosystem. These development LUDs are restricted by impacts to long-term site productivity, Forest-wide standards and guidelines and timber operability considerations.

The selected Alternative 11 from the 1997 Forest Plan Revision Final EIS (the basis for the current Forest Plan), was believed to reduce the overall risk and increase the likelihood of maintaining viable and well-distributed populations of old-growth associated species by protecting 90 percent of the remaining productive old growth over time. Under this alternative, long-term harvest schedules comprised approximately 475,000 acres of productive old-growth forest for timber harvest. Based on the action alternatives, Table 3.2-12 in the *Biodiversity* section shows the estimated scheduled suitable old-growth acres that could be harvested by biogeographic province under each alternative. It also provides the amount of productive old growth and high-volume productive old growth in 1954 and at present (2001).

There are approximately 5,000,647 acres of productive old growth remaining on the Tongass. The 1997 Forest Plan provides a combination of land allocations that protects 90 percent of this acreage over the long term. Alternatives 1, 2, and 4 would also protect 90 percent of the existing productive old growth. Alternatives 3, 5, and 7 would protect 91, 92, and 93 percent, respectively. Alternatives 6 and 8 would protect 97 percent of the existing amount. Table 3.2-13 in the *Biodiversity* section presents these percentages in terms of the original (1954) acreage of productive old growth. They range from 83 percent for Alternatives 1, 2, and 4 to 89 percent for Alternatives 6 and 8.

### **Species Assessments—The “Fine” Filter Analysis**

The viability analysis relies on the six wildlife species panel assessments mentioned previously (wolf, marten, northern goshawk, brown bear, marbled murrelet, and other mammals). Scientists with expert professional knowledge and experience with the species being evaluated conducted panel assessments for each of the above species. Viability analysis and panel assessment results are summarized for each species and highlighted where additional information is needed. For additional information on the panel process, outcomes, and ranking results, see the Wildlife section of the 1997 Tongass Forest Plan Revision Final EIS.

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### ***Northern Goshawk***

Goshawks have a relatively low density in Southeast Alaska; a total of 63 nesting sites have been identified through nearly 10 years of inventory effort across the Forest. Low prey diversity compared to other goshawk populations across North America has been considered a principal factor, resulting in a higher sensitivity to habitat modifications which may reduce prey diversity and abundance (USDA Forest Service, 1997a).

Goshawks in Southeast Alaska have a significant preference for productive old-growth forest, with general avoidance of all other habitat types (especially early and mid-seral conifer forests). They are predominantly found at elevations less than 1,200 feet. This disproportionate use of productive old growth, at lower elevations on gentle slopes, indicated to panelists that not all old-growth forest acres were of equal value to goshawks; however, the majority of timber harvest occurs in these lower elevations.

The 1997 Forest Plan features allocations of small, medium, and large reserve areas which increase the likelihood of maintaining well distributed goshawk populations. The goshawk conservation assessment (Iverson et al., 1996), concluded that habitat reserves were necessary in addition to extended rotations in some regions where accelerated past timber harvest has occurred. Based on the proportion of productive old growth after harvest of all scheduled suitable old growth relative to 1954, the amount of estimated productive old growth remaining in 120 years would range from 59 percent in north-central Prince of Wales Island Biogeographic Province to 100 percent in several provinces like Admiralty Island and South Misty Fiords. Alternative 11 was selected partly because it had one of the highest likelihoods of sustaining viable goshawk populations over the next 100 years.

All of the alternatives in this SEIS would increase or maintain the current Forest Plan level of long-term protection for high-value goshawk nesting and foraging habitat. The most important goshawk habitat is believed to be high-volume stands located at elevations at or below 800 feet, although other habitats are used by goshawks. Alternatives 1, 2, and 4 would protect the same amount of high-volume, low-elevation old-growth area as the current Forest Plan. The other action alternatives each protect additional acres of high-volume stands at elevations below 800 feet, in approximate proportion to the amount of productive old growth protected. Thus, Alternative 3 protects the smallest additional amount followed in increasing order by Alternatives 5, 7, 8, and 6.

### ***Marten***

Forest structure at the stand scale and connectivity across the landscape was the most important factor in panel ratings and discussion during the 1997 Forest Plan Revision analysis. Marten are clearly associated with late-seral and old-growth forests and marten function ecologically at broad landscape scales.

The panel found that the strong association of marten with the high-volume old-growth forest stratum, combined with past timber harvest that was concentrated in these highly productive stands, was cause for significant concern. The added interaction of elevation heightened concern; that is, significantly greater marten habitat use occurred below 1,500 feet in elevation where there is also a greater relative proportion of the high volume strata and past timber harvest. Approximately 50 percent of future timber harvest is estimated to be from the high-volume stratum.

Maintaining the old-growth forest within the beach and riparian habitat zones was considered important, particularly for landscape connectivity and prey habitat diversity. Corridors that are wide enough to also serve as functional habitat to facilitate long-term landscape connectivity were preferable to narrower corridors that only facilitate movement between forest patches. The 1,000-foot beach zone was

specifically considered important because of the dissected nature of Southeast Alaska islands, and generally more important than altitudinal riparian corridors.

The Selected Alternative (Alternative 11) from the 1997 Forest Plan Revision Final EIS was rated by the panel as having a relatively high likelihood of sustaining viable marten populations because it incorporated three key features thought important to marten use: wider riparian management buffers; 1,000-foot beach and estuary buffers; and a system of small, medium, and large reserves. Subsequent to the panel assessment, Alternative 11 was strengthened by incorporating three different measures that require special prescriptions for managing high-value marten habitat in timber harvest areas to retain important forest stand features in higher risk biogeographic provinces (see Forest-wide guidelines for Wildlife in the 1997 Forest Plan and Appendix N to the 1997 Forest Plan Revision Final EIS).

All of the alternatives in this SEIS would increase or maintain the current Forest Plan level of long-term protection for high-value marten habitat. Alternatives 1, 2, and 4 would protect the same amount of high-volume, low-elevation old-growth area as the 1997 Forest Plan. The other action alternatives each protect additional acres of high-volume stands at elevations below 800 feet, in approximate proportion to the amount of productive old growth protected. Thus, Alternative 3 protects the smallest additional amount followed in increasing order by Alternatives 5, 7, 8, and 6.

### ***Alexander Archipelago Wolf***

Deer are the primary prey of wolves in Southeast Alaska, and the significance of predator/prey interactions on wolf populations led to the conclusion that wolf persistence was directly linked to deer habitat capability. The deer model was not conducted for any of the alternatives in this SEIS; however, they would provide the same or improved results relative to Alternative 11 in the 1997 Forest Plan Revision Final EIS. Alternatives 1, 2, and 4 would produce the same results as under the 1997 Forest Plan. Alternative 3 would produce slightly higher results for deer habitat capability followed in increasing order by Alternatives 5, 7, 8, and 6.

Results of the Wolf Panel and the Wolf Conservation Assessment (Person et al., 1996) suggest there is little chance of extirpation of the wolf from the Tongass; however, maintaining well-distributed and viable wolf populations in Southeast Alaska involves two principal management concerns. Current mortality rates in localized areas such as north Prince of Wales Island may result in local declines in the wolf population. Secondly, long-term reductions in deer habitat capability from timber harvest may negatively affect wolf populations.

Person et al. (1996) suggested that roadless and unfragmented reserves should be established in biogeographic provinces where extensive timber harvesting is planned to reduce long-term risks to wolf viability. Reserves of approximately 50,000 acres for each 192,000 acres of landscape area were considered necessary to support relatively secure core wolf populations. Spacing among reserves was not a critical criteria due to the extensive movement capability of wolves. On Prince of Wales and Kosciusko Islands (representing most of GMU 2) they recommended nine such reserve areas totaling 437,000 acres. Using the same design criteria, they estimated seven reserves totaling 350,000 acres would be needed on Mitkof, Kupreanof, and Kuiu Islands (representing most of GMU 3).

Alternative 11 meets the reserve criteria identified by Person et al. (1996) to sustain core wolf populations to reduce risks to long-term viability in the two principal areas of concern in Southeast Alaska (GMU 2 and 3). A few of these reserves represent new Old Growth LUD allocations and may have some roads from previous management activity (e.g., Central Prince of Wales reserve). Continued use of these roads would be examined consistent with the Old Growth LUD and Forest-wide standards and guidelines for wolves. The Selected Alternative (Alternative 11)

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under the 1997 Final EIS was ranked as having a high likelihood of sustaining viable and well-distributed wolf populations in GMU 2 and 3 as well as the remainder of the historic wolf range on the Tongass. For further information on the results of the wolf panel assessment, see the *Wildlife* section of the 1997 Final EIS.

Any of the alternatives would only maintain or build on the above scenario. Based on number of acres converted from development or non-development LUDs to Recommended Wilderness and Recommended LUD II (which would be managed as roadless areas for the long term), the alternatives would rank as follows in increasing order of wolf protection: 1, 2, 4, 3, 5, 7, 8, and 6.

#### ***Marbled Murrelet***

It was noted during the 1997 Forest Plan Revision Final EIS panel discussions that there is a lack of distributional and ecological information about marbled murrelets, especially in Southeast Alaska. However, the panel made some general assumptions about harvest practices and other components relative to marbled murrelets and, in particular, to nesting habitat. The primary consideration was that the best or most important habitat is found within large contiguous blocks of high-volume, low-elevation old-growth forest. Fragmentation within such habitat, in addition to reducing suitable nesting habitat, increases the likelihood of predation.

The Selected Alternative (Alternative 11) from the 1997 Final EIS offered the highest likelihood of maintaining well-distributed viable murrelet populations. This conclusion assumes that productive old-growth habitat is the preferred murrelet nesting habitat, particularly low-elevation high-volume stands (the same stands that are sought for timber production). This situation is similar to the dilemma documented in the Pacific Northwest (Ralph et al., 1995). DeGange (1996) suggested that long rotations may be beneficial components to a murrelet conservation strategy. He concluded that a reserve system was more likely to present a viable conservation strategy for murrelets given significant unknowns about this elusive species; protecting intact landscapes or ecosystems is a better hedge against uncertainty.

The significant reserve system in Alternative 11 (the basis for the current Forest Plan), especially in at-risk landscapes with significant past timber harvest (reserves partially discussed under *Alexander Archipelago Wolf*), made this alternative superior to all other action alternatives in terms of its ability to provide a reasonably high likelihood of sustaining well-distributed viable murrelet populations throughout Southeast Alaska. As with many of the other species, the SEIS alternatives would maintain or build on the above scenario. Based on number of acres converted from development LUDs to LUDs not allowing timber harvest, the alternatives would rank as follows in terms of murrelet habitat protection: Alternatives 1, 2, and 4 would rank the same as the current Forest Plan, followed by Alternatives 3, 5, 7, 8, and 6, in increasing order of protection.

#### ***Brown Bear***

Riparian habitat was one of the more important elements of brown bear ecology addressed by panelists convened for the 1997 Forest Plan Revision Final EIS. The relationship between riparian habitat management and the maintenance of habitat capability in sustaining anadromous fish production (see *Fish* section) is one aspect. Salmon obtained from mid-summer to early fall represent a very important food source for accumulation of energy reserves to sustain overwinter denning for a substantial proportion of the brown bear population in most years.

Panelists favored the reserve concept in alternative design, not necessarily as a large block of unfragmented old growth, but rather as landscapes providing roadless refugia from human disturbance. The panel stated that Alternative 11 (the selected alternative) likely presented the highest likelihood (among action alternatives) of

maintaining viable long-term brown bear populations due to the extensive reserve system. Reserves may be more important to brown bears as sources of roadless refugia rather than as unfragmented blocks of old-growth forest. Also, in recognition of the importance of riparian habitats to brown bears based upon panel recommendations, a Forest-wide standard and guideline was added to more explicitly address the issue of riparian brown bear habitat protection.

The current strategy under the 1997 Revised Forest Plan emphasizes protection of known high value brown bear areas, protection of riparian habitats, control of human access and sanitation management, and the system of old-growth reserves to maintain viable and well-distributed populations of brown bears in Southeast Alaska. Additional monitoring strategies have also been developed to evaluate potential effects of access management and recreation and viewing of brown bears at developed and undeveloped sites (USDA Forest Service, 2001e). Review of brown bear harvest statistics from ADF&G indicate that the vast majority of the areas, where the top 50 percent of brown bear harvest occurs are already protected in wilderness or other natural setting LUDs.

The brown bear would benefit from any of the SEIS action alternatives, however. Additional roadless refugia would be provided and protected over the long term with Alternative 3, 5, 6, 7, or 8. Based on number of acres proposed for wilderness, which would be the most restrictive in terms of maintaining roadless areas, the alternatives would rank as follows in terms of brown bear protection: Alternatives 1, 2, 4, 3, 5, 7, 6, and 8 in order of increasing protection. Increasing the amount of wilderness would assist in satisfying many of the concerns raised in the panel assessments.

### ***Other Terrestrial Mammals***

During the 1997 Forest Plan Revision Final EIS panel assessments, the panel identified two groups of mammals for evaluation (often with little known information): 1) widely distributed taxa associated with productive old growth (widely distributed group), and 2) endemic taxa associated with productive old growth (endemic group). The widely distributed group was comprised of 12 species and the endemic group was comprised of 14 species or subspecies. (See *Wildlife* section of the 1997 Forest Plan Revision Final EIS for additional information.)

The panel predicted that most of the alternatives analyzed in the 1997 Final EIS had a relatively high likelihood of creating conditions where wildlife populations of at least one of the species in the group may be no longer well distributed and viability could be compromised. Most of the alternatives (except Alternative 1) had some indicated likelihood of causing extirpation of some taxa in the widely distributed group.

To specifically address restricted-range endemics that may occur only on one or a few isolated islands, all islands less than 1,000 acres were removed from the timber base to eliminate risks to habitat loss or alteration from timber harvest under the selected Alternative 11. The 1,000-foot beach fringe and riparian corridors were also features that provide functional habitat for species with relatively small home ranges.

Alternative 11 had additional features that further increased the likelihood of maintaining well-distributed mammal populations such as mapped small reserves, and allocation of four additional medium or small reserves. Assuming that loss of productive old-growth conifer forest habitat is the greatest risk facing old-growth associated species, then those species most closely associated with old growth are assumed to be at greatest risk. Thus, among the 14 species or subspecies included in the endemic group, the Prince of Wales flying squirrel may be assumed to have the greatest viability concern. The panel stated that Alternative 11 presented the highest likelihood of sustaining habitat to support viable populations of endemic and wide-ranging mammals under the action alternatives analyzed.

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The very large reserves implemented under Alternative 11 in the current Forest Plan, especially in heavily harvested provinces, and the Forest-wide system of mapped large, medium and especially small reserves, is a multi-scale ecosystem hedge against significant uncertainty. Thus, the optimum strategy for these species and associated unknowns is a significant reserve system that preserves entire landscapes and ecosystems well distributed across the Forest. The 1997 Forest Plan provides for such a reserve system.

The widely distributed taxa associated with productive old growth (widely distributed group), and the endemic taxa associated with productive old growth (endemic group), would benefit further from some of the action alternatives in this SEIS, and would only build on the above scenario strategy to maintain a system of multi-scale reserves across the forest. Based on number of acres converted from development LUDs to LUDs not allowing timber harvest, the alternatives would rank as follows in terms of habitat protection for other terrestrial mammals: Alternatives 1, 2, and 4 would rank the same as the current Forest Plan, followed by Alternatives 3, 5, 7, 8, and 6, in increasing order of protection.

#### **Summary**

Alternative 11 was the Selected Alternative from the 1997 Tongass Forest Plan Revision Final EIS and is being implemented as the current (1997) Forest Plan (with some minor modifications related to increasing the acreage of small old-growth reserves. It deserves specific discussion because it, more than any other alternative, represented an explicit attempt to address general, as well as specific, issues related to wildlife viability conservation planning (see also Iverson, 1997). Specifically, this alternative met the conservation planning measures considered important to sustain viable populations of the Alexander Archipelago wolf and Queen Charlotte goshawk, as identified in interagency conservation assessments. Overall, the 1997 Forest Plan was projected to have a moderately high likelihood of maintaining viable well-distributed populations of old-growth associated species across the Tongass National Forest (Everest et al., 1997). Over the first 5 years of implementation, harvest levels have been less than predicted and the old-growth reserve system has been expanded. Thus, risks associated with the Forest Plan are slightly lower than anticipated.

With that said, the action alternatives that convert development LUDs to LUDs with long-term protection would provide further benefits to the many wildlife species represented by the above analysis. Alternatives 1, 2, and 4 do not convert any development LUDs to long-term protection LUDs; however, Alternatives 2 and 4 do convert some natural setting group LUDs to wilderness group LUDs, increasing the permanency of roadless area protection in some areas. Based on the number of acres recommended for wilderness or LUD II designations, the other alternatives would rank in the following order: 3, 5, 7, 8, and 6, in order of increasing amount of acres protected over the long term. Increasing the amount of wilderness would further satisfy many of the concerns raised in the panel assessments. Any of the action alternatives would increase the amount of land protection over a longer period of time than is currently protected in the 1997 Forest Plan.

## Threatened, Endangered, and Sensitive Species

### Threatened and Endangered Species

#### Affected Environment

Federally listed threatened and endangered species are those plant and animal species formally listed by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), under authority of the Endangered Species Act (ESA) of 1973, as amended. An endangered species is defined as one, which is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The federally listed species within the boundary of the Tongass National Forest are:

#### Endangered Species:

- ◆ Humpback whales (*Megaptera novaeangliae*)
- ◆ Snake River sockeye salmon (*Onochorhynchus nerka*)

#### Threatened species:

- ◆ Steller (Northern) sea lion (*Eumetopias jubata*)
- ◆ Snake River spring/summer chinook salmon (*Onorhynchus tshawytscha*)
- ◆ Snake River fall chinook salmon (*Onorhynchus tshawytscha*)

The Endangered Species Act for the State of Alaska authorizes the Commissioner of the Alaska Department of Fish and Game (ADF&G) to list Alaska endangered species. Recovery plans have been prepared for the humpback whale and Steller sea lion.

Pursuant to Section 7 of the ESA, a biological assessment was prepared for the endangered humpback whale, American peregrine falcon, and Snake River sockeye salmon and the threatened Steller sea lion, Snake River spring/summer chinook salmon, and Snake River fall chinook salmon, and submitted to NMFS for review and concurrence in the 1997 Tongass Forest Plan Revision process. Since the 1997 Forest Plan Revision Final EIS, the American peregrine falcon has been delisted. The final delisting rule for this falcon was published on August 25, 1999 (64 FR 46542).

Complete copies of the Biological Assessments and agency concurrences are available in Appendix J of the 1997 Forest Plan Revision Final EIS. Full information on the affected environment and environmental consequences for each species relative to the alternatives considered in the 1997 Final EIS are included in the Biological Assessments and are not repeated in this section.

The only plant federally listed or proposed by the USFWS in Alaska is the Aleutian shield-fern (*Polystichum aleuticum*), which is endangered. It is only known from Adak Island and is not expected to occur in the Tongass National Forest.

### Other USFWS Species of Concern

The northern goshawk and Alexander Archipelago wolf were both the subject of listing petitions under the ESA; they were reviewed and formally accepted by the USFWS in 1994. The USFWS concluded in 1995 that listing was not warranted for either subspecies, but remains concerned for their long-term viability. In part, the USFWS decisions were based on expectations of the Forest Service employing species-specific conservation strategies into the 1997 Forest Plan Revision. Recent

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court decisions have required the USFWS to re-evaluate both listing petitions. These two subspecies are discussed under the *Wildlife* section.

### **Sensitive Species**

Sensitive species are those plant and animal species identified by the Regional Forester for which population viability is a concern on National Forest System land within the region. Either a significant current or predicted downward trend in population numbers or density, or a significant current or predicted downward trend in habitat capability that would reduce a species' existing distribution indicates a viability concern. The goal of the Forest Service Sensitive Species Program (FSM 2670) is to ensure that species numbers and population distribution are adequate so that no federal listing will be required and no extirpation will occur on National Forest System land.

The Alaska Region Sensitive Species List was updated in January 2001. There are currently 18 plant species, reduced from 22 plant species listed in the 1997 Forest Plan Revision Final EIS, and 9 vertebrates currently designated as sensitive species in the Alaska Region. Sixteen plants and seven vertebrates are known or suspected to occur on the Tongass National Forest (Table 3.2-23).

The Regional Sensitive Species List continues to be revised as new information dictates. The Alaska Region Sensitive Species List remains under review and revision under a regional process. The Natural Heritage Program Rare Species Global Rankings Criteria that were described in the 1996 RSDEIS will continue to be one source of information used to identify sensitive species.

### **Sensitive Species – Birds**

#### ***Queen Charlotte Goshawk***

The northern goshawk including the Queen Charlotte goshawk subspecies, is summarized in the *Wildlife* section.

#### ***Osprey***

The best available information indicates that the osprey is naturally rare in Southeast Alaska and this may represent the periphery of the species' range. A total of 16 osprey nest sites have been documented in Southeast Alaska (Blatt, 1995). Of this total, no more than three have ever been known to be active in any 1 year. Nests can be found at the following locations: Thomas Bay; Wrangell Narrows near Finger Point; near the mouth of McCormick Creek on Wrangell Island; and on the Duncan Canal Tidal Flats and Douglas Bay, both on Kupreanof Island. Ospreys have been observed at Towers Arm, Irish Lakes, and Kah Sheets Creek on Kupreanof Island, and on Swan Lake on the mainland near Thomas Bay. Ospreys nest from late April through August and probably overwinter in Mexico and Central America. Historically, there is no evidence that there were additional ospreys in Southeast Alaska. The population numbers have remained stable but low. Limiting factors are unknown, but available nest sites and foraging areas do not appear to be limiting. Interaction and competition with the abundant bald eagle population may be a limiting factor. Also, Southeast Alaska is the northernmost portion of the osprey's known range.

#### ***Peale's Peregrine Falcon***

As of 1997, 36 nests of Peale's peregrine falcon have been located in Southeast Alaska; 32 of which are on the Tongass National Forest. Nest surveys are very difficult to conduct, and biologists believe more nests may be present. Peregrine nest distribution is closely associated with large seabird colonies located on the

**Table 3.2-23  
Regional Forester Sensitive Species that are Known or are Suspected to Occur on the Tongass National Forest<sup>1</sup>**

Common Name (Scientific Name)
<b>Birds</b>
Trumpeter swan ( <i>Cygnus buccinator</i> )
Osprey ( <i>Pandion haliaetus carolinensis</i> )
Queen Charlotte goshawk ( <i>Accipiter gentilis laingi</i> )
Peale's peregrine falcon ( <i>Falco peregrinus peali</i> )
<b>Fish</b>
Northern pike (Pike Lakes) ( <i>Esox lucius</i> )
Chum salmon (Fish Creek) ( <i>Oncorhynchus keta</i> )
King salmon (Wheeler Creek and King Salmon River) ( <i>Oncorhynchus tshawytscha</i> )
<b>Vascular Plants</b>
Eschscholtz's little nightmare ( <i>Aphragmus eschscholtzianus</i> )
Norberg arnica ( <i>Arnica lessingii</i> ssp. <i>Norbergii</i> )
Goose-grass sedge ( <i>Carex lenticularis</i> var. <i>dolia</i> )
Edible thistle ( <i>Cirsium edule</i> )
Pretty shooting star ( <i>Dodecatheon pulchellum</i> ssp. <i>alaskanum</i> )
Davy mannagrass ( <i>Glyceria leptostachya</i> )
Wright filmy fern ( <i>Hymenophyllum wrightii</i> )
Truncate quillwort ( <i>Isoetes x truncata</i> )
Calder lovage ( <i>Ligusticum calderi</i> )
Pale poppy ( <i>Papaver alboroseum</i> )
Bog orchid ( <i>Platanthera gracilis</i> )
Loose-flowered bluegrass ( <i>Poa laxiflora</i> )
Kamchatka alkali grass ( <i>Puccinellia kamtschatica</i> )
Unalaska mist-maid ( <i>Romanzoffia unalaschcensis</i> )
Queen Charlotte butterweed ( <i>Senecio moresbiensis</i> )
Circumpolar starwort ( <i>Stellaria ruscifolia</i> ssp. <i>aleutica</i> )

<sup>1</sup> Sensitive plants updated January 2001.

outer coasts or nearby islands. The nest sites are on cliffs ranging from 65 to 900 feet in height; all but one nest face the open ocean. Seabirds are thought to be major prey of the falcon. Information on falcon breeding biology or reproductive success is limited, but based on USFWS surveys, populations appear to be stable.

**Trumpeter Swan**

The largest nesting population of trumpeter swans on the Tongass National Forest occurs on the Yakutat Forelands where 60 adult and 35 young were counted in the 2001 nesting surveys (Conant et al. 2001). The southernmost nesting population in Alaska occurs in the Chilkat Valley on non-National Forest System land. Surveys by the USFWS indicate the Yakutat population has been stable, while the population in the Chilkat Valley has increased from one pair in 1975 to a total of 64 adults and 49 young counted in 1993. Trumpeter swans winter in ice-free areas throughout Southeast Alaska. Winter surveys on the Yakutat Forelands documented 221 adults and 63 cygnets in 2001. Information on wintering habitats and populations elsewhere on the Tongass is very limited, but a traditional winter concentration area has been documented at Blind Slough on Mitkof Island near Petersburg. Numerous swans from other parts of Alaska migrate through Southeast Alaska, and many may winter in suitable habitats in Southeast Alaska. A total of 334 adults and 43 juveniles were recorded throughout Southeast Alaska during the 2000/2001 surveys conducted by USFWS (Conant et al. 2001).

## 3 Environment and Effects

### Sensitive Species – Fish

#### ***Northern Pike***

Northern pike are found in five lakes, referred to as Pike Lakes, approximately 23 miles east of Yakutat in Roadless Area 341 (Browning, 1986). These lakes are shallow, with high concentrations of humic acid and peat-filled margins. The northern pike in Pike Lakes are the only natural-occurring pike in Southeast Alaska and are probably remnant populations that survived only because the most recent glacial advance missed the Pike Lakes area. Relatively little information is available on the life history and population dynamics of these pike populations.

#### ***Large Chum Salmon***

Near Hyder (Roadless Area 530) on the Portland Canal, Fish Creek produces very large chum salmon, probably the largest chum salmon in North America. Several fish over 38 pounds have been weighed by biologists; fish weighing 25 pounds are common. The average size of large chum salmon is close to 20 pounds (the average chum salmon from other areas weighs around 10 pounds). A high percentage of the returning fish have spent 4 and 5 years in the ocean, accounting for the large average size. Normally, chum salmon stay at sea for 2 to 5 years (Sala, 1991). Fish Creek is a low gradient stream, dominated by high quality spawning gravels and extensive areas of groundwater upwelling. The predominant upwelling and high quality spawning gravels appear to be the reasons for the remarkable production levels. Populations have been stable to increasing with a reported escapement of more than 60,000 in 1993.

#### ***Island Run King Salmon***

King Salmon River and Wheeler Creek populations of king salmon are island genetic stocks. No other naturally occurring runs of island king salmon stocks are known to exist in Southeast Alaska. King Salmon River and Wheeler Creek are both within Kootznoowoo Wilderness. Information on these populations is limited, although recent escapement counts suggest the population is stable or slightly decreasing. The King Salmon River stock serves as an important king salmon transplant source for other streams and rivers.

### Sensitive Species – Plants

The sensitive plants discussed here are known or suspected to occur in the Tongass National Forest and are listed in Table 3.2-23. Little is known about some of these plants. Habitat information has been limited to herbarium specimens, where in many instances, habitat information was often very general. During the past several years, sensitive plant surveys have filled in the gaps of habitat and distribution information, as well as provided information to botanists who are evaluating the taxonomy of these plants. Consequently, some of the plants designated as sensitive have been found to be more common than previously expected, and the taxonomic status of others has been changed. The following four plants were previously listed as Forest Sensitive but have since been removed: Northern rockcress (*Draba borealis* var. *maxima*), Kamchatka rockcress (*Draba kamtschatica*), Choris bog orchid (*Platanthera chorisiana*), and Straight-beak buttercup (*Ranunculus orthorhynchus* var. *alascensis*).

#### ***Eschscholtz's Little Nightmare***

This distinct species is endemic to southern Alaska and adjacent Canada in a band extending from the Aleutians through the southwest Yukon. It is suspected to occur

in mountainous areas on the northern mainland of the Tongass. It grows in moist mossy areas, seeps, heaths, and scree slopes in the subalpine and alpine. The plant is known from about 30 sites throughout its range. Because the plant is so small, it is easily overlooked and may be more common than previously thought. New populations have been located in the past several years during rare plant surveys.

### ***Norberg Arnica***

Norberg arnica is endemic to Alaska, and is known from less than 20 occurrences in a range extending from Prince William Sound through the northern panhandle. The plant is known from the Yakutat Ranger District. It grows from sea level to subalpine in meadows, shrublands, dry meadows, and open forest.

### ***Goose-Grass Sedge***

Recent taxonomic treatments of *Carex* have added *Carex enanderi* to this taxon. Consequently, this taxon is more common, but still rare. The plant ranges from the Aleutians east to the Alaska-Canada Coast Range, through the Rockies south to Glacier National Park. It is known from the Juneau and Ketchikan Ranger Districts. This sedge grows in wet meadows, along lakeshores and snowbeds, generally at high elevations.

### ***Edible Thistle***

This regional endemic ranges from southern Southeast Alaska, through western Washington, to extreme northwestern Oregon. It is known from three locations in the Misty Fjords National Monument, and is expected to occur elsewhere in the southeast Tongass National Forest. It grows in open meadows, scree slopes, and along glacial streams and lakeshores.

### ***Pretty Shooting Star***

The taxonomic status of this plant is questionable; some authors do not recognize the subspecies. It is known from seven populations ranging from southcentral and northern Southeast Alaska to a distinct population near Great Slave Lake. It occurs in wet meadows and upper beach meadows. Little is known about this plant. Distribution, population size, population trends, existence of historical populations, and habitat requirements need to be determined.

### ***Davy Mannagrass***

This well-defined regional endemic occurs from central Southeast Alaska disjunctly south through central California. In Alaska, it is known from several sites in the Ketchikan area and near Wrangell, and has been discovered to be widespread along the Wrangell road system. It grows in shallow freshwater and along stream and lake margins.

### ***Wright Filmy Fern***

This extremely inconspicuous fern's range is disjunct from the Russian Far East, Korea, and Japan to the Petersburg and Sitka areas in the Tongass National Forest, south to about four sites along the British Columbia coast. In Alaska, only gametophytes have been found; however, gametophytes and sporophytes occur in coastal British Columbia. It grows on shaded cliff faces; bases of trees; decaying wood and rootwads; and in the dense, humid coastal forests near saltwater. Because this is such an inconspicuous plant it may be overlooked. In Alaska, the plant has only been found by biologists. Distribution, population size, population

### 3 Environment and Effects

trends, existence of the historical populations, and habitat requirements need to be determined.

#### ***Truncate Quillwort***

This aquatic plant is a hybrid of *Isoetes occidentalis* and *Isoetes maritima*. Recent reevaluations of *Isoetes x truncata* reveal that *Isoetes x truncata* as identified from the Sitka Ranger District, were misidentifications of *Isoetes occidentalis*. *Isoetes occidentalis* was not previously known to Alaska. *Isoetes x truncata* is known from Kodiak and Vancouver Islands, with a disjunct population at Pyramid Lake, Alberta. It is suspected to occur from Prince William Sound through the Tongass National Forest. It grows immersed in shallow fresh water pools or ponds.

#### ***Calder Lovage***

This is a regional endemic, known from Vancouver Island north through the southern part of the Tongass National Forest (Dall and Prince of Wales Islands) and disjunct to Kodiak Island. It occurs in alpine and subalpine meadows, boggy slopes, and rocky areas. It is known from less than 6 places in Alaska and less than 100 throughout its range.

#### ***Pale Poppy***

A rather spectacular poppy, this species is known from three disjunct areas: Kamchatka and northern Kurile Islands; Cook Inlet, Kenai Peninsula, Portage Glacier; and northern British Columbia and southern Yukon. In the Tongass National Forest, it is suspected on the mainland in the Skagway and Juneau areas. The plant grows in open areas, recently deglaciated areas, rock outcrops, sand, gravel, and on well-drained soils.

#### ***Bog Orchid***

This taxonomically questionable orchid is known from a limited range in the southernmost part of the Tongass and adjacent British Columbia. It has been documented from four sites in wet meadows and is expected in peat bogs. Little is known about this plant. Distribution, population size, population trends, existence of historical populations, and habitat requirements need to be determined.

#### ***Loose-Flowered Bluegrass***

The range of this distinct species extends from the Hoonah area south to Oregon. In spite of numerous surveys, this large grass is known from about 25 sites, 6 of which are in the Tongass National Forest. The plant is suspected to occur throughout the Tongass National Forest from the Juneau Ranger District south; however, it is only known from the Juneau and Hoonah Districts and Admiralty Island National Monument. It grows in upper beach meadows, open areas, and open forest.

#### ***Kamchatka Alkali Grass***

The range of this regional endemic extends from the Aleutians through the central Tongass National Forest. It grows on tidal flats, salt marshes, and sea beaches. The taxonomic status of this plant is in question; some authors recognize it as a distinct species, others do not. Current taxonomic revisions of *Puccinellia* may result in moving this taxon into the much more common *Puccinellia nutkaensis*.

***Unalaska Mist-maid***

This distinct species is endemic to Alaska, ranging from the Aleutian Islands through Prince William Sound, disjunct to the western Tongass National Forest. The plant is known from about 25 occurrences. It grows in cracks in rock outcrops; along streambanks; beach terraces; open rocky areas; and on grassy, mossy rock cliffs along shores.

***Queen Charlotte Butterweed***

This plant is endemic to the southern half of the Tongass National Forest, Queen Charlotte Islands, and northern Vancouver Island. It is known from less than 100 occurrences, with about 5 from the Tongass. It grows in alpine and subalpine meadows, boggy or rocky slopes, open rocky heaths, or grassy areas.

***Circumpolar Starwort***

This species ranges from the eastern Aleutians east across southern coastal Alaska to the northern Tongass, with about ten occurrences across its range. One of these is from the Yakutat Ranger District. This plant is inconspicuous and difficult to identify. It grows in open gravelly sites and along creeks in the mountains.

**Environmental Consequences**

**Threatened and Endangered Species**

Consultation requirements for the Forest Plan Revision under Section 7 of the ESA, as amended, were completed with the USFWS and NMFS. Both USFWS and NMFS reviewed the biological assessments for threatened and endangered species under their regulatory jurisdiction and concluded that the Tongass Forest Plan Revision was “not likely to adversely effect” threatened or endangered species occurring on the Tongass. These findings were made subject to the programmatic scope of the Forest Plan Revision and following the associated Forest-wide standards and guidelines (see Chapter 4 of the 1997 Forest Plan). Copies of the correspondence with each agency are included in Appendix J of the 1997 Forest Plan Revision Final EIS.

Formal and informal consultation procedures (as directed by the ESA, as amended in 50 CFR 17.7, and Forest Service Manual 2670) are used with NMFS and USFWS on all projects that implement the 1997 Forest Plan. Forest-wide standards and guidelines (see Chapter 4 of the 1997 Forest Plan) for threatened, endangered, and sensitive species direct that all projects will comply with requirements of the ESA, as amended, and Forest Service policy (FSM 2670).

Because Alternative 11 of the 1997 Forest Plan Revision Final EIS was the Selected Alternative (as described in the 1997 ROD) and was deemed not likely to adversely affect threatened or endangered species occurring on the Tongass, the alternatives being examined in this SEIS would also fall in this category because they are at least as protective as Alternative 11 from the 1997 Final EIS.

**Sensitive Species**

**Osprey**

Limiting factors for osprey populations are unknown, but availability of nest sites and foraging areas do not appear to be limiting and Forest-wide standards and guidelines (see Chapter 4 of the 1997 Forest Plan) were developed to provide for protection of nest sites as they are identified. In addition to protection around known nest sites, standards and guidelines also include a 1,000-foot beach and estuary buffer that provides suitable dominant or co-dominant trees along shorelines for nesting.

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This shoreline buffer essentially protects all suitable or potentially suitable nesting, perching, and foraging habitat for ospreys regardless of the alternative. Alternatives 1, 2, and 4 are essentially the same in terms of acres of habitat protection for the osprey, while the other alternatives provide more habitat protection. Alternatives 3, 5, 7, 8, and 6 are in order of increasing amount of acres protected over the long-term.

### **Peale's Peregrine Falcon**

Forest-wide standards and guidelines (see Chapter 4 of the 1997 Forest Plan) were developed to provide for protection of Peale's peregrine falcon habitat. Any project level planning requires the evaluation of potential impacts to known falcon nests within 2 miles of a proposed project in an effort to plan project activities to avoid adverse impacts to the falcons and their habitats.

The Forest-wide standards and guidelines of the 1997 Forest Plan are meant to avoid any adverse effects on Peale's peregrine falcon populations and habitats, and not result in a loss of species viability. All of the action alternatives would only increase the amount of protection over time.

### **Trumpeter Swans**

At the present time, the only documented nesting habitat for trumpeter swans on the Forest is at Yakutat, in the Yakutat Forelands Biogeographic Province (primarily Roadless Area 339). Approximately 96 percent of this province is already within legislated LUD II areas or other natural setting LUDs. All of the nesting habitat is classified as wetlands and/or riparian habitat. Forest-wide standards and guidelines for wetlands and riparian management apply to these areas (see Chapter 4 of the 1997 Forest Plan), which were developed for trumpeter swan habitats on the Forest.

None of the alternatives would increase the likelihood of any adverse effects on trumpeter swan populations, nesting habitat, or wintering habitat, or would result in a loss of species viability. Most of the action alternatives would increase the amount of habitat protection.

### **Northern Pike**

Northern Pike are found in five lakes east of Yakutat in Roadless Area 341. Forest-wide standards and guidelines for wetlands and riparian management generally cover these areas. Although road access exists within 0.5 mile of Pike Lakes, there is no land suitable for timber harvest immediately around the lakes. Natural habitat conditions associated with the lakes are expected to be maintained under all alternatives.

### **Fish Creek Chum Salmon**

The habitat for the Fish Creek chum salmon, near Hyder on the Portland Canal in Roadless Area 530, will be managed in accordance with the Forest-wide standards and guidelines for wetlands and riparian management (see Chapter 4 of the 1997 Forest Plan) under all alternatives. Additional standards and guidelines for chum salmon that apply include coordination with appropriate agencies to protect, maintain, and preserve this run of chum salmon, and to provide for habitat improvement as necessary to maintain the viability of the run. None of the alternatives are expected to negatively affect the Fish Creek chum salmon.

There have been improvement projects to increase spawning habitat. With these improvement projects, the habitat for these chum salmon is expected to be improved

in the future. Alternatives 1, 2, 3, 4, 5, and 7 maintain the current LUDs. Alternative 6 would convert this area to Recommended LUD II, which would still allow limited improvement projects if or as needed. However, Alternative 8 proposes this area for conversion to Recommended Wilderness, which may limit continued hatchery activities and/or the ability to conduct improvement projects.

### Island Run King Salmon

King Salmon River and Wheeler Creek habitats for island run king salmon are both within Kootznoowoo Wilderness. Natural habitat conditions are to be maintained, and specific Forest-wide standards and guidelines also apply (see Chapter 4 of the 1997 Forest Plan). None of the alternatives would change how this area would be maintained. Application of the wilderness prescription and Forest-wide standards and guidelines to sustain habitat conditions would not result in a loss of viability of these island run king salmon.

### Sensitive Plants

Under the 1997 Forest Plan Revision, all of the plants listed in Table 3.2-23 were assessed in terms of potential adverse effects to each of the species. The likelihood of adverse effects was determined to be extremely low to moderate because activities could affect individuals, populations, or habitat. Activities include road construction, changes in hydrology associated with road construction, construction of other facilities, increased off-road vehicle use, increased access, and increased use and associated trampling by recreationists.

The likelihood of adverse effects is considered low because for individual project proposals, site-specific environmental analysis would include biological evaluations, which analyze the effects of those proposals on the plant and its habitat. As a result of the analysis, appropriate mitigation measures would be included in the project. In addition, appropriate Forest-wide standards and guidelines (Riparian Management, Wetlands, Beach and Estuary Fringe) will be applied to sustain each sensitive listed plant and its habitat.

None of the alternatives presented in this SEIS would increase the likelihood of additional impacts not previously discussed in the 1997 Forest Plan Revision Final EIS. Most of the action alternatives would increase, to some degree, the amount of potential long-term habitat protection. Alternatives 1, 2, and 4 are essentially the same in terms of acres of habitat protection for these plants, followed by Alternatives 3, 5, 7, 8, and 6, in order of increasing amount of long-term protection. Any alternative may still affect individuals, but will not contribute to a loss of viability.

# Human Uses and Land Management

## Timber

### Affected Environment

- Current Condition of the Forest Land Base
- Tentatively Suitable Forest Lands
- Tongass Timber Sale Program
  - Timber Sale Management
  - Timber Under Contract

### Environmental Consequences

- Suitable Forest Lands
- Allowable Sale Quantity and Timber Sale Program Quantity
  - Non-Interchangeable Components
    - NIC I-Normal Operability (80 to 82 percent of ASQ)
    - NIC II-Difficult and Isolated Operability (18 to 20 percent of ASQ)
  - TTRA Demand
  - Log Grades and Product Demand
- Allowable Sale Quantity and Long-term Sustained Yield Capacity
- Short-term Effects

### Affected Environment

The forests of Southeast Alaska are the main source of raw materials for the region's wood products industry. From 1980 through 2001, the Tongass National Forest accounted for between 22 and 49 percent of the total annual Southeast Alaska timber harvest, averaging approximately 42 percent. Timber harvest in Southeast Alaska ranged from peak levels of just under 1,000 million board feet (MMBF) in 1989 and 1990 to a low of 221 MMBF in 2001. The wood products industry and associated regional employment is discussed in more detail in the *Economic and Social Environment* section of this document.

The forests of Southeast Alaska are primarily of the western hemlock-Sitka spruce forest type. This type is a segment of the temperate rain forest that occupies a coastal strip 2,000 miles long from Northern California to southcentral Alaska. The most extensive occurrence of this type is in Southeast Alaska. Within the Tongass, western hemlock and Sitka spruce stands cover 98 percent of the forest lands, with the remaining 2 percent supporting western redcedar, yellow-cedar, and cottonwood. Western hemlock is used for pilings, poles, railway ties, windowsills, doors, and construction lumber, and has been an important fiber source for pulp. Sitka spruce is used for specialty products, such as piano sounding boards, guitar faces, oars, planking, masts, and spars for custom-made or traditional boats, and ladders. For centuries Alaska Natives have used cedar species for canoes and paddles, housing (along with Sitka spruce), and totem poles. Today, redcedar is primarily used as a roofing material and yellow-cedar is suitable for many uses, including boats, utility poles, heavy flooring, framing, and marine decking and piling.

The timber inventory on the Tongass, including the forest type composition, age class distribution, and volume classes, is described in Chapter 3 of the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a; pp 3-251 to

3-253). Current management practices are also described in the 1997 Final EIS (USDA Forest Service, 1997a; pp 3-255 to 3-257). Vegetation management practices prescribed under the 1997 Tongass Forest Plan, including regeneration methods, reforestation, and intermediate treatments, are described in the standards and guidelines of the 1997 Tongass Forest Plan (USDA Forest Service, 1997b; pp 4-94 to 4-101). Definitions for each of these practices, how they are applied, and the expected effects on the timber resource are provided. No changes in these prescriptions are proposed in this SEIS.

### **Current Condition of the Forest Land Base**

Forests occupy slightly less than 10 million acres, or approximately 60 percent of the Tongass land area. The remaining 40 percent is non-forested, e.g., water, muskeg, ice, snow, and rock. The forests vary from sparse muskeg forests to heavily timbered stands of 50 thousand board feet (MBF) (long-log bureau scale) per acre or more.

**Productive old growth** – Old-growth forest capable of producing at least 20 cubic feet of wood fiber per acre per year, or having greater than 8,000 board feet per acre.

Approximately 56 percent of the forestland on the Tongass National Forest (approximately 5.5 million acres) is classified as productive forestland; these lands are considered biologically capable of producing industrial wood products. These lands were previously called timberlands or commercial forestlands. Approximately 0.5 million acre of the productive forestlands on the Tongass have been harvested to date or have been converted to second growth due to fire or wind. This is approximately 3 percent of the total Tongass land base and 9 percent of the productive forestlands and represents approximately 15 billion board feet of timber. In addition to productive forestlands, the Tongass includes approximately 4.5 million acres of “other forestland” that are not capable of producing industrial forest products, but are of major importance for watershed protection, wildlife habitat, recreation, and other uses. “Other forestland” is land incapable of yielding crops of industrial wood usually because of adverse site conditions. These conditions may include sterile or poorly drained soil, subalpine conditions, and steep rocky areas where landslides or avalanches curtail timber development. This land has been called noncommercial or nonproductive forestland.

### **Tentatively Suitable Forest Lands**

Timber resource land suitability was completed by the Forest Service for the 1997 Tongass Forest Plan Revision Final EIS (Appendix A). The National Forest Management Act (NFMA) requires the Secretary of Agriculture to identify lands not suited for timber production due to physical and other pertinent factors. NFMA also included consideration of economic factors in the identification of suitable lands, but the Tongass Timber Reform Act (TTRA) exempted economic considerations as a requirement for identifying suitable lands on the Tongass.

Tentatively suitable lands are lands that have the biological capability, and availability, to produce commercial wood products. To be considered tentatively suitable, the forested land must (36 CFR 219.14):

- ♦ be at least 10 percent occupied by trees or have formerly had such tree cover, and not be developed for non-forest uses;
- ♦ be capable of harvest with available technology to ensure timber production without irreversible resource damage to soil productivity or watershed conditions;
- ♦ be capable of being restocked within 5 years after final harvest; and
- ♦ not be withdrawn from timber production by an Act of Congress, the Secretary of Agriculture, or the Chief of the Forest Service.

In the 1997 Forest Plan Revision Final EIS, it was estimated that there were 2.4 million acres of tentatively suitable lands on the Tongass. In this SEIS, the estimated tentatively suitable land base is 2.3 million acres (Table 3.3-1). The difference in the tentatively suitable land base is due to updates in the Tongass Geographic

### 3 Environment and Effects

Information System (GIS) coverages resulting from changes in land ownership and updates from additional field work, as well as from a different computer measurement method (using polygon areas rather than extrapolation from a grid system). Of the 2.3 million acres of tentatively suitable land, approximately 1.0 million acres are estimated to be in land allocations that allow timber harvest under the 1997 Forest Plan and, thus, are suitable for harvest.

**Management Implementation Reduction Factor (MIRF)** – An adjustment to the gross estimate of tentatively suitable acres that accounts for conditions that are not accurately mapped, but affect suitability.

This gross estimate of the number of suitable acres was reduced by a “falldown” factor to account for conditions that are not accurately mapped, but affect suitability. These conditions include deer standards and guidelines, karst and caves, land selections, isolated stands, and unmapped Class III buffers. This reduction factor was referred to as the Model Implementation Reduction Factor (MIRF) in the 1997 Forest Plan Revision Final EIS. After applying the MIRF, the estimated suitable lands are reduced to 718,000 acres. In addition, the optimization model excluded 54,000 acres that did not meet scheduling objectives. This resulted in an estimated 664,000 acres of suitable lands that could be scheduled for timber harvest. Figure 3.3-1 illustrates the changes that have occurred to the tentatively suitable forestland base on the Tongass as a result of legislation and the land allocation process over the past 100 years.

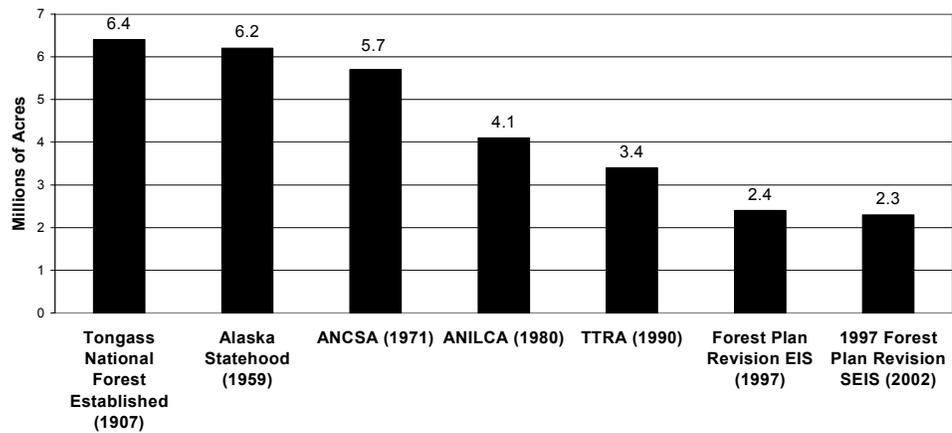
**Table 3.3-1  
Land Classification (thousands of acres of) Tentatively Suitable and Suitable Lands**

Classification	Acres (thousands) <sup>1</sup>
Total National Forestland (Items 1 and 2)	16,801
1. Non-Forestland (includes water)	6,914
2. Forest land	9,887
3. Productive Forestland	5,428
4. Productive Forestlands that are classified unsuitable because they cannot be harvested without causing irreversible resource damage or cannot be regenerated within 5 years or have inadequate response information or are legislatively withdrawn from harvest.	3,127
<b>5. Tentatively suitable timberlands (Item 3 minus Item 4)</b>	<b>2,301</b>
6. Tentatively suitable timberlands allocated to Land Use Designations that do not allow timber management	1,261
7. Net remaining (item 5 minus item 6)	1,043
8. Model Implementation Reduction Factor (MIRF) Acreage <sup>2</sup>	324
<b>9. Net remaining (Item 7 minus Item 8)</b>	<b>718</b>
10. Scheduling reduction	54
<b>11. Scheduled (suitable lands)</b>	<b>664</b>

<sup>1</sup> Totals are approximate due to rounding.

<sup>2</sup> MIRF is an adjustment to the gross estimate of tentatively suitable acres that accounts for conditions that are not accurately mapped, but affect suitability. These conditions include deer standards and guidelines, karst, caves, isolated stands, and unmapped Class III stream buffers. The MIRF was calculated separately for different portions of the Forest based on field observations.

**Figure 3.3-1  
Estimated Tentatively Suitable Forestland (millions of acres) in the  
Tongass National Forest, 1907 to Present**



Note: The estimated tentatively suitable forest land (2.3 million acres) is slightly less than the total estimated in the 1997 Tongass Forest Plan Revision Final EIS (2.4 million acres). This difference is due to updates in the Tongass GIS coverages resulting from changes in land ownership and updates from additional fieldwork, as well as from a different computer measurement method (using polygon areas rather than extrapolation from a grid system).  
 ANCSA – Alaska Natives Claims Settlement Act  
 ANILCA – Alaska National Interest Lands Conservation Act  
 TTRA – Tongass Timber Reform Act

**Tongass Timber Sale Program**

An objective of the Alaska National Interest Lands Conservation Act (ANILCA) passed in 1980 was the maintenance of timber supply opportunities for the Southeast Alaska timber industry because of its contribution to the local and regional economies of Southeast Alaska. For similar reasons, TTRA (Section 101) directs the Forest Service to seek to provide a supply of timber from the Tongass that meets annual market demand and meets the market demand for each planning cycle to the extent consistent with providing for the multiple-use and sustained-yield of all renewable resources. The planning cycle is assumed to be the 10- to 15-year period between Forest Plan revisions.

The Tongass timber program is part of a long-term cooperative effort among the federal government, the State of Alaska, and local governments to provide greater economic diversity and stability in Southeast Alaska and more year-round employment. During the 1920s, the Forest Service proposed several long-term sales to help establish a pulp industry in Southeast Alaska. The objective was to provide a sound economic base in Alaska through establishment of a permanent year-round pulp industry. The Forest Service established requirements to process timber in Alaska, including the construction and operation of pulp mills, via 50-year timber sale contracts awarded in the early 1950s. The first successful sale was made in 1951 and construction of a pulp mill was completed at Ward Cove near Ketchikan in 1954. This long-term contract was held by Ketchikan Pulp Company (KPC). During the 1950s, the Forest Service offered three additional long-term sales. The belief was that a long-term sale was necessary to assure the supply of timber and attract the wood products industry to Alaska.

These long-term timber sale contracts are no longer operating. The U.S. Plywood-Champion Paper contract in the Juneau District was canceled by mutual consent in 1976; no operations were performed on the ground. The Pacific Northern Timber Company contract located on the Wrangell District required the construction and

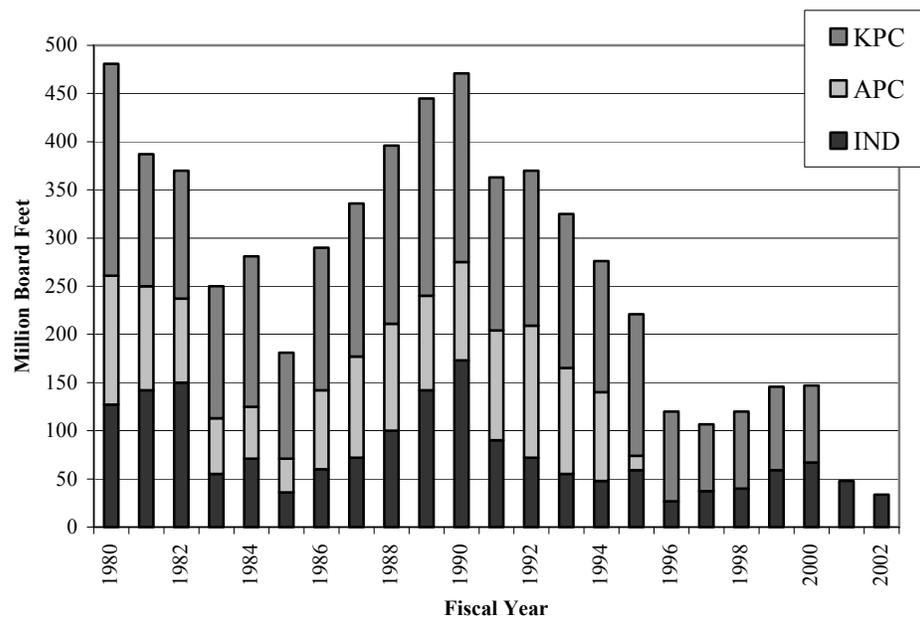
### 3 Environment and Effects

operation of both a sawmill and pulp mill in the contract to operate for 50 years. Only the sawmill was constructed and operated and the contract was, thus, limited to 25 years. All ground activities for the Wrangell Unit were completed in 1981 (USDA Forest Service, 1997a). The Alaska Pulp Corporation (APC) closed their Sitka pulp mill in 1993 and the Wrangell sawmill in 1995. Their contract was terminated by the Forest Service in 1994. In February 1997, an end to the KPC contract, due to expire in 2004, was negotiated. The KPC pulp mill closed in 1997.

The average annual timber harvest on the Tongass was about 40 MMBF per year from the early 1900s to 1952. Timber harvest averaged about 358 MMBF per year (sawlog and utility) for the next 45 years after establishment of the long-term contracts in the 1950s. This volume was generated primarily from the KPC, Pacific Northern Timber, and APC contracts. Harvests peaked in 1973 at approximately 591 MMBF and then declined to a low of about 181 MMBF by 1985.

Long-term sales comprised almost three-quarters of the timber volume made available during the period of 1980 through 1991 (USDA Forest Service, 1997a; Table 3-74). Between Fiscal Year 1980 and 1995, an annual average of 247 MMBF of volume was made available to the long-term contract holders. Because of market fluctuations, appeals and litigation, and other factors, the long-term contract holder annual average harvest between 1980 and 1995 was about 249 MMBF. Total annual average harvest was approximately 340 MMBF over the same time period. Since 1995, total annual timber harvest has averaged approximately 103 MMBF, or less than a third of the average annual volume harvested between 1980 and 1995 (Figure 3.3-2).

**Figure 3.3-2**  
**Tongass National Forest Timber Harvest, 1980 to 2002**



KPC – Ketchikan Pulp Company  
APC – Alaska Pulp Corporation  
IND – Independent timber operators

The current Tongass timber program is composed of a large sale program, a small sale program, and a firewood and personal use program. The 2001 and 2002 harvest volumes, 48 and 34 MMBF, respectively, were notably lower than the average annual harvest of 340 MMBF for 1990 to 1995.

The primary sources of timber in Southeast Alaska are the Tongass National Forest, private corporations (principally Alaska Native Corporations formed through the Alaska Natives Claims Settlement Act [ANCSA]), and the State of Alaska (USDA Forest Service, 1997a; Table 3-75). Timber harvest patterns are discussed in more detail in the *Economic and Social Environment* section of this document.

### Timber Sale Management

The Forest Service employs a “buffer stock” approach to timber sale planning to provide a stable timber sale program and a continuous flow of timber to regional timber processors. The resulting program is complex and requires that the Forest Service manage four “pools” of timber volume, commonly referred to as the timber pipeline:

- ◆ Timber volume identified in the Forest Service’s 10-year Timber Sale Plan: This pool contains sales available for future timber sale planning and preparation.
- ◆ Timber volume in preparation: This pool contains sales that are being analyzed and undergoing public comment through the National Environmental Policy Act (NEPA) process. This can take from 2 to 4 years to complete and ends when a NEPA decision is made.
- ◆ Timber volume available for sale: This pool contains NEPA-approved sales. Administrative appeals have been resolved, and litigation, if any, has been resolved. This volume is available to program managers to schedule for sale offerings. Managers need to maintain enough volume in this pool to be able to schedule future sale offerings in an orderly manner and of the size and configuration that best meets regional demand. The Forest Service tries to announce probable future sale offerings at least a year in advance to allow potential purchasers an opportunity to conduct their own evaluations of these offerings in order to determine whether to bid and, if so, how much to offer.
- ◆ Timber volume under contract: This pool contains sales that have been sold, but not yet harvested. Timber contracts typically give the purchaser 3 to 5 years to harvest or remove the timber purchased. Long-standing Forest Service practice is to maintain about 2 or 3 years of unharvested timber volume under contract to purchasers. This practice is not limited to the Alaska Region, but is particularly relevant to Alaska because of the nature of the land base. The relative absence of roads, the island geography, and steep terrain mean that much of the timber is isolated and timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

Timber sales can take from 3 to 5 years to complete. Sales offered by the Forest Service vary in size to meet the needs of different purchasers. The time taken to complete a sale may vary with the size of the offering. Further uncertainty and delays may be introduced through appeals and litigation. The buffer stock approach and the variable length of the timber sale process generally makes it difficult to draw a direct relationship between particular sales and regional timber demand.

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### Timber Under Contract

As of September 30, 2002, there were 58 timber sales with approximately 294.6 MMBF of timber volume under contract on the Tongass National Forest (Table 3.3-2). Approximately 58 percent of this volume is at least partly within roadless areas. The roadless area portion of these sales represents less than 0.1 percent (one-tenth of 1 percent) of the roadless areas on the Tongass.

Approximately 89 percent of the timber under contract is under contract with four operators: Gateway Forest Products (39 percent), Silver Bay Logging (24 percent), Viking Lumber Company (15 percent), and Pacific Log and Lumber (11 percent). Pacific Log and Lumber, Silver Bay Logging, and Viking Lumber Company operate sawmills in Ketchikan, Wrangell, and Craig/Klawock, respectively.

Gateway Forest Products (Gateway) formerly owned a veneer mill and saw mill in Ketchikan. Gateway acquired the KPC pulp mill site and existing sawmill as part of the settlement agreement to terminate the KPC long-term timber sale contract. The veneer mill, which operated for a portion of 2000, was built as part of this settlement. While the mill was being constructed, Gateway purchased approximately 120 MMBF of National Forest timber to operate the veneer mill and sawmill. Gateway filed for bankruptcy in 2001 and announced in April 2002 that the sawmill and veneer mill would be auctioned off to resolve the bankruptcy. The sawmill was auctioned off, but the city of Ketchikan purchased the veneer plant with the expectation of finding an operator to take it over (it is currently shutdown). Although Gateway no longer owns a processing facility, they still hold the contracts for 11 National Forest timber sales, with an approximate total of 115 MMBF in remaining uncut volume. Gateway has the option of harvesting this timber (most likely through a third-party agreement with one of the local processors) and/or turning the sales back to the Forest Service for re-offer. Because this volume has already been cleared for harvest, the Forest Service assumes that this volume will be harvested and it is included in existing demand projection calculations.

Silver Bay Logging announced in February 2003 that it has filed for Chapter 11 reorganization with the U.S. Bankruptcy Court, citing depressed lumber prices and increased costs to harvest Federal timber sales as the principle reasons for the filing. The company also announced that they plan to continue operating and plan to harvest approximately 25 MMBF of timber in 2003.

**Table 3.3-2  
Timber under Contract, by Purchaser**

Purchaser	Location	MBF	Percent of Total <sup>1/</sup>
3-D Logging	Whale Pass	111	0.0
Beaver Creek Logging	Craig	61	0.0
D&L Woodwork	Hoonah	123	0.0
David Seaford	Thorne Bay	1,350	0.5
Gateway Forest Products	Ketchikan	115,780	39.3
H&L Salvage	Craig	25	0.0
Jack Harrison	Craig	48	0.0
Ketchikan Public Util.	Ketchikan	15,762	5.4
Luthier Tone Woods	Wrangell	38	0.0
Mnt. Man Cutting	Craig	162	0.1
New Age Mining/Excavation	Thorne Bay	1,193	0.4
Pacific Log & Lumber Ltd	Ketchikan	32,208	10.9
Porter Lumber	Thorne Bay	372	0.1
Richard Blauvelt	Thorne Bay	35	0.0
Silver Bay Logging <sup>2/</sup>	Wrangell	71,004	24.1
The Mill, Inc	Petersburg	644	0.2
Thorne Bay Wood Products	Thorne Bay	147	0.0
Viking Lumber Company	Craig/Klawock	44,248	15.0
Whitestone SE Logging Co.	Hoonah	11,265	3.8
<b>Total</b>		<b>294,574</b>	<b>100.0</b>

<sup>1/</sup>0.0 percent indicates that the volume under contract is less than 0.1 percent of the total.

<sup>2/</sup>This volume excludes the Saook Timber Sale (23.4 MMBF) which was cancelled by mutual agreement in 2002.

### Environmental Consequences

#### Direct, Indirect, and Cumulative Effects

The following sections discuss the direct, indirect, and cumulative effects of the alternatives on timber. These sections address the following questions:

1. How much land would be allocated to timber production under each of the alternatives?
2. What would be the allowable sale quantity (ASQ) and long-term sustained yield?
3. Would there be a sufficient timber supply to meet demand?
4. How would existing sales under contract be affected (i.e., what are the short-term effects)?

The potential effects of the alternatives on the wood products industry and associated employment levels are discussed in the *Economic and Social Environment* section of this document. The *Economic and Social Environment* section considers potential changes in timber supply in the context of ongoing changes in other sectors of the wood products industry, particularly past and projected future trends in logging on Native Corporation lands.

#### Suitable Forest Lands

Based on the analysis presented in the *Affected Environment* subsection, there are approximately 2.3 million acres of land that are tentatively suitable for timber production. Of this, approximately 664,400 acres are estimated to be suitable and available for scheduling for timber harvest under the current Forest Plan. Reductions in suitable land would result from allocating lands that are currently suitable to the two new LUDs that do not permit timber management (Recommended Wilderness and Recommended LUD II). There would be no change

### 3 Environment and Effects

in the suitable acres under Alternatives 2 and 4 (see Table 3.3-3). Reductions in the suitable land base would be approximately 7 percent for Alternative 3, approximately 11 percent for Alternative 5, and approximately 22 percent for Alternative 7. Reductions would be largest under Alternatives 6 and 8, at approximately 48 and 47 percent, respectively.

The distribution of the potential effects on the suitable land base would vary by alternative. The following discussion discusses the percent change in estimated acres by ranger district and alternative. It should be noted that the largest relative changes are not necessarily the largest absolute changes. Under Alternative 6, for example, the 89 percent reduction in suitable acres in Juneau (-36,824 acres) is less than half the 55 percent reduction in Petersburg (-86,848 acres) (see Table 3.3-3).

Under Alternative 3, the greatest relative reductions would occur in the Ketchikan and Petersburg Districts and a slight change would occur in the Sitka District; no changes would occur in the other districts. The Juneau, Ketchikan, and Petersburg Districts would be most affected under Alternative 5, with smaller effects felt by the Craig and Thorne Bay districts. The suitable land base in the Hoonah, Sitka, Wrangell, and Yakutat districts would not be affected by this alternative.

**Table 3.3-3  
Estimated Change in Suitable Timber Land by Ranger District**

District	Alternative							
	1	2	3	4	5	6	7	8
<b>Total</b>	<b>664,386</b>	<b>684,386</b>	<b>620,671</b>	<b>664,386</b>	<b>589,194</b>	<b>344,071</b>	<b>520,594</b>	<b>351,115</b>
	<b>Absolute Change from Alternative 1 (Acres)</b>							
Craig	68,012	0	0	0	-7,950	-41,450	-16,056	-40,671
Hoonah	19,562	0	0	0	0	-8,948	0	-8,946
Juneau	41,258	0	0	0	-16,604	-36,824	-34,382	-36,822
Ketchikan	65,765	0	-15,555	0	-15,577	-36,948	-15,577	-34,476
Petersburg	158,867	0	-25,934	0	-28,308	-86,848	-59,866	-82,827
Sitka	47,161	0	-2,226	0	0	-28,266	-6,752	-27,436
Thorne Bay	164,352	0	0	0	-6,752	-27,342	-8,780	-25,735
Wrangell	89,154	0	0	0	0	-48,315	-2,378	-50,985
Yakutat	10,254	0	0	0	0	-5,374	0	-5,374
<b>Total</b>	<b>664,386</b>	0	-43,715	0	-75,192	-320,315	-143,792	-313,271
	<b>Percent Change from Alternative 1</b>							
Craig	68,012	0	0	0	-12	-61	-24	-60
Hoonah	19,562	0	0	0	0	-46	0	-46
Juneau	41,258	0	0	0	-40	-89	-83	-89
Ketchikan	65,765	0	-24	0	-24	-56	-24	-52
Petersburg	158,867	0	-16	0	-18	-55	-38	-52
Sitka	47,161	0	-5	0	0	-60	-14	-58
Thorne Bay	164,352	0	0	0	-4	-17	-5	-16
Wrangell	89,154	0	0	0	0	-54	-3	-57
Yakutat	10,254	0	0	0	0	-52	0	-52
<b>Total</b>	<b>664,386</b>	0	-7	0	-11	-48	-22	-47

Notes:

1/The number of acres that were considered tentatively suitable was reduced by a "falldown" factor (MIRF) included to account for conditions that are not accurately mapped but that affect suitability. These conditions include deer standards and guidelines, karst, caves, isolated stands, and unmapped Class III stream buffers. The MIRF was calculated separately for different portions of the Forest based on field observations.

2/The Admiralty and Misty Fiords National Monuments are not included in the table because they contain no suitable forestland.

There would be substantial reductions in most districts under Alternatives 6 and 8. The largest relative effects would occur in Juneau (-89 percent). Craig, and Sitka would experience declines in the range of 60 percent, while reductions in the Petersburg, Ketchikan, Wrangell, Yakutat, and Hoonah districts would range from 46 to 57 percent (Table 3.3-3). Only Thorne Bay would experience a decline of less than 45 percent under either alternative.

The suitable base in the Juneau Ranger District would decline by approximately 83 percent under Alternative 7. The Petersburg, Craig, Ketchikan, and Sitka districts would experience declines ranging from 14 to 38 percent. Thorne Bay and Wrangell would experience declines of 5 and 3 percent, respectively. The Hoonah and Yakutat Ranger districts would not be affected.

Removing land from the suitable base would reduce both the potential ASQ and long-term timber growth and yields. While the effect is not perfectly linear, the magnitude of the reduction is generally related to the proportion of lands removed. The timber production lost due to Congressional designation to wilderness or LUD II is irretrievable but not irreversible. It may be possible to resume timber management activities if Congress decided to reverse its designation in the future and allow timber management of these lands.

Where land is dedicated to road construction, development of facilities, or excavation of minerals or rocks, the loss of land for timber production is generally irretrievable and may be irreversible. The occurrence of landslides or excessive erosion can also degrade soil productivity, thus reducing potential forest growth and yield in the generally small and localized areas where this occurs.

### **Allowable Sale Quantity and Timber Sale Program Quantity**

The ASQ estimated for each of the alternatives is an indicator of possible future timber supply levels. The ASQ is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period (36 CFR 219.3). It is usually expressed as an annual average. The quantity in a given year may exceed or be less than the annual average for the decade. The ASQ is a ceiling; it is not a future sale level projection or target and does not reflect all of the factors that may influence future sale levels. Given the uncertainties inherent in developing ASQs, the amount of timber sold will usually be less than the ASQ.

Allowable Sale Quantity (ASQ) is the maximum quantity of timber that may be scheduled from suitable lands on the entire forest. Usually expressed as an annual average, it is a ceiling not a future sale level projection or target.

The ASQ was determined by the 1997 Record of Decision (ROD) (Alternative 11, with modifications, in the 1997 Forest Plan Revision Final EIS) to be 267 MMBF. The scheduled yield from Alternative 1 in this SEIS (No Action) is estimated to be 259 MMBF, slightly less than 267 MMBF. The difference is a result of changes in small old-growth reserves and land ownership, as well as revised mapping of the vegetation layer and a difference in methodology for ASQ calculation (see Appendix B). Estimated annual average ASQ volumes are presented by alternative for the first decade following implementation in Table 3.3-4. The ASQ under Alternatives 1, 2, and 4 would be 259 MMBF. Alternatives 3 and 5 would produce ASQs of 236 and 209 MMBF, respectively. The ASQ under Alternatives 6, 7, and 8 would be 92, 174, and 96 MMBF, respectively.

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**Table 3.3-4  
Allowable Sale Quantity by Alternative (First Decade, Average Annual, MMBF)**

	Alternative							
	1	2	3	4	5	6	7	8
ASQ <sup>1</sup>	259	259	236	259	209	92	174	96
NIC I Only <sup>2</sup>	212	212	194	212	171	75	143	79
Higher-grade saw-logs (NIC I) <sup>3</sup>	130	130	118	130	105	46	87	48
Cedar logs (NIC I) <sup>3</sup>	23	23	21	23	19	8	16	9
Utility/Low-grade saw-logs (NIC I) <sup>3</sup>	59	59	54	59	48	21	40	22

Notes:

1. The SEIS incorporates a different method for calculating the ASQ and NIC than the 1997 Forest Plan Revision Final EIS. The estimates in the SEIS do not update or replace the original calculations. The average annual ASQ for the 1997 Forest Plan Revision Final EIS remains 267 MMBF with a NIC I of 220 MMBF.
2. NIC I is assumed to be 82 percent of the ASQ volume.
3. Higher grade saw-logs, cedar logs, and utility/low-grade saw-logs account for 61 percent, 11 percent, and 28 percent of the NIC I total, respectively (see Table 3.3-5).

There are several factors that need to be considered when evaluating ASQ. Among these are the non-interchangeable components, TTRA demand, timber grades, and product demand.

#### Non-Interchangeable Components

The ASQ is partitioned into two portions referred to as non-interchangeable components or NICs. The ASQ is partitioned to prevent the over harvest of the best operable ground, and identify that portion of the timber supply that is more economic to harvest.

#### ***NIC I - Normal Operability (80 to 82 percent of ASQ)***

This is volume scheduled from suitable lands using existing logging systems. Most of these lands are expected to be economic to harvest under projected market conditions. On average, sales from these lands have the highest probability of offering a reasonable opportunity for a purchaser to profit from his/her investment and labor. This is the best operable ground using even-aged management as the primary harvest method.

Normal operability includes those systems most frequently used on the Tongass. These systems are tractor, shovel, standard cable, and helicopter yarding up to 0.75 mile.

#### ***NIC II - Difficult and Isolated Operability (18 to 20 percent of ASQ)***

This is volume scheduled from suitable lands that are available for harvest using logging or silvicultural systems not in common use in Southeast Alaska. Most of these lands are presently considered economically and technologically marginal.

#### TTRA Demand

Section 101 of TTRA directs the Secretary of Agriculture, in part and consistent with providing for the multiple use and sustained yield of all natural resources, to seek to provide a supply of timber from the Tongass that meets the annual market demand. The Forest Service develops annual demand estimates to ensure that annual sale offerings are consistent with this demand. These estimates of demand vary from

year to year depending on a number of factors, including mill capacity and utilization, volume under contract at the beginning of the year, volume projected to be harvested during the year, and an adjustment to account for volume offered and not sold.

Brooks and Haynes' (1997) medium projection for 2005 is one benchmark used to evaluate the alternatives. This projection, which is discussed in the *Economic and Social Environment* section of this document and summarized in Table 3.4-6, estimates that 152 MMBF of Tongass timber would be demanded in 2005.

**Log Grades and Product Demand**

Forests in areas considered suitable for timber production contain trees of different species and different log grades (Table 3.3-5). Unrestricted export of raw material from the Tongass is currently limited to Alaska yellow cedar because there is no established local manufacturing demand. If there is a demonstrated surplus of other species relative to local demand, the Regional Forester may grant export once these conditions are verified. Recently, with the closure of the pulp mills, defective logs suitable only for chipping have been authorized for round-log export on a case-by-case basis. With the exception of surplus western red cedar, export permits allow purchasers to ship logs to domestic or foreign markets at their discretion. Through annual appropriations language, a certain portion of surplus western red cedar authorized for export must first be offered to the Pacific Northwest for processing before it can be exported to foreign markets.

**Table 3.3-5  
Log Type and Product Utilization of Current Demand**

Log Type	Product Utilization	Percent of Available Timber <sup>1/</sup>
Higher-Grade Sawtimber	Processed Locally	61
Low-Grade Logs	Chipped	18
Utility Logs	Chipped	10
Western Redcedar <sup>2/</sup>	Exported in Round Logs	5
Yellow-Cedar <sup>3/</sup>	Exported in Round Logs	6

<sup>1</sup> These percentages are based on actual harvest records for the past five years.

<sup>2</sup> A portion is processed locally with preferential consideration for surplus given to the United States before it is available for foreign market export.

<sup>3</sup> Generally exported to Asia.

Actual harvest records for the past 5 years indicate that approximately 61 percent of the volume harvested consists of higher-grade sawlogs that can be used to meet the demand from local sawmills. As a result, approximately 61 percent of the NIC I component of the ASQ is expected to be available to meet local sawmill demand. The remaining 39 percent of the NIC I component is divided between exportable cedar (11 percent) and low grade sawtimber and utility logs (28 percent) (see Table 3.3-4).

Applying the same ratios to Brooks and Haynes medium projection of 152 MMBF, all alternatives except 6, 7, and 8 would theoretically be capable of meeting demand (see Table 3.3-4 and Figure 3.4-16 in the *Economic and Social Environment* section). It is important to note that the NIC I levels represent the maximum volumes that could be harvested under each alternative. It would take unprecedented conditions to meet the maximum volume authorized for each sale by the programmatic Forest Plan. In order for this to occur, sales would need to consistently meet the upper limits established by the 1997 Forest Plan's standards and guidelines regulating timber sale design and resource protection. The sales

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would also need to meet the economic criteria required to sell, and sale implementation would need to not be affected by litigation. Realistically, approximately 70 percent of the total volume allowed by the NIC I ceiling can be expected to be sold and harvested under any of the alternatives. Under this condition, only volume available for Alternatives 1, 2, and 4 could realistically be considered sufficient to meet a demand of 152 MMBF. This is discussed further in the *Economic and Social Environment* section.

#### **Allowable Sale Quantity and Long-term Sustained Yield Capacity**

Long-term sustained yield (LTSY) is the maximum timber yield that can be sustained indefinitely from lands managed for timber production when all stands have been converted to a managed state. This varied by alternative in the 1997 Forest Plan Revision Final EIS according to the timber management strategy proposed. LTSY is a function of the total number of acres allocated to timber management, the management intensity, standards and guidelines, silvicultural systems, and the productive capacity (conifer growth) of the suitable lands. The harvest schedule is based on: 1) a harvest schedule that exhibits non-declining yield at or below long-term sustained yield capacity, 2) a regeneration harvest age at or beyond culmination (maximum) of mean annual increment, and 3) a planning horizon of 150 years. In this analysis, the management intensity, standards and guidelines, silvicultural systems, and productive capacity are essentially the same for all alternatives. There is, therefore, little variation in LTSY.

The projected yield over the next 16 decades that could contribute to the ASQ is expected to increase over time as second-growth forests mature and become available for harvest. The average volume per acre of old-growth forest is approximately 29 MBF per acre. The expected volume on 100-year-old stands of second growth is approximately 49 MBF per acre. As more 100-year-old stands become available for harvest, the ASQ could increase. In addition, intermediate treatments (thinning) will add harvest volume.

The ASQ is not expected to exceed the LTSY during the 150-year planning horizon. The potential ASQ is expected to be between 88 and 91 percent of LTSY throughout the rotation for all alternatives based on the LTSY calculations for the Selected Alternative in the 1997 Forest Plan (USDA Forest Service, 1997a; Table 3-84), Alternative 1 in this analysis. All alternatives considered in this analysis have between 68 and 70 percent of the suitable acres allocated to the Timber Production LUD and similar portions allocated to the other development LUDs. Therefore, there is little difference in the relationship between ASQ and LTSY under the different alternatives in this SEIS.

#### **Short-term Effects**

Potential timber harvest volumes located in roadless areas could be affected by wilderness or LUD II designation. These volumes are presented by alternative in Table 3.3-6. These volumes are divided into six classes. Under contract volume represents sales that have been sold and are currently under contract. Some of these sales have been partially harvested. NEPA-cleared volume is ready for sale now. Proposed sales with completed Final EISs or Environmental Assessments (EAs) could be soon ready for sale, while those with only a completed Draft EIS or EA could take another 1 to 2 years before they would be ready for sale or they may never be completed, depending on the site-specific analysis. Proposed sales with Notices of Intent filed are at the beginning of the NEPA phase and may require 2 to 3 years to complete. Proposed sales in the last category (Preliminary Project Plan) are part of the longer-range planning and may take up to 10 years to complete.

**Table 3.3-6  
Planned Timber Sale and Under-Contract Volume Affected by each Alternative (MMBF)**

Volume Category	Total (MMBF)	Alternative							
		1	2	3	4	5	6	7	8
<b>MMBF Affected</b>									
Under-Contract Volume	294.8	0	0	6.2	0	6.4	188.1	23.5	172.2
NEPA-Cleared Volume	162.7	0	0	15.0	0	15.1	84.5	18.2	91.9
Sales with Final EIS or EA	172.3	0	0	12.7	0	4.6	122.9	4.6	119.3
Sales with Draft EIS or EA	118.0	0	0	3.6	0	7.6	62.6	55.4	59.4
Notice of Intent Filed	235.3	0	0	0.0	0	22.4	134.7	64.7	109.7
Preliminary Project Plan	831.0	0	0	28.5	0	37.6	506.8	139.8	487.6
<b>Total</b>	<b>1,814.1</b>	<b>0</b>	<b>0</b>	<b>69.0</b>	<b>0</b>	<b>98.7</b>	<b>1,105.7</b>	<b>313.1</b>	<b>1048.1</b>
<b>Percent of Total Affected</b>									
Under-Contract Volume	294.8	0	0	2	0	2	64	8	58
NEPA-Cleared Volume	162.7	0	0	9	0	9	52	11	56
Sales with Final EIS or EA	172.3	0	0	7	0	3	71	3	69
Sales with DEIS	118.0	0	0	3	0	6	53	47	50
Notice of Intent Filed	235.3	0	0	0	0	10	57	27	47
Preliminary Project Plan	831.0	0	0	3	0	5	61	17	59
<b>Total</b>	<b>1,814.1</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>5</b>	<b>61</b>	<b>17</b>	<b>58</b>

Alternatives 1, 2, and 4 would not affect any of the volume under contract or planned for sale in the next 10 years. Alternative 3 would affect about 4 percent of this total volume, including approximately 2 percent of the volume currently under contract. Alternative 5 would affect about 5 percent of the total volume, including about 2 percent of the volume currently under contract. Alternative 7 would affect approximately 17 percent of the total volume and about 8 percent of the volume currently under contract. Alternatives 6 and 8 would have the greatest effect, reducing the total volume by about 61 and 58 percent, respectively. The volume under contract for these two alternatives would be reduced by about 64 and 58 percent, respectively.

The under-contract volume includes 58 separate timber sales totaling approximately 295 MMBF. The effects of the alternatives on these sales, as well as on sales with completed EISs and EAs, may go beyond the loss of the volume that would be within roadless areas allocated to non-timber LUDs. Sales are designed to constitute an economic package. When portions of a sale are removed, it may not be economically feasible to harvest the remaining portions. Also, portions of sales not located in a roadless area allocated to a non-timber LUD may not be available for harvest because the road that would access that timber may go through the roadless area or the planned log transfer facility (LTF) may be in the roadless area. For example, several sales under contract to one company are in roaded areas but have no available LTF within the roaded portion of the sale area.

The effects on the under-contract volume would be felt by individual contract holders in a variable manner, depending on the alternative (Table 3.3-7). Several smaller contract holders would not be affected by any of the alternatives, including 3-D Logging, Beaver Creek Logging, D&L Woodwork, David Seaford, H&L Salvage, Jack Harrison, Luthier Tone Woods, Mountain Man Cutting, Porter Lumber, Richard Blauvelt, and Thorne Bay Wood Products. Together these companies hold approximately 2.5 percent of the timber volume under contract.

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**Table 3.3-7  
Sale Volume under Contract by Purchaser and Alternative**

Mills	Location	Volume under Contract (MBF)	Volume under Contract Affected by Alternative					
			1, 2, and 4	3	5	6	7	8
<b>Major Operators</b>								
Gateway Forest Products	Ketchikan	115,780	0	0	0	64,481	0	63,877
Pacific Log and Lumber, Ltd	Ketchikan	32,208	0	0	0	19,616	0	15,521
Silver Bay Logging	Wrangell	71,004	0	0	0	56,750	13,164	55,854
Viking Lumber Company	Craig/ Klawock	44,248	0	6,210	5,757	21,454	9,664	11,536
<b>Smaller Operators</b>								
Whitestone Southeast Logging Co.	Hoonah	11,265	0	0	0	8,984	0	8,984
The Mill, Inc	Petersburg	644	0	0	0	446	0	0
<b>Total (Mills)</b>		<b>275,149</b>	<b>0</b>	<b>6,210</b>	<b>5,757</b>	<b>171,731</b>	<b>22,828</b>	<b>155,772</b>
<b>Other Purchasers</b>								
3-D Logging	Whale Pass	111	0	0	0	0	0	0
Beaver Creek Logging	Craig	61	0	0	0	0	0	0
D&L Woodwork	Hoonah	123	0	0	0	0	0	0
David Seaford	Thorne Bay	1,350	0	0	0	0	0	0
H&L Salvage	Craig	25	0	0	0	0	0	0
Jack Harrison	Craig	48	0	0	0	0	0	0
Ketchikan Public Util.	Ketchikan	15,762	0	0	0	15,762	0	15,762
Luthier Tone Woods	Wrangell	38	0	0	0	0	0	0
Mnt. Man Cutting	Craig	162	0	0	0	0	0	0
New Age								
Mining/Excavation	Thorne Bay	1,193	0	0	652	652	652	652
Porter Lumber	Thorne Bay	372	0	0	0	0	0	0
Richard Blauvelt	Thorne Bay	35	0	0	0	0	0	0
Thorne Bay Wood Products	Thorne Bay	147	0	0	0	0	0	0
<b>Total (Other Purchasers)</b>		<b>19,425</b>	<b>0</b>	<b>0</b>	<b>652</b>	<b>16,414</b>	<b>652</b>	<b>16,414</b>
<b>Grand Total (Mills and Other Purchasers)</b>		<b>294,574</b>	<b>0</b>	<b>6,210</b>	<b>6,409</b>	<b>188,145</b>	<b>23,480</b>	<b>172,186</b>

Whitestone Southeast Logging, Inc. of Hoonah holds approximately 3.8 percent of the volume under contract. It would lose approximately 80 percent of that volume under alternatives 6 and 8. There would be no effects under any of the other alternatives.

Approximately 39 percent of the volume under contract is held by Gateway. Although Gateway sold its veneer plant and sawmill as part of bankruptcy proceedings, it is still the owner of the timber sale volume. This volume would only be affected under alternatives 6 and 8, with approximately 56 and 55 percent of this volume affected, respectively. For the most part, these sales have not been entered. All of the sales except one are at least partially in roadless areas. Under either of these alternatives, the likelihood of Gateway being able to third-party these sales for harvest or the ability of the Forest Service to resell the sales if they are turned back, would be greatly affected because more than half of the volume is located in roadless areas.

Pacific Log and Lumber Ltd. holds approximately 10.9 percent of the volume under contract. Approximately 61 and 48 percent of this volume would be affected under Alternatives 6 and 8, respectively. This volume would not be affected under the other alternatives. It is unlikely that the Forest would be able to replace this volume within the next 3 to 4 years due to the time necessary to design new sales and

prepare the NEPA documents. Around 60 percent of the proposed sales, including those with completed NEPA and Final EISs would be lost under alternatives 6 and 8, compounding the problem. The loss of so much volume under contract and the loss of proposed sales could result in a temporary or permanent mill closure.

Silver Bay Logging holds approximately 24.1 percent of the volume under contract. Approximately 19, 80, and 79 percent of this volume would be affected under alternatives 7, 6, and 8, respectively (Table 3.3-7). Alternatives 6 and 8 would result in the Silver Bay mill in Wrangell losing the majority of the Tongass timber it has available for processing. As with Pacific Log and Lumber, the loss of so much volume under contract, compounded by the loss of over 60 percent of proposed sales, could result in a temporary or permanent mill closure.

The Viking Lumber Company holds approximately 15 percent of the volume under contract. This volume would be affected under alternatives 3, 5, 6, 7, and 8, with effects ranging from 14 percent under Alternative 3 to 48 percent under Alternative 6 (Table 3.3-7). Alternative 6 would result in the Viking mill in Craig/Klawock losing almost half of the volume it has under contract. The loss of so much volume under contract, compounded by the loss of more than 60 percent of the proposed sales, could result in a temporary or permanent mill closure.

An additional effect on the government could result from the canceling of all or portions of some of these contracts. This could expose the government to financial liabilities.

The consequences of these short-term reductions in supply on the wood products industry and the communities of Southeast Alaska are discussed in more detail in the *Economic and Social Environment* section.

## 3 Environment and Effects

### Minerals

#### Affected Environment

A wide variety of mineral deposit types and mineral resources occur within the boundary of the Tongass National Forest. Examples of these mineral resources are gold, silver, molybdenum, uranium, lead, zinc, copper, tungsten, and the platinum group metals. The Forest Service recognizes that minerals are fundamental to the Nation's well being and, as policy, encourages the exploration and development of the mineral resources it manages. The Secretary of Agriculture has provided regulations (36 CFR 228) to ensure surface resource protection, while encouraging the orderly development of mineral resources on National Forest System land.

Mineral resources are legally divided into three groups: locatable minerals, leasable minerals, and salable minerals. The authority of the Forest Service to influence and regulate the exploration, development, and production phases of mining operations varies with each group. As a result, the Forest Service manages mineral resource programs that are specific to each group of minerals.

#### Locatable Minerals

A locatable mineral is any mineral, which is "valuable" in the usual economic sense, or has a property that gives it distinct and special value. Examples of some locatable minerals on the Tongass National Forest are gold, silver, copper, molybdenum, iron, nickel, lead, zinc, limestone, and marble.

The General Mining Law of 1872, as amended, grants every United States citizen the right to prospect and explore public domain lands open to mineral entry. The right of access is guaranteed and is not at the discretion of the Forest Service. Upon discovering a valuable mineral deposit, citizens have the right to locate a mining claim and remove the mineral resources. The citizen holding a mining claim is called the claimant. The claimant is responsible for initiating mining activities and investing the capital required to conduct mineral exploration, site development, mine operation, and reclamation of the site.

By law, designated wilderness, national monuments, Research Natural Areas, Enacted Municipal Watersheds, and Wild Rivers (when designated by Congress) are withdrawn from mining activities. These withdrawn areas, however, are subject to mining claims with valid existing rights established before the date the areas were withdrawn from mineral entry. As a consequence, some mining claims located within existing or proposed withdrawn areas could be developed in the future. Primitive Recreation, Semi-remote Recreation, Old-growth Habitat, Experimental Forest, Special Interest Areas, Scenic Rivers, and LUD II Land Use Designations remain open to mining activities. However, these LUDs require that special stipulations and more stringent mitigation measures be applied; therefore, there is a higher cost to develop minerals in these LUDs. Modified Landscape, Scenic Viewshed, Recreational Rivers, Timber Production, and Minerals LUDs remain open to mineral activities. These LUDs do not require special stipulations or more stringent mitigation measures; therefore, development in these LUDs would be at an average cost.

The Forest Service works with mining claimants to provide reasonable access to their claims, to minimize adverse environmental impacts on surface resources, and to ensure adequate reclamation of lands affected by mining operations. Protection of surface resources is accomplished by reviewing the plan of mining operations submitted by a claimant, disclosing impacts of the proposed mining operations in a site-specific environmental document, approving only those activities that are reasonably necessary for the proposed operation, monitoring operations to ensure

environmental standards are met, and ensuring prompt and reasonable reclamation of disturbed areas.

The identified mineral resources on the Tongass National Forest were described by the U.S. Bureau of Mines, Alaska Field Operations Center, in *An Economic Analysis, Tongass Land Management Plan, Mineral Resource Inventory* (Coldwell, 1990). For summaries of this report, see the 1991 Forest Plan Revision Supplement to the Draft EIS and the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1991; 1997a). The methods used by the U.S. Bureau of Mines included the following steps. First, a mineral resource inventory was compiled from all available sources, resulting in the identification of 148 locatable mineral deposit areas within the Tongass National Forest. Next, the 148 deposit areas were grouped into 52 identified mineral activity tracts that had high Mineral Development Potential (MDP) and were further ranked from 1 to 3, based on the likelihood of exploration and development activity within the next 10 to 15 years. Rank 1 areas contained at least one deposit with a positive after-tax net present value at a 4 percent discounted cash flow rate of return and/or at least one active gold deposit (site of current industry activity). Rank 1 areas have the highest potential for development. Rank 2 areas contained at least one deposit with a positive pre-tax net present value at a zero percent discount rate and/or at least one “critical” and “strategic” mineral deposit. Rank 3 areas may not meet these criteria. The lower rankings may be due to a lesser likelihood of mineral occurrence, or because of a lack of available information. Of the 52 tracts, 22 are categorized as Rank 1, 7 are categorized as Rank 2, and 23 are categorized as Rank 3. The tracts are listed in Table 3.3-8.

The Coldwell (1990) report is the most recent comprehensive study of mineral resources for the entire Tongass. However, additional studies of mineral resources in the Tongass have since been conducted. These include: *Mineral Investigations in the Ketchikan Mining District, Southeastern Alaska* (Maas et al., 1995); *Mineral Resources of the Chichagof and Baranof Islands Area, Southeast Alaska* (Bittenbender et al., 1999); and *Mineral Assessment of the Stikine Area, Central Southeast Alaska* (Still et al., 2002). These studies conducted further investigations on Known Mineral Deposit Areas (KMDAs) within the Tongass. These KMDAs included the original tracts studied by Coldwell (1990). Each study reported estimates of Mineral Development Potential as Low, Medium, and High for each KMDA, as well as for individual mines, prospects, and occurrences. The designations given in Table 3.3-8 for these reports are for the highest rating given for any prospect studied in that tract.

The 1995, 1999, and 2002 area studies give essentially identical definitions for the following MDP designations:

High—High grades and probable continuity of mineralized rock exist. The property is likely to have economically mineable resources under current economic conditions. A high potential exists for developing tonnage or volume with reasonable geologic support for continuity of grade.

Medium—Either a high grade or continuity of mineralization exist. Mineralization is confined by geology, structures, and/or grades are overall low. It could serve as a material source if economics were not a factor, but is presently uneconomic at existing conditions.

Low—The property exhibits uneconomic grades and/or little evidence of continuity of mineralized rock. There is little or no obvious potential for developing resources or is an insignificant source of the material of interest.

### 3 Environment and Effects

Differences in MDP designations between these area studies and Coldwell (1990) reflect additional geologic and chemical data, changes in prices, and cost and likelihood of development based in part on LUDs at the time of the study. In addition, Still et al. (2002) ranked each mine prospect and occurrence by Mineral Exploration Potential (MEP). The MEP ranking takes into account the potential for extent of mineralized rock but not current land status of the site. The highest MDP and MEP rankings for each area are summarized in Table 3.3-8.

The gross metal value of undiscovered mineral resources was estimated for the Tongass National Forest by the U.S. Geological Survey (USGS), and is detailed in their report *Undiscovered Locatable Mineral Resources of the Tongass National Forest and Adjacent Lands, Southeastern Alaska* (Brew et al., 1991). In 1990, this value was \$28.3 billion (expressed as 1988 dollars). Highest among the individual minerals were copper (\$6.8 billion), iron (\$4.6 billion), molybdenum (\$4.35 billion), and tin (\$3.4 billion). These totals cover the entire Tongass National Forest, and thus include areas currently withdrawn from mineral activity. The methods used by the USGS involved the definition of areas or “tracts” that may permit the occurrence of one or more deposit types; the estimation of the numbers of undiscovered deposits of each type in each tract, along with the expected tonnage and grade of each type; and the use of computer simulation using these estimates to produce a probability distribution of the quantities of contained metal in the tract. This resulted in the preparation of location maps, along with descriptions of 930 metal-bearing localities. The 930 metal-bearing localities were grouped into four classes, based on the estimated value of undiscovered mineral resources per acre: Class 1 has a relatively high mineral value per acre, Class 2 has a moderate mineral value per acre, Class 3 has a relatively low mineral value per acre, and Class 4 has nominal mineral value per acre.

#### **Leasable Minerals**

Federally owned leasable minerals under the Mineral Leasing Act of 1920 include oil, gas, coal, geothermal resources, potassium, sodium, phosphates, and sulfur. The resource potential for oil and gas is considered to be moderate to low in the Yakutat region, with no potential elsewhere in the Tongass. Coal occurrences are classified as lignite and of small extent. Geothermal resources occur in 19 known locations in Southeast Alaska. No leasable minerals are presently being produced on the Tongass National Forest and the anticipated demand for available leasable minerals is expected to remain quite low.

#### **Salable Minerals**

Salable, or common variety, minerals are sold rather than located or leased. These minerals include petrified wood and common varieties of sand, rock, building stone, gravel, pumice, clay, and other similar materials. The predominant salable commodity extracted within the Tongass National Forest is crushed rock, which is used to construct timber sale roads. The demand of quality rock sources is largely dependent upon the locations of active logging operations. Presently, there is an adequate supply of rock sources, of suitable quality (hardness and durability), in the southern third of the Forest. Rock quality is, however, poor in the northern two-thirds, and good material sources are difficult to locate in current timber production areas. Sand and gravel sources are scarce throughout much of the Forest.

**Table 3.3-8  
Identified Mineral Resources of the Tongass National Forest Displayed by Mineral Activity  
Tract**

Tract Name	Ref. 1 (Acres)	Ref. 1 Rank	Ref. 2 MDP	Ref. 3 MDP	Ref. 4 MDP/ MEP	Gold (tons)	Silver (tons)	Lead (tons)	Zinc (tons)	Copper (tons)	Moly (tons)	Iron (tons)	Other Minerals
Chilkat Peninsula	40	3				1	-	-	-	-	-	-	
Sullivan	7,938	1				-	-	-	-	-	-	-	Critical Minerals
Bohemia Basin	9,376	1		H		-	-	-	-	41,000	-	-	Nickel; Cobalt; Critical Minerals
Berners Bay	10,318	1				69	-	-	-	-	-	-	
Juneau Gold Belt	85,699	1				189	164	100,920	100,747	82	-	-	Critical Minerals
Fremming	501	3				0	1	150	2,100	-	-	-	
Douglas Island	1,319	2				12	-	-	-	-	-	-	
Funter Bay	11,499	1				-	-	-	-	1,960	-	-	Nickel; Cobalt; Critical Minerals
Greens Creek	7,528	1				22	2,880	136,500	339,500	-	-	-	Critical Minerals
Taku Mo	3,199	3				-	-	-	-	-	1,000	-	Critical Minerals
Enterprise	1,505	3				0	-	-	-	-	-	-	
Apex-El Nido	4,603	2		H		1	-	-	-	-	-	-	
Basaltic Cu	4,484	3		M		-	-	-	-	1,360	-	-	Critical Minerals
Mirror Harbor	2,242	2		M		-	-	-	-	1,265	-	-	Nickel; Critical Minerals
Pinta Bay	1,301	3		H		-	-	-	-	-	-	-	Critical Minerals
Chichagof	12,946	1		M		25	7	-	-	-	-	-	Critical Minerals
Slocum Arm	8,625	3		L		-	-	-	-	-	-	-	Critical Minerals
Silver Bay	22,706	3		L		-	-	-	-	-	-	-	Critical Minerals
Pyrola	3,261	2				-	196	8,255	27,800	-	-	-	Barite; Critical Minerals
Hasselborg	1,860	3				-	-	-	-	-	-	-	Critical Minerals
Crystal/Friday	1,391	2				2	-	-	-	-	-	-	Platinum
Windham Bay	23,909	3				1	1	2	2	-	-	-	Critical Minerals
Sumdum	41,419	3				0	279	112	18,501	156,988	-	-	Critical Minerals
Pt Astley	2,004	3				2	3	1,200	5,893	379	-	-	Critical Minerals
Zarembo	27,886	1			L/H	0	109	5,030	15,774	567	-	-	Critical Minerals
Portage Mountain	1,280	3			L/H	0	2	-	-	-	-	-	Critical Minerals
Duncan	2,393	3			L/H	-	-	-	-	27	-	-	Critical Minerals
Grnd Hog/Glacier	15,859	1			L/H	-	23	63,115	202,115	143	-	-	Critical Minerals
Shakan	42,763	1		M		-	-	-	-	-	248	-	
N, Bradfield Cn	1,120	3			L/M	-	-	-	-	1,710	-	313,500	Critical Minerals
Hyder	56,396	1		M		4	60	26,899	2,337	960	75	-	Tungsten; Critical Minerals
Franks Ridge	5,866	3		L		-	-	-	-	-	-	-	Critical Minerals
Khayyam	23,450	1		M		0	1	-	781	1,436	-	-	Critical Minerals
South Arm	7,943	3		H		-	-	-	-	-	-	-	Critical Minerals
Niblack	8,915	1		H		-	-	-	-	-	-	-	Critical Minerals
Dolomi	8,634	1		M		-	-	-	-	-	-	-	Critical Minerals
Lime Point	900	3		M		-	-	-	-	-	-	-	Barite
Big Harbor	3,535	3		M		-	-	-	-	-	-	-	Critical Minerals
Jumbo	12,326	1		M		1	2	-	-	2,250	-	293,800	Critical Minerals
Hollis	17,148	1		L		-	-	-	-	-	-	-	
Kasaan	8,176	1		M		1	3	-	-	11,494	-	2,437,700	Critical Minerals
Salt Chuck	4,817	1		M		1	1	-	-	1,070	-	-	Palladium; Critical Minerals
Union Bay	17,492	3		M		-	-	-	-	-	-	190,000.00 0	
Helm Bay	7,204	1		M		4	-	-	-	-	-	-	
Tongass Narrows	4,488	1		M		6	-	-	-	-	-	-	
Thorne Arm	7,657	1		L		4	-	-	-	-	-	-	
George Inlet	6,198	3		M		3	-	156	-	-	-	-	Critical Minerals
Quartz Hill	2,402	2		M		560	69	-	-	-	1,258,698	-	
Barrier Island	4,414	3		L		-	-	-	-	-	-	-	Critical Minerals
Nichols Mountain	16,882	3		L		-	-	-	-	-	-	-	Critical Minerals
Bokan	17,750	2		L		-	-	-	-	-	-	-	Uranium; Critical Minerals
McLeod Bay	2,287	1		L		-	-	-	-	-	-	-	

Note: Critical Minerals are those minerals necessary to supply military, industrial, and essential civilian needs during a national defense emergency, and not found or produced in sufficient quantities to meet emergency needs (Strategic and Critical Materials Stock Piling Act, 1979). Examples of critical minerals include lead, zinc, copper, tungsten, and the platinum group metals.

- Ref. 1: Coldwell (1990)
- Ref. 2: Maas et al., (1995)
- Ref. 3: Bittenberger et al., (1999)
- Ref. 4: Still et al., (2002)

### 3 Environment and Effects

#### Environmental Consequences

##### Locatable Minerals

As noted above, the LUD group where a mineral deposit is located strongly affects the potential and cost of its development. In Table 3.3-9, the LUDs within each Mineral Development Potential LUD Group are identified. The Withdrawn LUD Group includes those LUDs that are currently withdrawn from mineral entry. The Recommended Withdrawn Group includes those areas that the Forest Service is recommending to become Withdrawn. Mineral entry is permitted within Recommended Withdrawn LUDs until Congress assigns withdrawn status. Valid existing rights established before the areas are withdrawn from mineral entry would not be affected by the change in LUD. The Open with Higher Cost Group permits mineral exploration and development, but requires special stipulations and more stringent mitigation measures to be applied; therefore, they are more expensive to develop than the Open with Average Cost Group.

Table 3.3-10 identifies the relative economic availability of the 52 identified mineral tracts in terms of the acreage of these areas by LUD group for each alternative. Rank 1 mineral tracts are most likely to see mineral exploration or development. It is apparent that Alternative 1, which would be a continuation of the current conditions, is the least restrictive to mineral activity, and Alternative 8 is the most restrictive. The percentage of the total area in the Open with Average Cost Group would change very little under Alternatives 1 through 5. In Alternatives 2 through 5 and 7 (Table 3.3-10), the area in the Open with Higher Cost Group varies in response to changes in the area of the Recommended Withdrawn Group. Alternatives 7, 6, and 8 would result in an increasingly larger reduction in the area of the Open with Average Cost Group; with this area being transferred into the Open with Higher Cost Group in Alternative 6 and to the Recommended Withdrawn Group in Alternatives 7 and 8.

**Table 3.3-9  
Land Use Designations within each LUD Group**

LUD Group	LUDs
Withdrawn – Existing <i>(Areas remain open to mineral rights established prior to the area being withdrawn.)</i>	Wilderness National Monument Research Natural Area Municipal Watershed Wild Rivers
Withdrawn – Recommended <i>(Areas remain open to mineral development until designated withdrawn by Congress.)</i>	Recommended Wilderness
Open Areas – High Cost <i>(Mineral exploration and development requires special stipulations and more stringent mitigation measures to be applied.)</i>	Remote Recreation Semi-remote Recreation Old-growth Habitat LUD II Recommended LUD II Experimental Forest Special Interest Area Scenic Rivers
Open Area – Average Cost	Recreational Rivers Scenic Viewshed Modified Landscape Timber Production Minerals

**Table 3.3-10**  
**Effects on Economic Availability of Identified Mineral Resources<sup>1</sup>**

	Withdrawn Areas		Open Areas		Total
	Existing	Recommended	Higher Cost	Average Cost	
Alternative 1	25%	0%	29%	46%	100%
Alternative 2	25%	6%	23%	46%	100%
Alternative 3	25%	6%	27%	42%	100%
Alternative 4	25%	2%	27%	45%	100%
Alternative 5	25%	12%	21%	42%	100%
Alternative 6	25%	18%	33%	23%	100%
Alternative 7	25%	28%	16%	31%	100%
Alternative 8	25%	65%	2%	7%	100%

<sup>1</sup> Percentage of total area (587,734 acres) within each category.

Table 3.3-11 shows changes in the acreage of the different LUD groups for the 22 highest value identified mineral tracts (Rank 1 tracts). This table shows the same general patterns as Table 3.3-10, except that the percentage of areas converted to the Recommended Withdrawn Group is slightly higher for Alternatives 2, 4, and 8; lower for Alternatives 3 and 7; and the same for Alternatives 1, 5, and 6.

Table 3.3-12 shows the relative economic availability of the undiscovered mineral resources in terms of the acreage of these areas by LUD group, for each alternative. This table shows Alternative 1 is the least restrictive to mineral activity and Alternative 8 is the most restrictive. Relatively few changes would occur in the area of the Open with Higher Cost and Open with Average Cost Groups under Alternatives 1 through 4. With Alternatives 5, 6, 7, and 8, a continuous increase in area of the Recommended Withdrawn Groups is seen.

Table 3.3-13 shows changes in the percent of area in the different LUD groups, under each alternative, for the Class 1 and Class 2 undiscovered mineral resources only. These localities are believed to have a moderate to high mineral value per acre. In Table 3.3-13, relatively little change in the area of the Open with Average Cost Group would occur for Alternatives 1 and 4; however, there is a reduction in the area of the Open with Higher Cost Group in response to an increase in the area of the Recommended Withdrawn Group. Alternatives 6 and 8 have the smallest area in the Open with Average Cost Group (Table 3.3-13).

**Table 3.3-11**  
**Effects on Economic Availability of Rank 1 Identified Mineral Resources<sup>1</sup>**

	Withdrawn Areas		Open Areas		Total
	Existing	Recommended	Higher Cost	Average Cost	
Alternative 1	15%	0%	30%	55%	100%
Alternative 2	15%	9%	21%	55%	100%
Alternative 3	15%	3%	27%	55%	100%
Alternative 4	15%	3%	27%	55%	100%
Alternative 5	15%	12%	18%	55%	100%
Alternative 6	15%	15%	40%	31%	100%
Alternative 7	15%	25%	18%	43%	100%
Alternative 8	15%	72%	3%	10%	100%

<sup>1</sup> Percentage of total area (375,832 acres) within each category. Rank 1 mineral tracts have the highest likelihood of being developed.

### 3 Environment and Effects

**Table 3.3-12**  
**Effects on Economic Availability of Undiscovered Mineral Resources<sup>1</sup>**

	Withdrawn Areas		Open Areas		Total
	Existing	Recommended	Higher Cost	Average Cost	
Alternative 1	35%	0%	41%	24%	100%
Alternative 2	35%	3%	38%	24%	100%
Alternative 3	35%	5%	37%	23%	100%
Alternative 4	35%	4%	38%	24%	100%
Alternative 5	35%	12%	33%	21%	100%
Alternative 6	35%	24%	34%	7%	100%
Alternative 7	35%	31%	18%	16%	100%
Alternative 8	35%	57%	2%	7%	100%

<sup>1</sup> Percentage of total area (6,564,447 acres) within each category.

**Table 3.3-13**  
**Effects on Economic Availability of Class 1 and 2 Undiscovered Mineral Resources<sup>1</sup>**

	Withdrawn Areas		Open Areas		Total
	Existing	Recommended	Higher Cost	Average Cost	
Alternative 1	38%	0%	39%	24%	100%
Alternative 2	38%	7%	31%	24%	100%
Alternative 3	38%	8%	31%	24%	100%
Alternative 4	38%	8%	31%	24%	100%
Alternative 5	38%	18%	21%	22%	100%
Alternative 6	38%	16%	38%	8%	100%
Alternative 7	38%	27%	16%	19%	100%
Alternative 8	38%	52%	2%	8%	100%

<sup>1</sup> Percentage of total area (990,629 acres) within each category. Class 1 has a high mineral value per acre; Class 2 has a moderate mineral value per acre.

Table 3.3-14 shows changes in the acreage of the different LUD groups, under each alternative, for each of the defined Mineral LUDs. In Table 3.3-14, relatively little change occurs in the area of the Open with Higher Cost and Open with Average Cost groups in Alternatives 1, 2, and 4. Alternatives 3 and 5 have almost a 10 percent reduction in the area of the Open with Higher Cost and Open with Average Cost Groups in response to an increase in the area of the Recommended Withdrawn Group. It is likely that converting areas identified with the Minerals LUD overlay into the Recommended Withdrawn Group would result in the elimination of the overlay. In other words, mineral exploration and development would no longer be encouraged in these areas. In Alternatives 6, 7, and 8, a continuous increase in the area of the Recommended Withdrawn Groups is seen. The area with the Open with Average Cost Group is minimized in Alternatives 6 and 8. Under Alternative 8, the area in Minerals LUD on the Tongass is likely to be reduced to about 8 percent of the current area.

**Leasable Minerals**

The Tongass has no current leasable mineral activity and none is projected; therefore, none of the alternatives would affect leasable minerals.

**Salable Minerals**

Salable or common variety minerals, primarily crushed rock, would be needed for road construction under each alternative. The amounts required would vary with the amount of roads to be developed. These are shown in Chapter 2 and in the Transportation and Utilities section of this chapter. In general, these minerals would only be needed where new roads are constructed, which would generally not occur in Recommended Wilderness and Recommended LUD II areas. No effects on salable minerals are therefore expected.

**Table 3.3-14**  
**Effects on Economic Availability of Mineral LUDs<sup>1</sup>**

	Withdrawn Areas		Open Areas		Total
	Existing	Recommended	Higher Cost	Average Cost	
Alternative 1	0%	0%	50%	51%	100%
Alternative 2	0%	0%	50%	51%	100%
Alternative 3	0%	10%	48%	42%	100%
Alternative 4	0%	2%	48%	51%	100%
Alternative 5	0%	10%	48%	42%	100%
Alternative 6	0%	33%	63%	4%	100%
Alternative 7	0%	43%	36%	21%	100%
Alternative 8	0%	92%	2%	6%	100%

<sup>1</sup> Percentage of total area (172,014 acres).

## 3 Environment and Effects

### Transportation and Utilities

#### Affected Environment

There are three principal types of travel in Southeast Alaska: air, water, and ground. Historically, marine transportation has been the major method of moving freight and passengers; however, during the last five decades, air services have developed to serve the growing demand for rapid transportation between communities within Alaska and to the contiguous United States. Residents of the region are dependent on air and water transportation for travel between most communities, rather than roads or rail. On National Forest System land, a roaded transportation system has developed, largely in support of timber harvesting.

Access from Southeast Alaska to the continental road system is currently available at only four points via the Alaska Marine Highway (all are water ports). Three of these connections are to the United States communities of Haines and Skagway, Alaska, and Bellingham, Washington, while the other connection is to the Canadian community of Prince Rupert, British Columbia. Prince of Wales Island has the only road system in Southeast Alaska that interconnects island communities. Several possibilities exist for State Highways that could connect some communities of Southeast Alaska to the continental road system, and for new internal corridors.

The 1999 Southeast Alaska Transportation Plan (SATP; Alaska Department of Transportation and Public Facilities, 1999) includes future investments in roads and ferries to complete the regional transportation system. This Plan was updated and clarified by Addendum One, dated February 28, 2001. The SATP is based on two fundamental concepts: 1) an integrated multi-modal transportation system (a combination of road segments linked to shuttle and mainline ferry services within key corridors); and 2) a combination of subarea or zone and regional transportation services and facilities. The four identified major travel corridors or zones are: 1) Juneau-Haines-Skagway, 2) Juneau-Sitka-Petersburg, 3) Petersburg-Ketchikan, and 4) Ketchikan-Prince Rupert, B.C. Road construction and improvements and new ferry terminal construction are planned on south Mitkof Island and south Wrangell Island. A new ferry terminal is also planned at Coffman Cove. The Inter-Island Ferry Authority, which operates a route between Hollis and Ketchikan, plans to initiate a route serving Coffman Cove, Wrangell, and Mitkof Island upon completion of the new South Mitkof terminal.

A number of different groups have identified several corridors for consideration as major transportation routes. The SATP identifies several potential extensions of the Inside Passage Highway among its long-term actions. Several possibilities are under consideration, including extensions or new highway construction on Kupreanof Island (to connect Kake and Petersburg), Cleveland Peninsula, and Revillagigedo Island (including an extension of the Revilla road to Shelter Cove, and a road from Carroll Inlet to Shrimp Bay). The SATP recommends reserving these possible future alignments as highway corridors. The SATP also proposes a study to consider the viability of constructing a road to connect Sitka with the east side of Baranof Island, either at Rodman Bay or Warm Springs Bay. Further north, the preferred alternative of the Juneau Access EIS includes a proposal to build a road along the east shore of Lynn Canal, connecting Juneau to Skagway via Berners Bay.

Other potential routes that have received attention in recent years include a route along the west shore of Lynn Canal, two Juneau-to-Canada routes along Taku Inlet, the East Bradfield River corridor connection to the Cassiar Highway, several other road corridors near Wrangell, a coastal alignment connecting Thorne Bay and

Coffman Cove, a road connecting North Whale Pass and the East Prince of Wales road, and a road to the southeastern tip of the Kasaan Peninsula. In addition to the routes listed above, draft Transportation System Concept maps prepared for the Southeast Conference identify a potential route connecting Hoonah and Tenakee Springs, and a short connector route between the Chatham and Corner Bay road systems. The Southeast Conference maps also identify an alternative corridor between Kake and Petersburg, via a ferry across Duncan Canal.

When a National Forest Transportation System road (see the next subsection) provides a connection between communities, serves local needs such as mail delivery, or connects public roads within the National Forest, it can be designated as a Forest Highway (see 23 U.S.C. 101 for technical definition). Usually, Forest Highways are upgraded to State Highway standards, and jurisdiction passes to the State. To date, the Alaska Department of Transportation and Public Facilities, the Federal Highway Administration, and the Forest Service have agreed to designate a potential 362 miles as Forest Highways; the State would assume the jurisdiction and maintenance responsibility for 181 miles of these highways.

Other transportation facilities within Southeast Alaska include 230 marine facilities (docks, small boat harbors, refuge floats, and boat launch ramps), 12 major airports, approximately 35 seaplane bases or floats, and numerous heliports and airstrips (Alaska Department of Transportation and Public Facilities, 1999).

**National Forest Transportation System Roads**

**Road Types**

Classified roads: Roads wholly or partially on National Forest System (NFS) land that are determined to be needed for motor vehicle use and are intended to be maintained for the long-term.

Unclassified roads: Roads on NFS land that are not needed for, and not managed as part of the forest transportation system.

Temporary roads: Roads authorized for short-term use and not intended to be part of the forest transportation system.

National Forest Transportation System roads are constructed to provide access to National Forest System land and are included in the Forest Development Transportation Plan (see Transportation Forest-wide Standards and Guidelines in Chapter 4 of the Forest Plan [USDA Forest Service, 1997b]). They are considered classified roads along with other roads that are wholly or partially on National Forest System land and are intended to be maintained for the long-term (see text box on Road Types). They are functionally classified as arterial (serving large land areas and usually connecting to public highways), collector (serving smaller areas, usually connecting to arterials or public highways), and local (terminal roads, may connect to any other type). Forest roads are also managed by a system of maintenance levels, depending on their intended use and suitability for various types of vehicles. These range from level 1 (closed) to level 5 (suitable for passenger cars).

Except at a few administrative sites and campgrounds, most Forest roads are single lane, constructed with blasted quarry rock, and designed for off-highway loads. Typical collector and local roads are 14 feet wide, with a rough gravel surface. Higher standard arterial roads are normally 16 feet wide, may have a smooth gravel surface, and are designed for speeds of up to 30 miles per hour. Travel speed on lower standard roads is often controlled more by surface roughness than by horizontal alignment or road gradient.

For the Tongass, the demand for roads has primarily been a function of the demand for access to timber resources. The maintenance and reconstruction requirements of the existing system depend mainly on the volume of timber hauled and, to a lesser extent, on recreational use. The amount of future construction is anticipated to continue to be largely dependent on the need to access timber resources. Currently, approximately 5,008 miles of road are identified on the updated road inventory; these roads provide access to about 8 percent of the Tongass National Forest. About one-fourth of these road miles are not managed for car and truck use. Over one-half of the more than 2,000 miles of road open to public motorized vehicle use are connected to communities. Between 1984 and 1993 an average of 168 miles of road was constructed annually. In recent years this average has declined and under the current Forest Plan, the average is expected to be no more than 108 miles per year for the first decade and at a lower rate after that.

### 3 Environment and Effects

Except for Wilderness, national monuments, and Research Natural Areas, the Forest is designated open to off-highway vehicles. In specific locations where conflicts with other uses, public safety problems, or damage to resources could occur, site-specific closures are considered. The goal of off-highway vehicle management is to ensure resource protection and public safety, minimize user conflicts, and provide diverse opportunities for Forest users. A specific set of closures was consolidated in the Juneau area in November 1985 as the "Off-Road Vehicle Travel Plan" for the Juneau Ranger District. This travel plan is incorporated here by reference.

In early 2001, the Forest Service adopted a new road management policy, which requires the agency to maintain a safe, environmentally sound road network that is responsive to public needs and affordable to manage. The policy includes a science-based roads analysis process designed to help managers make better decisions on roads.

#### **Log Transfer Facilities**

The transport of harvested timber from isolated islands in Southeast Alaska requires both land and water routes to reach processing facilities. Log transfer facilities (LTFs) are used to transfer logs to and from the water and to put together log bundles for towing. There are a total of 116 LTF sites existing in Southeast Alaska on National Forest land, and an additional 17 sites that the Forest Service uses or is seeking agreements to use on State or private lands.

#### **Power Transmission Lines**

A number of existing power transmission lines link existing hydroelectric projects with the nearest larger community in Southeast Alaska. The State of Alaska has proposed corridors for transmission lines and/or undersea cables to link many Southeast Alaska communities to British Columbia. An intertie corridor, connecting the Swan Lake project (near Carroll Inlet) with the Tyee project (on the Bradfield Canal) has been permitted and is planned for construction beginning in summer 2002. As a result of the Swan Lake-Lake Tyee Intertie, another potential corridor, which runs down the Cleveland Peninsula connecting the Tyee powerline with Ketchikan and Meyers Chuck, is unlikely to be needed. Other potential interties include powerlines between Juneau and Skagway, Juneau and Hoonah, Hoonah and Tenakee Springs, Tenakee Springs and Angoon, Angoon and Sitka, Sitka and Kake, Kake and Petersburg, Thorne Bay and Ketchikan, and Klawock and Hydaburg. Also planned are powerlines between the proposed Lake Dorothy, Otter Creek, and Sunrise Lake Hydroelectric Projects and existing powerlines or communities. A powerline from the Tyee hydropower site along a potential Bradfield Canal/Craig River road corridor route to Canada is also a potential route that has been considered.

#### **Transportation and Utility Systems in the Forest Plan**

The Forest Plan applies the Transportation and Utility Systems LUD to the rights-of-way corridors and associated uses for selected potential and existing transportation systems and utility corridors. These systems include State and Federal Highways, powerlines of 66 kV capacity or greater, and pipelines 10 inches or more in diameter, if they are a public utility. This LUD is intended to minimize potential conflicts, such as over-determining the appropriate visual quality objective, should development of any of these projects occur. With certain exceptions, transportation and utility systems are allowed throughout the Tongass, as directed by Title XI of ANILCA.

#### **Direct, Indirect, and Cumulative Effects**

#### **Environmental Consequences**

The following discussions address the direct, indirect, and cumulative effects of the alternatives on the transportation and utilities infrastructure of Southeast Alaska. Analyses examine both the existing system and all reasonably foreseeable changes.

**Effects on National Forest Transportation System Roads**

Table 3.3-15 displays the maximum anticipated road construction by alternative for Decade 1 and Decade 5, expressed both in annual averages and cumulatively.

**Table 3.3-15  
Maximum Annual and Cumulative Miles of New Road Construction by Alternative<sup>1</sup>**

Alternative	Decade 1		Decade 5	
	Annual Miles	Cumulative (at End of Decade)	Annual Miles	Cumulative (at End of Decade)
1	106	6,073	27	7,792
2	106	6,073	27	7,792
3	95	5,958	24	7,491
4	106	6,073	27	7,792
5	82	5,823	21	7,138
6	23	5,238	6	5,609
7	64	5,648	16	6,681
8	25	5,258	6	5,661

<sup>1</sup> Cumulative miles includes all classified and unclassified existing roads (5,008 miles) and all planned classified roads. Estimates are based on the projected ASQ for each alternative; therefore, they represent a maximum estimate. Numbers do not include decommissioning of unclassified roads.

These road miles are directly related to proposed timber harvesting activities; they are based on the maximum harvest levels allowed by projected ASQs.

Roads have the potential to affect fish habitat, soils, and water quality by increasing erosion and landslide potential, to change recreation settings and opportunities, to alter scenery, and to increase legal and illegal wildlife kills. These types of effects are discussed in the subject resource sections of this chapter, as applicable.

Based on current practices, about 35 percent of new classified roads would be closed to motorized traffic once their initial use is over, but may allow non-motorized and foot traffic. Bridges may be removed from these roads, and the roads themselves are likely to revegetate naturally. Another 30 percent would remain open to motorized vehicles but would be isolated from large road systems or communities, primarily on remote islands. The remainder would be open to motorized vehicles and connected to communities and would likely be maintained for continuous multiple-use activities.

Each alternative would result in reconstruction of a portion of the existing road system in each decade. Reconstruction of a road maintains the original investment, protects forest resources, and makes the road suitable and safe for the intended use. Reconstruction involves the rehabilitation of the original roadbed, and can include cleaning ditches and culverts, replacing damaged drainage structures, re-installing bridges, and grading and shaping.

**Effects on Log Transfer Facilities**

LTFs can adversely affect the marine benthic habitat (plants and animals that live in and on the ocean bottom). Effects are expected from two sources: structural embankment (placing rock in the water) and bark deposition (bark that accumulates underwater). Structural embankment is estimated to cover approximately one-quarter acre per site.

LTFs have affected approximately 2 acres of marine benthic habitat for the average site (Faris and Vaughan, 1985). Bark and debris accumulation may decrease over time due to water currents, but no estimate is known on the length of time before a

### 3 Environment and Effects

bark accumulation is completely eliminated. Using this 2-acre average, about 232 acres of marine benthic habitat associated with the existing 116 LTFs on National Forest System land are currently experiencing bark accumulations. This is roughly 0.05 percent of the total estuarine area less than 60 feet deep. The biological effects of LTFs are described in the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a).

The 1997 Forest Plan Revision Final EIS estimated that 200 to 350 acres of benthic habitat could be adversely affected by new LTFs over the next 30 years (approximately another 0.04 to 0.08 percent of estuarine habitat under 60 feet deep). Under the alternatives evaluated in this SEIS, the extent of effects would be the same or less. Furthermore, the effects of continuing operation at existing LTFs would also be the same or reduced.

#### **Effects on Off-Highway Vehicle Access**

The Forest Service prepares travel plans for National Forest Service land based on the concept that access is a resource to the people who want to enjoy and use the National Forest. In almost all places, travel through the National Forest is free from any restrictions. Where there are restrictions, they usually relate to the type of access permitted. An example is the limit on use of motor vehicles in designated wilderness.

The steep, densely vegetated terrain of Southeast Alaska limits the use of typical off-highway vehicles, such as three-wheelers and all-terrain vehicles, to beaches, communities, road systems, braided river channels, and frozen or snow-covered areas. Most trails in Southeast Alaska do not lend themselves well to the use of such vehicles because of wet ground conditions that often necessitate the use of boardwalks. Except in a few specific areas, the Tongass has not experienced the kinds of resource damage typically associated with off-highway vehicles elsewhere; thus, no broad closures have been issued.

The designation of new wilderness could restrict the use of off-highway vehicles in these areas and the restriction would be highest under Alternative 8 and lowest under Alternative 1. The very limited use of these vehicles in most areas of the Tongass indicates, however, that these restrictions would have little effect.

#### **Effects on the Southeast Alaska Transportation Plan**

Effects of the alternatives on the SATP are summarized in Table 3.3-16. Alternatives 1 through 7 would have little effect on planned ferry terminal and road construction identified in the Southeast Alaska Transportation Plan (as amended). Under Alternative 8, however, development of the South Wrangell ferry terminal and road connection could be restricted by the designation of all undeveloped areas on Wrangell Island as Recommended Wilderness. In addition, designation of Recommended Wilderness under Alternative 8 would preclude the approval of new highway construction along all of the potential transportation corridors identified in the SATP. Only two of these corridors would also be affected by Recommended Wilderness designation under other alternatives: the potential Cleveland Peninsula corridor under Alternatives 3, 5, and 7, and the East Lynn Canal route under Alternatives 2, 5, 6, and 7. Possible extensions of the Inside Passage Highway on Kupreanof Island and Revillagigedo Island, and potential routes between Sitka and the east side of Baranof Island, would not be affected by Alternatives 1 through 7. Note that LUD II designation (which would apply to most SATP proposals under Alternative 6) would not preclude the development of regional transportation linkages.

**Table 3.3-16  
SATP Planned Ferry Terminals and Potential Transportation Corridors that  
may be Affected by Land Use Designation Changes under Each Alternative**

Description	Alternative							
	1	2	3	4	5	6	7	8
<b>Ferry Terminals</b>								
South Mitkof Island								
South Wrangell Island (Fools Inlet)						L		W
Coffman Cove								
<b>Transportation Corridors</b>								
Lynn Canal east (Berners Bay to Skagway)		W			W	W	W	W
Sitka to Rodman Bay						L		W
Sitka to Warm Springs Bay						L		W
Kake to Petersburg via Portage Bay						L		W
Cleveland Peninsula			W		W	L	W	W
Northern Revillagigedo Island						L		W
Revilla Road Extension						L		W
Notes:								
W = The identified terminal or corridor falls wholly or partially within Recommended Wilderness area(s).								
L = The identified terminal or corridor falls wholly or partially within Recommended LUD II areas(s).								
Blank = The identified terminal or corridor would not pass through Recommended Wilderness or Recommended LUD II areas.								

**Effects on Other Regional Transportation Opportunities**

Effects of the alternatives on other regional transportation opportunities are summarized in Table 3.3-17. With two exceptions, Alternatives 1 through 7 would have little or no effect on any of the other potential regional transportation developments identified in the Affected Environment discussion, above. One corridor, the alternative route between Kake and Petersburg (via Duncan Canal) identified by the Southeast Conference, would be affected by the reclassification of land to Recommended Wilderness under Alternatives 3, 5, 6, and 7. The other exception is the West Lynn Canal alternative route between Haines/Skagway and the Juneau area; the potential for developing this route would be restricted by Recommended Wilderness designation under Alternatives 6 and 7. Alternative 8 would restrict the potential for road development in these corridors, along with the following: two Juneau-to-Canada routes along Taku Inlet; the East Bradford River corridor connection to the Cassiar Highway, and several other road corridors near Wrangell; a coastal alignment connecting Thorne Bay and Coffman Cove; a road connecting North Whale Pass and the East Prince of Wales road; a road to the southeastern tip of the Kasaan Peninsula; a potential route connecting Hoonah and Tenakee Springs; and a short connector route between the Chatham and Corner Bay road systems. The effects of restricting regional transportation developments on the communities of Southeast Alaska are addressed in the *Economic and Social Environment* section.

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**Table 3.3-17  
Other Potential Regional Transportation Developments that may be Affected by Land Use Designation Changes under Each Alternative**

Description	Alternative							
	1	2	3	4	5	6	7	8
Lynn Canal west (Pt. Howard to Haines)						W	W	W
Taku Inlet						L		W
Hoonah to Tenakee Springs						L		W
Chatham to Corner Bay						L		W
Kake to Petersburg via Duncan Canal			W		W	W	W	W
East Bradfield River corridor						L		W
North Whale Pass to Coffman Cove						L		W
Thorne Bay and Coffman Cove						L		W
Kasaan Peninsula						L		W

**Notes:**

- W = The identified corridor falls wholly or partially within Recommended Wilderness area(s).
- L = The identified corridor falls wholly or partially within Recommended LUD II areas(s).
- Blank = The identified corridor would not pass through Recommended Wilderness or Recommended LUD II areas.

#### Effects on Power Transmission Line Opportunities

Wilderness and LUD II designations are identified in the 1997 Forest Plan as Transportation and Utility System "Avoidance Areas." Utility sites and corridors may be located in these LUDs only after an analysis of potential TUS corridors has been completed and found that no feasible alternatives exist outside this LUD.

Effects of the alternatives on power transmission line opportunities are summarized in Table 3.3-18. Alternatives 1 and 4 would have little to no effect on power transmission line development opportunities. Alternative 2 would restrict the potential for development of transmission lines connecting Tenakee Springs with Sitka/Angoon and Juneau with Skagway. Alternative 3 would restrict one of the potential routes for development of a transmission line connecting Kake and Petersburg. Alternatives 5, 6, 7, and 8 would restrict the potential for development of transmission lines connecting Tenakee Springs and Sitka/Angoon, Juneau and Skagway, and Kake and Petersburg. The city of Kake has expressed interest in exploring options for modifications to Alternative 6 that would allow the construction of a powerline corridor between Kake and Petersburg. Alternative 8 could restrict the development of the Swan Lake-Lake Tye Intertie; the potential transmission lines from the Lake Dorothy, Otter Creek, and Sunrise Lake Hydroelectric Projects; and routes connecting Sitka with Kake and Tenakee Springs with Hoonah. Alternatives 2, 3, 4, 5, 7, and 8 would also restrict the development of a route connecting the Tye powerline with Meyers Chuck and Ketchikan; however, this route is unlikely to be needed with the development of the Swan Lake-Lake Tye Intertie. The effects of restricting transmission line developments on the communities of Southeast Alaska are addressed in the *Economic and Social Environment* section.

**Table 3.3-18  
Power Transmission Line Development Opportunities that may be  
Affected by Land Use Designation Changes under Each Alternative**

Description	Alternative							
	1	2	3	4	5	6	7	8
Swan Lake-Lake Tye Intertie								W
Tye-Myers Chuck/Ketchikan Intertie <sup>1</sup>		W	W	W	W		W	W
Juneau-Skagway Intertie		W			W	B	W	W
Juneau-Hoonah Intertie								
Hoonah-Tenakee Springs Intertie								W
Tenakee Springs-Angoon Intertie		W			W	B	W	W
Angoon-Sitka Intertie		W			W	L	W	W
Sitka-Kake Intertie								W
Kake-Petersburg Intertie			W		W	B	W	W
Thorne Bay-Ketchikan Intertie								
Klawock-Hydaburg Intertie								
Lake Dorothy/Otter Creek/Sunrise Lake Transmission Lines								W
Bradfield Canal/Craig River Corridor								

Notes:

W = The identified corridor falls wholly or partially within Recommended Wilderness area(s).

L = The identified corridor falls wholly or partially within Recommended LUD II areas(s).

B = Portions of the identified corridor pass through both Recommended Wilderness and Recommended LUD II areas.

Blank = The identified corridor would not pass through Recommended Wilderness or Recommended LUD II areas.

1/ This route is unlikely to be needed due to the ongoing development of the Swan lake-Lake Tye Intertie.

## 3 Environment and Effects

### Lands

#### Affected Environment

The *Lands* section includes non-recreation special uses and land ownership administration and adjustments. Transportation and utility systems are discussed in a separate section. Most non-recreation special uses are industrial uses, such as commercial fishing camps, transportation facilities, and electronic sites. Appendix E in the 1997 Forest Plan lists the existing and potential electronic sites.

#### Land Selection Processes

Land ownership within the Tongass is complicated by several ongoing land selection processes. The Alaska Native Allotment Act of 1906 provided for Native individuals who had occupied lands prior to their designation as National Forest to apply for conveyance of up to 160 acres, under conditions prescribed by the Act and Federal Regulations. As of October 1995, 2,014 acres in 37 Native allotments had been conveyed, with an additional 7,914 acres pending adjudication by the Bureau of Land Management (BLM).

The Alaska Statehood Act of 1959 authorized the State of Alaska to select 400,000 acres of vacant and unappropriated land from within the Tongass and Chugach National Forests in Alaska, to further the development and expansion of Alaskan communities. To date, approximately 308,000 acres have been approved for selection. The State had received title to approximately 249,000 acres located in the Tongass National Forest. The State has completed its National Forest selection process and most of the land requested by the State has been approved by the Forest Service. To date, approximately 50,000 acres remain to be conveyed from the Chugach and Tongass National Forests.

The Alaska Native Claims Settlement Act of 1971 (ANCSA) provided for conveyance of 23,040 acres of land to each of the ten Native village corporations and two urban corporations located in Southeast Alaska, additional acres to the Regional corporation (Sealaska), and up to 160 acres to Native individuals who had occupied that land as a primary place of residence on August 31, 1971. To date, approximately 560,000 acres have been conveyed under this legislation.

#### Land Exchanges

In addition to the above legislation, ongoing discussions and negotiations regarding future land exchanges between the Forest Service and a number of Native Corporations and other entities may influence land ownership on the Tongass. Specific tracts have not been identified for exchange; however, this issue is a factor shaping future land ownership on the Tongass.

#### Hydroelectric Projects

There are three hydropower projects in the Federal Energy Regulatory Commission (FERC) licensing process on the Tongass that could be affected by wilderness designation. These hydropower projects include the Otter Creek project within the Skagway-Juneau Icefield Roadless Area (301) and the Lake Dorothy project within the Taku-Snettisham Roadless Area (302). The environmental assessments for both of these projects are in the draft stages. In addition to these projects, a preliminary permit from FERC was given to a hydroelectric project on Sunrise Lake in the Woronkofski Roadless Area (231). This project would service the city of Wrangell.

#### Communication and Other Electronic Sites

A communication or other electronic site is a parcel of land on which buildings, antenna towers, and other electronic equipment designed for communication or monitoring are located. These sites are used for electronic communication systems, including electronic transmitters, receivers, and resource monitoring equipment. These uses are authorized by the Federal Land Policy and Management Act of 1976

and the sites are located throughout the Tongass, including existing wilderness. The sites are operated by the Forest Service, Coast Guard, Federal Aviation Administration, National Weather Service, and a variety of other private and public entities.

### Direct, Indirect, and Cumulative Effects

### Environmental Consequences

The environmental consequences for lands are related to the use restrictions that additional wilderness recommendations would create under each alternative. Changes to the National Forest System land base will continue to occur as a result of the ongoing conveyance processes and from future land exchanges. Additional wilderness and LUD II areas would reduce the pool of land available for future land exchanges with Native Corporations or other entities.

The alternatives would not restrict the conveyance of lands currently selected by the State or by Native Corporations. Consequences of recommending land for wilderness or LUD II designation surrounding or adjacent to selected lands are present, however. The integrity or values of the land recommended for wilderness or LUD II could be compromised due to the conflicting State or Native Corporation land management objectives on conveyed land.

The areas available for future non-recreation special uses, including communication sites, would be affected by the alternatives recommending wilderness. The alternatives that would most significantly limit areas of new development are Alternatives 5 through 8. Alternatives 5 and 7 would result in 2.0 million or 4.6 million acres of Recommended Wilderness, respectively. Alternative 6 would recommend almost all roadless lands for wilderness or LUD II designation (8.9 million acres) and Alternative 8 would recommend all inventoried roadless areas (9.6 million acres) for wilderness designation. As a result, Alternatives 6 and 8 would sharply limit new major development activities to areas near existing development. None of these alternatives would isolate development areas from access to other developed areas.

The three hydroelectric projects under study (Otter Creek, Lake Dorothy, and Sunrise Lake) would not likely be authorized if lands associated with them are converted to Recommended Wilderness. This would only occur under Alternative 8 for each of the three projects. Alternative 6 would convert these lands to Recommended LUD II, which would permit the projects as long as they can be designed to retain the overall primitive characteristics of the area. Under Alternative 1, 2, 3, 4, 5, or 7, none of the proposed projects would be affected.

The effects of the alternatives on timber management, mineral development, recreation use, and other land uses are discussed in the appropriate sections of this SEIS.

## 3 Environment and Effects

### Recreation and Tourism

#### Affected Environment

- Introduction and Overview
- Supply of Recreation Opportunities
  - Recreation Opportunity Spectrum
  - Recreation Places
- Existing Use Levels and Trends
  - Forest Use
    - Wilderness Recreation
  - Resident Recreation
  - Tourism
    - Trends in Visitation
  - Commercial Outfitter/Guide Use

#### Environmental Consequences

- Effects on Supply
  - Recreation Opportunity Spectrum
  - Recreation Places
    - Home Range Recreation Places
    - Important Recreation Places
      - Facilities
      - Marine
      - Hunting
      - Fishing
- Effects on Use and Demand
  - Resident Recreation
  - Tourism
    - Important Recreation Places
    - Developments
      - Major Development
      - Minor Development
  - Commercial Outfitter/Guide Use
  - Recreation Demand by ROS Setting

#### Introduction and Overview

The affected environment portion of the recreation and tourism analysis is divided into two broad sections that address the supply of recreation opportunities and existing use levels and trends, respectively. The supply section discusses the existing supply of recreation opportunities in terms of the Forest Service's Recreation Opportunity Spectrum (ROS) classes and inventoried Recreation Places on the Tongass. The existing use and trends section discusses overall forest use, resident recreation, tourism, and commercial outfitter/guide use.

The remainder of this introductory section provides a general overview of recreation in Southeast Alaska and the Tongass National Forest, which comprises approximately 80 percent of the region. Southeast Alaska possesses a remarkable and unique combination of features including inland waterways with over 11,000 miles of shoreline, mountains, fiords, glaciers, and large or unusual fish and wildlife populations that provide opportunities for a wide range of outdoor recreation experiences. Southeast Alaska imparts a sense of vastness, wildness, and solitude. These sentiments are enhanced by a small resident population and a relative absence of development compared to most other National Forests.

Recreation and tourism on National Forests encompasses more than providing facilities or recreation sites. This is especially true on the Tongass National Forest where most recreation and tourism attractions, and much of the use, occur in remote undeveloped areas. Many Alaska residents purposefully live in proximity to such settings as a part of their lifestyle. Most visitors, who travel long distances to see Alaska, expect to find it wild and “unspoiled,” while at the same time seek comfort and convenience, reliable transportation, and other features requiring some level of infrastructure and development. The challenge to managers is to identify and understand the relationship between the settings and the variety of client groups. Commercial providers of recreation activities base much of their marketing strategy on particular environmental settings and identified recreation places within those settings.

The Tongass National Forest includes approximately 17 million acres of land available for recreation. This land contributes greatly to the feeling of vastness and solitude that dominates the region; however, much of the land is not suitable for outdoor recreation. Difficult and steep terrain, wetlands, icefields, glaciers, and heavy vegetation confine most recreation activities to accessible shorelines, river and stream bottoms, and around the many lakes within the Forest. Extensive use is made of some of the icefields and alpine areas (above tree line), but access to these areas is usually by aircraft. Both residents and visitors use the developed campground and picnic areas, beaches, trails, cabins, shelters, and visitor centers that are located near communities. A current inventory of developed recreation sites on the Tongass is presented in Table 3.3-19.

The State of Alaska also administers a significant amount of land that is available for recreation. Many of the State land selections were made with recreation opportunities for the residents of local communities in mind. Most of these opportunities are still undeveloped. State selections were also made for future development of a system of marine parks. Currently there are two designated State Parks and one State Historic Site in Southeast Alaska. Numerous other State recreation lands also exist.

Community road systems are limited, but heavily used for access to recreation sites and attractions near local communities. Existing road systems are primarily located near the larger communities of Juneau, Sitka, Ketchikan, Petersburg, and Wrangell. There is an extensive road system connecting the small communities on Prince of Wales Island, and systems developing near the communities of Hoonah and Kake. There is no interconnecting highway system between islands or between communities on the mainland.

Roads exist in other locations where timber harvest has taken place. Independent visitors and local users from other parts of Southeast Alaska use road systems that are accessible from the Alaska Marine Highway System (ferries) or from a community for recreational purposes. Roads in locations where there are no communities or interconnecting access to the Alaska Marine Highway System (ferries) receive relatively low levels of recreation use. However, recreation-related vehicle use has been growing on some remote islands, including Zarembo and Etolin Islands and isolated systems on Kuiu and Kupreanof Islands. While the total amount of recreation use on these islands is low, it can be heavy at times, such as during hunting seasons.

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**Table 3.3-19  
Tongass Recreation Facilities**

Type of Facility	Number
Anchor Buoys	28
Campgrounds	14
Number of Sites	166
Interpretive Sites	5
Historic Sites	1
Observation Sites	7
Organized Camps	3
Picnic Areas	25
Number of units	142
Recreation Cabins	
- in Wilderness	53
- nonwilderness	103
- on saltwater	53
Total Recreation Cabins	155
Recreation Residences	48
Recreation Road Miles	1,238
Resorts & Lodges	4
Trails (# miles):	
- nonwilderness	419.4
- Wilderness	85.1
Total Trail Miles	504.5
Trail Shelters	25
Trailheads	48
Visitor Centers	3
Winter Sports	1

Source: USDA Forest Service, 1997a (Table 3-34).

#### Supply of Recreation Opportunities

The supply of recreation opportunities is described in this analysis using two concepts: the Recreation Opportunity Spectrum (ROS) and Recreation Places. These concepts describe the quantity of recreation opportunities. Quality is addressed using the “Home Range” concept and by assigning a value to the recreation places. These concepts are discussed in the following sections.

#### Recreation Opportunity Spectrum

The Tongass National Forest has the potential to provide a wide variety of recreation settings. The ROS has been developed to help identify, quantify, and describe these settings. The ROS system portrays the appropriate combination of activities, settings, and experience expectations along a continuum that ranges from highly modified to primitive environments. Seven classifications are identified along this continuum: Urban (U), Rural (R), Roaded Natural (RN), Roaded Modified (RM), Semi-primitive Motorized (SPM), Semi-primitive Non-motorized (SPNM), and Primitive (P). A general Forest-wide inventory of the ROS classification was made in 1989 and is periodically updated. The ROS inventory is used to assess the potential effects of the alternatives on recreation settings.

The seven ROS classes are summarized in Table 3.3-20, based on seven elements that are considered in the allocation and management of recreation settings. Forest-wide ROS acres are presented in Table 3.3-21.

Viewed in terms of acres, the Primitive ROS setting is the largest on the Tongass, with approximately 10.3 million acres allocated to this setting (Table 3.3-22). The

Wilderness and Natural Setting LUD groups currently account for 43 and 48 percent of this total, respectively. Approximately 35 percent of the areas presently inventoried as Semi-primitive Non-motorized (3.1 million acres) are presently located in the Moderate Development (11 percent) or Intensive Development (24 percent) LUD groups, with 18 percent located in existing Wilderness. Areas inventoried as Semi-primitive Motorized account for approximately 1.1 million acres Forest-wide and are mostly located in the Wilderness (44 percent) and Natural Setting (41 percent) LUD groups. Approximately 75 percent of areas allocated to the Roaded Natural, Roaded Modified, Rural, and Urban settings are located in the Moderate Development (22 percent) or Intensive Development (53 percent) LUD groups (Table 3.3-22).

Existing Wilderness on the Tongass is mostly allocated to the Primitive ROS setting (79 percent), with the remaining 21 percent comprised of SPNM (10 percent) and SPM (11 percent). Much of the area inventoried as SPM on the Tongass is accessed via motorized watercraft. The Primitive ROS setting also comprises a large share of the Natural Setting LUD group (67 percent), with the remaining area allocated to other ROS settings, including 7 percent inventoried as SPM (Table 3.3-22).

### Recreation Places

**Recreation Places** are areas that are used for recreation activities and are easy to access. These areas are identified based on patterns of use associated with protected boat anchorages and landings, aircraft landing sites, and roads.

The Tongass offers a unique recreation setting because it provides an island and marine environment in close proximity to major mountain ranges and icefields. Forested mountains rising from the saltwater provide unique and remote coastal recreation opportunities not found in other areas of the United States. Recreation enthusiasts are able to view a variety of natural landforms and wildlife, such as glaciers, old growth forests, humpback whales, spawning salmon, and bald eagles. The immense amount of land on the Tongass National Forest provides a great diversity of recreation attractions and opportunities. Most recreation activities take place in and depend on settings that are primarily undeveloped and widely dispersed. The surrounding saltwater, which is not managed by the Forest Service, allows for motorized boat and floatplane access throughout Southeast Alaska.

The pattern of use associated with known protected boat anchorages, boat landings, aircraft landing sites, and the limited road systems makes it possible to identify specific “recreation places.” Recreation places are those areas that are used for recreation activities and are easy to access. Approximately 1,436 recreation places, totaling about 4.3 million acres (25 percent of the total Tongass National Forest), have been identified. Approximately 22 percent or 311 of these places are located in existing designated wildernesses. Although these areas comprise only 22 percent of the Forest-wide place total, they account for 36 percent of total recreation place acres. These areas received relatively low rates of visitation in 1995, accounting for only 18 percent of recreation place visitation, measured in Recreation Visitor Days (RVDs). This lower average use per acre likely corresponds with the ROS classification and standards for number of encounters in designated wilderness, as well as limitations placed on commercial group size.

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**Table 3.3-20  
Comparison of ROS Classes**

	<b>Urban (U)</b>	<b>Rural (R)</b>	<b>Roaded Modified (RM)</b>	<b>Roaded Natural (RN)</b>
<b>Visual Quality</b>	Alterations to landform and vegetation dominate landscape; nonrecreational activities not to exceed Mod - FG; Max Mod - MG.	Alterations to landform and vegetation dominate landscape; nonrecreational activities not to exceed Mod - FG; Max Mod - MG.	Alterations dominate the landscape; nonrecreational activities/ structures evident, but do not exceed maximum modification.	Alterations to landscape subordinate; nonrecreational activities not to exceed modification though typically partial retention.
<b>Access</b>	Access and travel facilities are highly intense, motorized, and often with mass transit supplements.	All methods of access and travel may occur, but subject to formal regulation.	All methods of access and travel when needed and compatible with intended activities.	All methods of access and travel may occur when compatible with intended activities; zones of non-motorized use.
<b>Remoteness</b>	Remoteness from sites and sounds of human activity not available or important.	Remoteness from sites and sounds of human activity not available or important.	Remoteness from continuous sounds of human activity is expected	Remoteness from continuous sounds of human activity is of moderate important.
<b>Visitor Management</b>	Intensive on-site controls are numerous and obvious.	On-site regimentation and control is obvious.	On-site regimentation and controls are few.	On-site regimentation and control is obvious.
<b>On-site Recreation Development</b>	Recreation structures and facilities readily evident, but appropriate for setting; designed for high use levels. Information and interpretive facilities may be large and complex.	Recreation structures and facilities readily evident, but appropriate for setting, designed for high use levels. Information and interpretive facilities may be large and complex.	Recreation structures and facilities may be present, but are provided primarily for protection of the resource rather than user convenience. Facilities are rustic and harmonize with a backcountry setting.	Recreation structures and facilities provided for site protection and user convenience. Facilities are contemporary but of rustic design and harmonize with natural setting.
<b>Social Encounters</b>	High concentrations of people at one time.	Moderate to high concentrations of people at one time.	Moderate concentration of users on roads and little evidence of others or interactions at campsites	Interactions with others may be moderate to high. Moderate concentrations of people, especially on trails and in dispersed areas.
<b>Visitor Impacts</b>	Very noticeable, but managed to prevent physical resource degradation.	Very noticeable, but managed to prevent physical resource degradation.	Human use noticeable, but not degrading to resources. Site hardening dominates campsites; parking areas.	Visitor use noticeable, but not degrading to resources; established VQOs.

**Table 3.3-20 (continued)  
Comparison of ROS Classes**

	<b>Semi-Primitive Motorized (SPM)</b>	<b>Semi-Primitive Non-Motorized (SPNM)</b>	<b>Primitive (P)</b>
<b>Visual Quality</b>	Alterations few and subordinate to landscape; designed and located to not exceed partial retention.	Alterations few and subordinate to landscape; nonrecreational activities and structures designed not to exceed retention.	Alterations to landscape not evident; structures do not exceed retention.
<b>Access</b>	Travel on trails designed for/open to motor vehicles; roads maintained for high clearance vehicles; motorboats operating on waterways; may establish zones of non-motor use for facility/resource protection.	Trails closed to motorized use; nonmotorized boats used on freshwater lakes and streams.	Trails closed to motorized use; non-motorized boats used on freshwater lakes and streams.
<b>Remoteness</b>	Nearby sights and sounds of human activity are rare; Distant sounds may occur.	Nearby sounds of human activity are rare; distant sounds may occur.	No or very infrequent sounds of human activity.
<b>Visitor Management</b>	On-site regimentation and controls are few.	On-site regimentation and controls are rare.	On-site regimentation and controls are very rare.
<b>On-site Recreation Development</b>	Recreation structures and facilities may be present, provided primarily for protection of site rather than user convenience. Facilities, when present, are rustic and harmonize with natural setting.	Recreation structures and facilities may be present but provided primarily for protection of site. Facilities, when present, are rustic and harmonize with natural setting.	Recreation structures are rarely present, provided primarily for the protection of the site. Facilities, when present, are rustic and harmonize with natural setting.
<b>Social Encounters</b>	Low interaction between users. Campsites seldom within sight or sound of another group except during peak periods.	Low interaction between users. Campsites seldom within sight or sound of another group except during peak periods.	Very low interaction between users and no other groups in sight or sound of overnight camps.
<b>Visitor Impacts</b>	Human use noticeable, but not degrading to resource or backcountry setting.	Human use noticeable, but not degrading to resource elements.	Human use essentially unnoticeable. Site hardening—boardwalks, boat moorings, food caches.

Source: USDA Forest Service, 1997a (Table 3-30).

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**Table 3.3-21  
Forest-wide Recreation Opportunity Spectrum Acres, 2002**

ROS Class	Acres
Primitive (P)	10,313,048
Semi-primitive Non-motorized (SPNM)	3,105,834
Semi-primitive Motorized (SPM)	1,373,954
Roaded Natural (RN)	181,511
Roaded Modified (RM)	1,791,768
Rural and Urban (R and U)	7,362

Note:

The total acres by ROS class shown in this table is slightly lower than the Forest-wide total because the ROS inventory does not include the entire Forest.

**Table 3.3-22  
Forest-wide Recreation Opportunity Spectrum Acres by LUD Group, 2002**

LUD Group	P	SPNM	SPM	RN	RM	R+U
<b>Acres by LUD Group and ROS</b>						
Wilderness	4,459,573	566,743	606,377	18,692	7,893	148
Mostly Natural	4,990,882	1,454,502	558,000	98,287	366,817	4,455
Moderate Development	198,086	341,437	140,721	47,355	384,677	650
Intensive Development	661,956	742,576	67,803	17,008	1,031,972	1,988
<b>Percent of ROS Setting</b>						
Wilderness	43	18	44	10	0	2
Mostly Natural	48	47	41	54	20	62
Moderate Development	2	11	10	26	21	9
Intensive Development	6	24	5	9	58	27
<b>Percent of LUD Group</b>						
Wilderness	79	10	11	0	0	0
Mostly Natural	67	19	7	1	5	0
Moderate Development	18	31	13	4	35	0
Intensive Development	26	29	3	1	41	0

Note:

1. P=Primitive, SPNM=Semi-Primitive Non-Motorized, SPM=Semi-Primitive Motorized, RN=Roaded Natural, RM=Roaded Modified, R+U=Rural and Urban

2. The total acres by ROS class shown in this table is slightly lower than the Forest-wide total because the ROS inventory does not include the entire Forest.

The setting of a recreation place plays a key role in its attractiveness and use. Many recreation opportunities, such as viewing scenery or pursuing solitude, are dependent on this relationship and require a natural type of setting, while others, such as hunting or fishing, are less dependent on the type of setting. Table 3.3-23 identifies the distribution of recreation place acres by ROS class. Recreation places can be categorized into three general groupings based on their principal uses and attractions. These three general groupings, marine, freshwater, and land-based, are discussed in the *Recreation and Tourism* section of the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a; pp. 3-107, 3-108). The distribution of recreation places among these general groupings is presented in Table 3.3-24.

For the purposes of this analysis, recreation places are classified in two basic ways. First, recognizing that access plays a key role in recreation in Southeast Alaska, "home ranges" were defined for each community. Inventoried recreation places were classified into two categories: those located within a radius of approximately 20 miles from communities ("home range") and those outside ("rest of forest"). Almost half (48 percent) of the recreation place acres are within a community home range. Second, recreation places are identified as either important or

ordinary/common based on five categories: facilities, marine, hunting, fishing, and tourism. The Forest Service developed this rating system in response to public comments received on the 1990 Draft EIS. Public comment showed concern that the initial recreation place inventory developed for the 1990 Draft EIS did not differentiate really important recreation places from ordinary ones. Recreation places may be important for one, several, or none of the identified categories. Important recreation places by category are summarized in Table 3.3-25 and discussed further in the *Recreation and Tourism* section of the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; pp. 3-109, 3-111).

**Table 3.3-23**  
**Distribution of Recreation Place Acres by Recreation Opportunity Spectrum Class**

ROS Class	Acres (1,000s)
Primitive	1,459
Semi-Primitive Non-Motorized	1,196
Semi-Primitive Motorized	831
Roaded Natural	162
Roaded Modified	661
Rural and Urban	27
<b>Total</b>	<b>4,336</b>

Note:

1. This estimate of total recreation place acres is higher than the estimate used in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a). The database used to develop these estimates has been updated and these estimates were developed using a more precise methodology than the grid-sampling approach that was employed in the 1997 Forest Plan Revision Final EIS analysis.
2. These totals include all identified recreation places within the Tongass National Forest boundary, including those on State and private lands.

**Table 3.3-24**  
**Distribution of Recreation Places by General Use**

	Number of Places	Percent of Total	Acres (1,000s) <sup>1</sup>	Percent of Total
Marine	617	43	1,474	34
Freshwater	302	21	1,084	25
Land-based	531	37	1,778	41
<b>Total</b>	<b>1,436</b>	<b>101</b>	<b>4,336</b>	<b>100</b>

<sup>1</sup> Updated acreages were calculated using the ratios from USDA Forest Service, 1997a (pp. 3-107, 3-108).

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**Table 3.3-25  
Important Recreation Places by Category<sup>1</sup>**

	Number of Places	Percent of Total <sup>2</sup>	Acres (1,000s)	Percent of Total <sup>2</sup>
Facilities <sup>3</sup>	402	28	1,270	29
Marine <sup>4</sup>	617	43	1,283	30
Hunting <sup>5</sup>	373	26	1,715	40
Fishing <sup>6</sup>	187	13	549	13
Tourism	876	61	2,292	53
<b>Total Acres/Places</b>	<b>1,436</b>	<b>na</b>	<b>4,336</b>	<b>na</b>

<sup>1</sup> Recreation places are either rated as important or common/ordinary.

<sup>2</sup> Percent columns sum to more than 100 because a recreation place can be rated important in more than one category.

<sup>3</sup> All recreation places with facilities were rated as being important. In addition, other recreation places with a facility investment, such as a viewing platform, and facilities authorized by a Special Use Permit for recreation purposes, were identified as important.

<sup>4</sup> The marine category identified here is different to the marine type identified in Table 3.3-24. The marine category in this table only includes those recreation places that are truly unique or typify the Southeast Alaska marine experience.

<sup>5</sup> Important hunting areas were distinguished from ordinary hunting areas based on a number of factors, including heavy recurring use, hunter success, ease of access, opportunities for several species, and prized species, such as mountain goats and moose.

<sup>6</sup> Important fishing recreation places were identified using ADF&G ratings for sport fishing.

Note: This estimate of total recreation place acres is higher than the estimate used in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a). The database used to develop these estimates has been updated and these estimates were developed using a more precise methodology than the grid-sampling approach that was employed in the 1997 Forest Plan Revision Final EIS analysis.

Source: USDA Forest Service, 1997a (pp. 3-109, 3-111).

#### Existing Use Levels and Trends

The following section is divided into four parts that discuss forest use in general, resident recreation, tourism, and commercial outfitter/guide use on the Tongass National Forest.

#### Forest Use

Precise information on recreation and tourism on the Tongass is not available. Except for locations where fees are collected or locations where people can be easily counted, most use data has historically been based on long-term observations, anecdotal information, and professional estimates, adjusted by quantitative indicators where available. Forest-wide recreation use statistics were last compiled for the Tongass National Forest in 1996. The basic measurement of recreational activity was the RVD, which is usually obtained through the counting of use permits, visitor surveys, or observation. An RVD is 12 hours of recreation use by one individual. Data compiled for recreation places for 1984 through 1995 showed an upward trend over that period, with recreationists spending an estimated 2,305,000 RVDs on the Tongass in 1995 (see Figure 3.4-8 and Table 3.4-7). These RVDs were divided into three groups based on ROS classes for the purposes of the analysis presented in the *Economic and Social Environment* section of this document. This division is based on the shares identified for 1994 and is assumed to remain constant throughout the analysis. The three groups are Primitive and Semi-primitive Non-motorized (here termed ROS 1), Semi-primitive Motorized (ROS 2), and Roaded Natural, Roaded Modified, Rural, and Urban (ROS 3).

In general, many residents and nonresidents seek the same type of recreation experiences and many engage in similar activities. Alaska has a reputation for vastness, rugged beauty, and solitude and both residents and nonresidents usually expect to find these qualities in recreation settings. Expectations often vary by group

and individual, however, with some people having higher expectations of wilderness and solitude than others.

Visitor use data were collected from 649 people surveyed on the north third of the Tongass National Forest in 2000 as part of the Forest Service's National Visitor Use Monitoring (NVUM) program. A draft report summarizing the preliminary findings of this study estimated that there were between 6 million and 10.5 million visits (an estimated 8.2 million visits with an error rate of plus or minus 27.5 percent) to the Tongass National Forest in 2000 (USDA Forest Service, 2001b). The preliminary results of the NVUM study indicate that at least 61 percent of visitors surveyed were Southeast Alaska residents, primarily from Juneau and Sitka. While these preliminary results, based on surveys on one third of the Forest, should be treated with caution, the finding that 39 percent of visitors were nonresidents is not inconsistent with the findings of earlier studies. The economic analysis in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; p.3-460), for example, assumed for the purposes of analysis that 44 percent of forest visitors were nonresidents.

The preliminary results of the 2000 survey indicate that the top five activities of survey respondents were hiking or walking (52.3 percent), viewing wildlife (44 percent), general relaxation (31.1 percent), fishing (23.3 percent), and visiting a nature center or nature trail (13.6 percent) (Table 3.3-26). Survey respondents were also asked to identify the primary activity that they were engaged in at the time of the survey. The top activities were viewing wildlife (22 percent), fishing (20.3 percent), hiking or walking (15.5 percent), general relaxation (8.9 percent), and visiting a nature center or nature trail (4.5 percent) (Table 3.3-26). These are the same as the top five activities ranked by participation.

### ***Wilderness Recreation***

The Wilderness Act identifies four key wilderness attributes: natural integrity, apparent naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive recreation. While the Wilderness Act and the movement that preceded it reflected a wide range of philosophical values, three general types of wilderness values that are frequently mentioned are the experiential, scientific, and symbolic and spiritual values of wilderness. The experiential value refers to the direct value of the wilderness experience, which is typically viewed as synonymous with wilderness recreation. This type of value is reflected in the writings of early wilderness proponents, including John Muir, Robert Marshall, and Aldo Leopold. Consistent experiential themes include closeness to nature, freedom, solitude, education, and simplicity, as well as the aesthetic, spiritual, and mystical dimensions of the wilderness experience (Hendee et al., 1990). These themes viewed against a backdrop of an increasingly complex society generally underscore a belief that wilderness provides an opportunity for individuals to develop personally, as well as spiritually.

Wilderness recreation includes many diverse activities, some of which do not depend on the wilderness qualities of the environment. Other activities, such as experiencing solitude, isolation, and the challenges of traveling and living in an undeveloped area or observing the results of natural ecological processes on the landscape are dependent on wilderness characteristics. Some activities, such as hunting and fishing, may in certain cases be enhanced by a wilderness setting, but may not necessarily be dependent upon it.

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**Table 3.3-26  
Activity Participation and Primary Activities Identified in the 2000  
Tongass NVUM Survey<sup>1</sup>**

<b>Activity<sup>2</sup></b>	<b>Percent Participation</b>	<b>Primary Activity (Percent)<sup>3</sup></b>
Hiking or Walking	52.3	15.5
Viewing Wildlife	44.0	22.0
General Relaxation	31.1	8.9
Fishing	23.3	20.3
Visiting Nature Center or Nature Trail	13.6	4.5
Swimming, Games, and Sports	9.5	0.0
Viewing Scenery	8.0	2.0
Picnicking	7.0	2.0
Cross-country Skiing, Snow Shoeing	6.0	0.0
Nature Study	5.3	1.5
Motorized Water Travel (boats, ski sleds, etc)	5.1	0.3
Visiting Historic and Prehistoric Sites/Area	4.0	0.0
Driving for Pleasure on Roads	4.0	1.0
Gathering Natural Products (mushrooms, berries, etc.)	2.6	0.8
Visiting Resorts, Cabins	2.0	1.0
Non-motorized Water Travel (canoe, raft, etc.)	2.0	1.0
Downhill Skiing/Snowboarding	1.9	1.4
Bicycling, including Mountain Bikes	1.5	0.9
Backpacking, Camping in Unroaded Areas	1.0	0.1
Off-highway Vehicle Travel (4-wheelers, dirt bikes, etc)	0.8	0.0
Camping in Developed Sites (family or group)	0.3	0.2
Other Motorized Land/Air Activities (plane, other)	0.3	0.0
Hunting – all types	0.2	0.2
Horseback Riding	0.1	0.0
Primitive Camping	0	0
Snowmobile Travel	0	0

<sup>1</sup> The 2000 Tongass NVUM survey represents a sampling of just 3 of the 10 Ranger Districts on the Tongass. As a result, the data presented in this table may not be representative of other locations on the Forest or the Forest as a whole. Surveys are planned as part of this project for the remaining two-thirds of the Tongass in 2002 and 2003.

<sup>2</sup> The names of the activity categories have been abbreviated for this presentation.

<sup>3</sup> Percent of survey respondents who identified this as the primary activity that they were engaged in at the time of the survey.

Source: USDA Forest Service, 2001b (Table 13).

The Wilderness Act's definition of wilderness includes "outstanding opportunities for solitude or a primitive and unconfined type of recreation" and a setting that "generally appears to have been affected primarily by the forces of nature." Many of the recreation opportunities available on the Tongass are based on these factors, with resident and nonresident recreationists expecting to find these types of opportunities. Approximately 5.8 million acres or nearly 35 percent of the Tongass National Forest is presently designated wilderness (Table 3.3-55). Approximately 10.3 million acres are inventoried as Primitive ROS settings, with an additional 3.1 million acres assigned to the Semi-primitive Non-motorized ROS (Table 3.3-21). These allocations reflect the abundance of primitive wilderness type recreation opportunities that are presently available on the Tongass National Forest.

Congressionally designated wilderness on the Tongass National Forest comes from two pieces of legislation: the 1980 Alaska National Interest Lands Conservation Act (ANILCA) and the 1990 Tongass Timber Reform Act (TTRA). ANILCA provided a number of specific exceptions to the prohibitions of the 1964 Wilderness Act, which

apply equally to TTRA Wilderness. Section 1110(a) of ANILCA allows “the use of snowmachines (during periods of adequate snow cover or frozen river conditions, in the case of Wild or Scenic rivers), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities (where such activities are permitted by this Act or other law) and travel to and from villages and homesites.” Wilderness is discussed in more detail in the *Wilderness* section of this document.

Wilderness recreation is generally recognized as one of the most difficult types of recreational use to measure (Hendee et al., 1990; Watson et al., 2000). Wildernesses often have a number of different access points and use is low density and dispersed over wide areas, making it difficult to make any sort of direct head count. Recent data are not available on the total number of wilderness visitors to the Tongass. Use is, however, likely lower than that in many of its counterparts in the lower 48 states, especially those located in close proximity to major urban areas and easily accessed by car, such as the Alpine Lakes Wilderness east of Seattle. With the popularity of wilderness recreation increasing, there has been increased day use in some wildernesses in the lower 48 states. This has resulted in high visitor densities that affect the degree of social encounters between groups and have lead researchers to question whether visitors to these types of area are actually having a wilderness experience.

Summarizing the findings of approximately 20 wilderness recreation studies, Hendee et al. (1990) were able to characterize wilderness visitors as generally younger and more educated than the general population. Visitors were predominately male (about 75 percent) and did not typically travel long distances to visit wilderness. Data on existing wilderness use on the Tongass are presently being compiled as part of the NVUM study. Visitor use data were collected from 31 wilderness visitors sampled on the Tongass in 2000 (USDA Forest Service, 2001b). These surveys were conducted at identified exit locations from the north part of the Forest, primarily boat harbors in Sitka and Juneau. While the results of these interviews should be treated as preliminary due to the limited number of individuals involved and the limited geographic scope of the sampling, the findings were generally similar to Hendee et al.'s typical profile of wilderness visitors. The NVUM study found, for example, that wilderness visitors were more likely to be Southeast Alaska residents than visitors to the Forest as a whole (71 percent compared to 61 percent), with two-thirds of the surveyed wilderness visitors residing in or near Juneau. The preliminary results of the NVUM study also suggest that wilderness visitors tend to be younger than visitors to the Tongass National Forest as a whole. Approximately 74 percent of wilderness survey respondents were below 40 years of age, compared to just 46 percent of the total surveyed group. None of the interviewed wilderness visitors used the services of a commercial guide. Forest Service records indicated that commercial guides reported 4,440 client service days in wilderness during the sample year (USDA Forest Service, 2001b). Commercial outfitter/guide use is discussed further in a following section.

### **Resident Recreation**

Many residents of Southeast Alaska place a high value on the quality and availability of outdoor recreation opportunities in the region. This is evidenced by the fact that the proportion of Alaskan residents who participate in outdoor activities is generally much higher than elsewhere in the United States (Bowker, 2001). Many local residents engage in dispersed recreation activities on National Forest System land and adjacent saltwater. Accurate data on this type of use are difficult to obtain and estimates tend to either underestimate the nature and extent of much of this use or overcompensate in inconsistent ways (USDA Forest Service, 1997a; p. 3-120). The net result is that while there is a general consensus that outdoor recreation

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opportunities and activities are highly important to residents, there is little recent documented evidence to clearly support this view.

Resident recreation demand is influenced by a number of factors, including regional population levels, per capita participation rates, and recreation travel behavior. Over time, the supply of certain recreation opportunities in Southeast Alaska has increased. Road systems have expanded into previously inaccessible areas, the numbers of Forest Service recreation cabins and other facilities have increased, and visitor services and tourism marketing have increased. In some cases, supply-induced increases in participation have occurred. This appears to be the case on Prince of Wales, Wrangell, and Mitkof Islands where road systems developed for timber harvesting created an opportunity for road-related access to previously inaccessible recreation settings and an opportunity for recreation activities involving wheeled vehicles.

Supply-induced participation changes have also been accompanied by additional demand for specific recreation places or facilities for a related activity. Increased opportunities for roaded access and activities are typically accompanied by a need for parking, dispersed campsites, picnic sites, trails to scenic attractions, and additional short access routes to cabin sites and previously inaccessible beaches. Increased tourism has resulted in increased demand for interpretive services, and walking and hiking opportunities near the major communities.

The use of OHVs, often referred to as off-road vehicles (ORVs), is also a growing activity on the Tongass. Use is limited by topography, dense vegetation, and wet soils. These types of vehicles are most frequently used on road systems connected to communities, with riders seeking out primitive roads or spurs. Limitations of accessibility often result in OHV use on muskegs, beaches, tidal areas, and river channels during low flows. OHV use presently occurs in a limited number of Inventoried Roadless Areas on the Tongass, including two areas near Yakutat.

#### **Tourism**

Nonresident pleasure visitors or tourists can be divided into package and independent visitors. Independent visitors, who constitute a small, but growing, group, are characterized as those who get off the ferries and planes and engage in a variety of activities. They spend more time in the communities and on the Forest, and may secure the services of outfitters and guides, restaurants, motels, and transportation services, such as floatplanes, boats, and gas stations. Independent travelers mostly plan their own itineraries, but often secure the services of mini-packages, such as day excursions or fishing charters. These types of visitors compete more directly with residents for recreation opportunities on the Forest. Lodges have grown in popularity in recent years (with fishing lodges in particular), playing an important role in the tourism industry in some local areas.

Package visitors are typically the cruise ship clients, though some arrive by ferry and airplane. This is a very large group that uses the Tongass National Forest primarily as a scenic resource. These visitors spend less time in the area and generally follow preplanned and regimented itineraries. Much of their land-based activities are centered around communities. Half-day and day excursions into the Forest are increasing in popularity, but are mostly oriented around boat trips and flightseeing, using the Forest as a backdrop.

The marketing of recreation opportunities by commercial suppliers has important similarities to resident recreation concerns. For example, many businesses that provide boat or aircraft access for wildlife viewing and other activities have a low tolerance for the presence of other groups in the same area. The presence of more

than two or three other parties in a bay or area may cause such operators to seek substitute locations. The ability to market Alaska tourism, in part due to the high cost of visiting Alaska, is dependent on meeting customer expectations of seeing and experiencing vast, awe-inspiring, untamed land and its wildlife. Resident recreationists who traditionally use an area may, however, be discouraged by commercial businesses operating in the same area.

Tourism in the region and state is seasonal, with over 80 percent of Alaska’s visitors arriving during the summer season from May through September (McDowell Group, 1999). This percentage is even higher for pleasure-related visitors, with most arrivals in July and August. Visitor data were compiled for Alaska in 2000-2001 as part of the fourth Alaska Visitors Statistics Program (AVSP), a significant visitor industry research project conducted periodically by the State of Alaska. This project identified a total of 1,457,200 visitors for 2000-2001 (1,202,800 in the summer; 254,400 in the fall/winter) (Northern Economics, 2002a). Approximately 84 percent of Alaska’s summer visitors traveled to Southeast Alaska in 2001, indicating that there were 1,010,352 summer visitors to the region (Northern Economics, 2002b; Table 43).

Two of the top three attractions in the state in 1993 to 1994 were directly associated with the Tongass: the Inside Passage, ranked first, and Mendenhall Glacier, ranked third. Southeast communities accounted for four of the six most frequently visited communities and places in the state: Juneau ranked second, Ketchikan third, Skagway fourth, and Glacier Bay sixth. The outstanding scenery was identified as the most cited reason for visiting the region (Table 3.3-27). Opportunities for seeing whales, bald eagles, puffins, bears, and other wildlife add to the experience. Wildlife is the second most cited reason for visiting the area. Scenery and wildlife were the most frequently cited attractions by both independents and visitors as a whole (Table 3.3-27).

**Trends in Visitation**

The number of visitors to Southeast Alaska has increased significantly over the past decade. Statewide, the total number of visitors increased from 861,117 in 1993 to 1,202,800 in 2001, an increase of 40 percent. The number of summer visitors to Southeast Alaska increased by 101 percent over the same time, increasing from 502,800 in 1993 to 1,010,352 in 2001 (McDowell Group, 1999; Northern Economics, 2002a; 2002b). Statewide, increases in cruise ship passengers accounted for 77 percent of the growth in visitors over this period. Arrivals by air also increased by

The estimated number of summer visitors to Southeast Alaska slightly more than doubled between 1993 and 2001, increasing from 502,800 in 1993 to 1,010,352 in 2001

**Table 3.3-27  
Reasons for Visiting Southeast Alaska**

Reason	Independents	All Visitors
Scenery	66%	66%
Wildlife	31%	35%
Recommendations	25%	25%
Visit Friends/relatives	23%	7%
Fishing/hunting	19%	8%
Wildernesses	16%	13%
Specific Attractions	13%	10%
Part of cruise	9%	60%
Advertising	7%	10%
Price	2%	8%

Source: USDA Forest Service, 1997a (Table 3-37). (Original Source: Data Decisions Group, 1989. *Southeast Alaska Pleasure Visitor Research Program (SEAPVRP)*, Summer 1988, p. 20.)

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29 percent, while the number of visitors arriving by ferry, highway, and other modes of entry decreased (Northern Economics, 2002a; Table 5-3). It may, however, be noted that the number of summer visitors to Alaska remained fairly constant between 1999 and 2001, increasing by just 0.5 percent.

The number of cruise ship passengers visiting Juneau more than doubled between 1993 and 2000, increasing from approximately 306,600 in 1993 to 632,000 in 2000.

The number of cruise ship passengers visiting Juneau more than doubled between 1993 and 2000, increasing from approximately 306,600 in 1993 to 632,000 in 2000 (Table 3.3-28). The number of passengers docking at Juneau is considered representative of the total number of cruise ship passengers because the majority of cruise ships visiting Southeast Alaska stop there. Other ports in Southeast Alaska, including Ketchikan, Skagway, Seward, and Haines, also experienced net increases in passenger volumes over this period. Sitka and Wrangell were exceptions to this general trend with absolute decreases in passenger volumes during the latter half of the 1990s. While Sitka's passenger volume declined by about 92,000 passengers between 1996 and 2000, there were still 160,652 cruise ship visitors to Sitka in 2000 (Alaska Department of Community and Economic Development, 2002). The rapid growth and sheer magnitude of the cruise ship industry has important implications for recreation planning on the Tongass. Shore excursions have become an integral part of the cruise ship experience, providing increased revenues for ship operators and opportunities for local entrepreneurs. Much of this activity has been concentrated at major ports of call, such as Ketchikan, Juneau, or Skagway. Alongside the international cruise lines, several small and mid-size cruise operators are now active in the region, often taking their customers to places, such as Metlakatla and Petersburg, that are bypassed by the larger ships.

**Table 3.3-28**  
**Southeast Alaska Visitation, 1990 to 2000**

Year	Juneau Cruise Ship Passengers <sup>1,2</sup>	Southeast Alaska State Ferry Passengers <sup>2</sup>	Juneau Airline Departures <sup>2</sup>	Haines Arrivals by Land	Skagway Arrivals by Land
1990	237,070	363,122	183,677	52,719	28,900
1991	248,428	368,780	190,244	51,605	29,300
1992	269,000	372,680	236,824	45,355	42,600
1993 <sup>3</sup>	306,600	342,613	200,066	56,406	33,100
1994	372,923	347,998	229,820	55,356	33,400
1995	380,529	332,312	242,084	55,148	38,400
1996	462,542	318,864	234,851	52,326	38,300
1997	513,181	300,653	233,007	51,495	39,700
1998	568,348	303,076	238,842	50,234	42,100
1999	595,595	323,540	244,645	48,997	39,100
2000 <sup>4</sup>	632,000	301,176	255,362	43,621	na

<sup>1</sup> These figures for passengers at Juneau are representative of cruise ship visitation trends because the majority of cruise ships visiting Southeast Alaska stop at Juneau.

<sup>2</sup> These data are presented for 1980 through 1994 in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; Table 3-38).

<sup>3</sup> The ferry *Taku* was out of service during May and June, which reduced total passengers.

<sup>4</sup> The ferry *Columbia* out of service for most of the summer season, which reduced total passengers.

Notes: The town of Hyder also receives a considerable number of arrivals by land. Based on estimates provided by the Hyder Community Association, approximately 28,000 visitors were recorded at the Fish Creek viewing platform in 1999. This number grew to 31,000 in 2001.

na – not available

Sources: USDA Forest Service, 1997a (Table 3-38) (Original Sources: Alaska Marine Highway Traffic Reports, Juneau Convention and Visitors Bureau, and Juneau Airport Manager's Office); USDA Forest Service, 2001d.

While the number of cruise ship passengers visiting Juneau more than doubled over the past decade, the total number of Southeast Alaska State ferry passengers fluctuated. The total number of ferry passengers was approximately 17 percent lower in 2000 than in 1990, declining from approximately 363,100 passengers to 301,176 (Table 3.3-28). State ferry use is largely constrained by available capacity during the summer and the relatively low figure in 2000 is partially explained by one of the State's ferries being damaged at the beginning of the season and out of service for the rest of the year. Passenger levels were also lower in 1999 than they were in 1990. Juneau airline departures increased between 1990 and 2000, but at a much slower rate than cruise ship passengers. Skagway and Haines arrivals by land stayed essentially constant throughout the decade (see Table 3.3-28 and Figure 3.3-3). Hyder also receives arrivals by land but data are not available for the early part of the decade. Essentially all cruise ship use is by nonresident tourists. Ferry and airline passenger volumes and arrivals by land, on the other hand, also include Alaska residents and nonresidents visiting for reasons other than recreation and tourism, such as business or visiting relatives or friends.

Visitation trends for two popular excursions, Juneau Icefield and Mendenhall Glacier, are presented in Table 3.3-29. The number of visitors to these areas has increased significantly over the past decade. The number of Juneau Icefield helicopter landing tour passengers increased by 146 percent from 1990 to 2000, with a total of 85,531 passengers in 2000. The number of visitors to Mendenhall Glacier increased by 45 percent between 1990 and 1999, with a total of 273,488 visitors in 1999.

**Table 3.3-29**  
**Juneau Icefield and Mendenhall Glacier Visitation, 1990 to 2000**

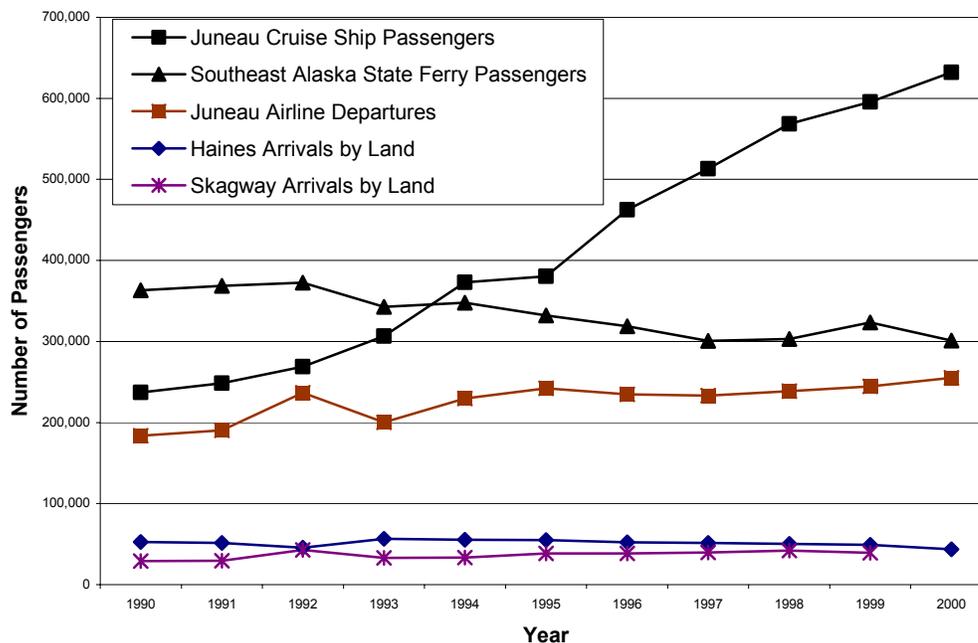
Year	Juneau Icefield Tour Passengers <sup>1</sup>	Mendenhall Glacier Visitors <sup>1</sup>
1990	34,765	188,000
1991	41,887	145,482
1992	45,638	160,000
1993	53,600	210,000
1994	62,449	265,000
1995	55,818	212,411
1996	65,709	276,000
1997	75,491	237,233
1998	84,632	238,366
1999	85,174	273,488
2000	85,531	na

<sup>1</sup> These data are presented for 1980 through 1994 in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; Table 3-38).

Sources: 1990 to 1994: USDA Forest Service, 1997a (Table 3-38) (Original Source: Juneau Ranger District Records); 1994 on: USDA Forest Service, 2001d.

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**Figure 3.3-3  
Southeast Alaska Visitation, 1990 to 2000**



Note: Data were not available for Skagway arrivals for 2000. Longitudinal data are not available for arrivals in Hyder (See the note to Table 3.3-28).  
Source: See Table 3.3-28.

#### Commercial Outfitter/Guide Use

Outfitter/guides on the Tongass range from small family run operations to larger corporations. Most firms serve less than 100 clients per year, with a smaller number of firms serving much larger numbers and one firm serving more than 100,000 clients in 1999.

The Forest Service authorizes commercial activities to make it easier for the public to visit national forests. Due to its remote and rugged nature, recreation use on much of the Tongass National Forest requires good outdoor skills and/or specialized equipment. Commercial outfitters and guides provide access and equipment to assist people who might not otherwise be able to pursue certain recreation activities on the forest. Outfitter/guides on the Tongass range from small family run operations to larger corporations and non-profit organizations.

A recent survey of commercial recreation businesses in Southeast Alaska indicated that the majority of surveyed businesses were small, with 86 percent earning gross revenues of less than \$100,000. Six firms reported revenues over \$1 million, including one firm with revenues exceeding \$10 million. A similar distribution is evident in terms of clients served, with the majority of firms serving less than 100 clients, a smaller number of firms serving considerably larger numbers, and one firm serving more than 100,000 clients in 1999 (Alaska Division of Community and Business Development [DCBD], 2001).

Both residents and nonresidents use the services of outfitter/guides, but nonresidents tend to use outfitter/guides more often because they don't have the local knowledge or necessary equipment. Local residents tend to use their own boats and equipment to reach the forest. Personal boats are often smaller than

charter boats used by nonresidents, resulting in visiting groups of residents generally being smaller than nonresident groups.

Outfitter/guides require special use permits to operate on the Tongass and are required to report annual use as part of their permit. Outfitter/guide use information compiled for the shoreline areas on the north part of the Tongass from 1994 to 1999 shows a dramatic increase in outfitter/guide use in shoreline areas, with the number of outfitter/guide clients increasing from approximately 1,550 in 1994 to 14,000 in 1999 (USDA Forest Service, 2002f). Outfitter/guide activities included in these data are those that usually occur within one-half mile of a saltwater shoreline. Helicopter landing tours are not included in these totals. Data compiled by the five Ranger Districts that comprise the south portion of the Forest (Craig, Ketchikan, Petersburg, Thorne Bay, and Wrangell) indicated that outfitter/guides served 19,179 clients in inventoried roadless areas on the south portion of the forest in 2000. These data do not include visitation to the Misty Fjords National Monument Wilderness.

The survey of commercial recreation businesses in Southeast Alaska conducted in 2000 found that 73 percent of the businesses surveyed had experienced an increase in the number of clients they serve since 1995 (Alaska DCBD, 2001). Nineteen percent reported no change over this period, with the remaining 8 percent reporting a decrease in number of clients served. Sixty-eight percent of responding firms indicated that they had been in business less than 10 years. Cruise ship passengers accounted for 41 percent of total clients for all of the surveyed businesses, ranging from 22 percent of clients for businesses with fewer than 200 clients a year to 91 percent of clients for businesses with more than 10,000 clients a year.

Recreation activities in Southeast Alaska and on the Tongass National Forest cover a broad spectrum of uses, ranging from fishing and hunting to helicopter flights and photography. The principle activities engaged in by the businesses surveyed in 2000 are identified in Table 3.3-30. Saltwater fishing was the most popular activity, followed by nature viewing/sightseeing then wildlife viewing. The survey found that motorized watercraft was the most popular transportation mode used by commercial recreation businesses in Southeast Alaska.

Most outfitter/guides using the Forest shorelines access them via boat from saltwater. Some clients are dropped off on beaches, while others are also guided on land. The majority of charter boats in Southeast Alaska operate exclusively on saltwater for fishing or sightseeing without ever using the Forest (USDA Forest Service, 2002f). These businesses are included in the data presented in Table 3.3-30.

While people often participate in several different activities in one or more settings on any given trip, different activities lead to different numbers of people in a group and different amounts of time spent on the Forest. At one end of the spectrum, guided bear hunting consists of many small groups of one or two people. Hunters are dispersed across a large area and are on the Forest for long periods of time, typically 5 to 10 days, during spring and fall. At the other end of the use spectrum are mid-sized nature-viewing tour boats, with relatively large group sizes (from 12 to 70 people). These groups are typically concentrated in a few areas of the Forest. Their use is short-term and concentrated in the summer season.

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**Table 3.3-30  
Principle Activities Engaged in by Southeast Alaska Commercial Recreation Businesses in 2000**

Activity	Percent	Activity	Percent
Saltwater Fishing	63	Hiking, Mountain Climbing	14
Nature Viewing/Sightseeing	49	Cultural/Historical Sites	10
Wildlife Viewing	44	Camping	6
Photography	35	Backpacking	3
Motorized Boating	25	Northern Lights Viewing	3
Freshwater Fishing	21	Downhill Skiing, Snowboarding	1
Bird Viewing	21	X-Country Skiing, Snowshoeing	1
Non-Motorized Boating	15	Bicycling, Mountain Biking	1
Hunting	14		

Source: Alaska DCBD, 2001.

The Shoreline Outfitter/Guide Draft EIS prepared for the north portion of the Tongass (USDA Forest Service, 2002f), notes that recreation group size is highly variable along shorelines in that study's project area. Groups are generally less than 12 people, although larger groups, often associated with commercially guided groups from tour boats, may also be present. The largest shoreline group reported in the north part of the forest in 1999 was a tour boat with 70 people.

Data compiled on outfitter/guide use on the north part of the Forest in 2000 are summarized in Table 3.3-31. These data include the Juneau, Sitka, and Hoonah Ranger districts and Admiralty National Monument. These data have been adjusted to exclude helicopter landing tours on the Juneau Icefields and visitors to Mendenhall Glacier, which accounted for approximately 85,000 and over 160,000 clients in 2000, respectively.

The data summarized in Table 3.3-31 indicate that the majority of outfitter/guide use occurred in the Natural Setting and Wilderness LUD groups. Average groups sizes by activity show relatively little variation by LUD group. Fishing and hunting individual group sizes ranged from 1 to 14 and 1 to 5 clients, respectively, with little variation by LUD group. Remote setting nature tour (RSNT) group sizes ranged from 1 to 70, with the Mostly Natural LUD group accounting for 83 percent of total visitation in this category.

Roadless areas used by outfitter/guides serving groups of more than 12 persons on the north part of the Tongass in 2000 included Granite Cove, Idaho Inlet, Pinta Cove, and Trail River, all in the Chichagof Roadless Area. Activities reported in these areas were hiking and nature viewing, with the average length of visit generally ranging from 1 to 3 hours and an average group size ranging from 32 (Pinta Cove) to 60 (Granite Cove). Outfitter/guides also reported relatively large group sizes for hiking parties at Williams Cove in the Taku-Snettisham Roadless Area, with an average length of visit of 1 to 2 hours and an average group size of 58. Hiking use involving large groups was also reported at Kelp Bay in the North Baranof Roadless Area, with an average length of visit of 2 to 3 hours and an average group size of 56. These areas are all included in the Natural Setting LUD group and included in Table 3.3-31 under the RSNT category.

**Table 3.3-31  
Outfitter/Guide Use on the North Part of the Forest by Activity and LUD Group, 2000**

	Fishing			Hunting			Remote Setting Nature Tours			Total		
	Groups	Clients	Average Group Size	Groups	Clients	Average Group Size	Groups	Clients	Average Group Size	Groups	Clients	Average Group Size
	<b>Number</b>											
Intensive Development	12	68	6	43	81	2	26	215	8	81	364	4
Moderate Development	126	645	5	48	77	2	41	246	6	215	968	5
Natural Setting	469	1,855	4	298	522	2	2,270	23,272	10	3,037	25,649	8
Wilderness	267	1,066	4	275	446	2	490	4,369	9	1,032	5,881	6
<b>Total</b>	<b>874</b>	<b>3,634</b>	<b>4</b>	<b>664</b>	<b>1,126</b>	<b>2</b>	<b>2,827</b>	<b>28,102</b>	<b>10</b>	<b>4,365</b>	<b>32,862</b>	<b>8</b>
<b>Percent of Total by Activity</b>												
Intensive Development	1	2	-	6	7	-	1	1	1	2	1	1
Moderate Development	14	18	-	7	7	-	1	1	1	5	3	3
Natural Setting	54	51	-	45	46	-	80	83	83	70	78	8
Wilderness	31	29	-	41	40	-	17	16	16	24	18	6
<b>Total</b>	<b>100</b>	<b>100</b>		<b>100</b>	<b>100</b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>8</b>

Notes:

1. These data include the Juneau, Sitka, and Hoonah Ranger Districts and Admiralty National Monument.
2. Data have been adjusted to exclude helicopter landing tours on the Juneau Icefields and visitors to Mendenhall Glacier, which accounted for approximately 85,000 and over 160,000 clients in 2000, respectively.

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Roadless areas used by outfitter/guides serving groups of more than 12 persons on the south part of the Forest included Betton Island (Behm Islands Roadless Area), Halleck Harbor (Keku Roadless Area), and Cascade Creek (Spires Roadless Area) in 2000 (USDA Forest Service, 2002e). A total of 12,807 remote setting nature tour days were reported for Betton Island in 2000, with an average length of visit of 1.5 hours. Outfitter/guides, mainly serving cruise ship passengers docking in Ketchikan, transport clients to the west side of Betton Island where there is a short nature trail. These nature tours serve a high volume of clients, with an average group size of 97. With several boats in operation, there is fairly continuous daily use of the area during the summer. Outfitter/guides reported hiking use at Halleck Harbor in the Keku Roadless Area, with an average length of visit of 2 to 3 hours and an average group size of 63. Two large groups were reported hiking at Cascade Creek in the Spires Roadless Area, with trip lengths of 3 hours and groups of 63 and 67.

This type of use accounts for a large number of visitors, but tends to be concentrated in relatively few areas of the Forest. Businesses providing services to these types of larger groups are heavily influenced by physical conditions that allow for large boat access and their schedules.

Helicopter landing tours are another form of outfitter/guide use that has been increasing in popularity in recent years. Of 632,000 cruise ship passengers visiting Juneau in 2000, 85,531, or 14 percent, participated in helicopter landing tours on the Juneau Icefield (Tables 3.3-28 and 3.3-29). These tours to the Juneau Icefield involve high volumes of people concentrated at specific locations for short periods of time, typically 2 to 4 hours. Helicopter traffic, in groups of one to three helicopters, is almost continuous to and from icefield locations during the summer. Clients are typically outfitted and guided to walk, photograph, hike, or trek on, and explore the glacial environment. Dogsled mushing tours on the Juneau Icefield are also increasing in popularity, with 9,000 cruise ship passengers engaging in this activity in 2000 (USDA Forest Service, 2001f).

Helicopter landing tours also occur in a number of locations elsewhere on the forest, including the Revilla and Spires roadless areas. The numbers of visitors are, however, much lower than those to the Juneau Icefield. In 2000, a total of 1,205 helicopter landing tour service days were reported for the Revilla Roadless Area, east of Ketchikan. A total of 727 helicopter landing service tour days were reported for the Spires Roadless Area, northeast of Petersburg.

This diversity in the range of activities and types of recreation experience offered by outfitter/guide businesses can lead to conflicts between businesses when incompatible activities occur in close proximity. Comments received during scoping for the Shoreline Outfitter/Guide Draft EIS highlighted conflicts between helicopter and wheeled airplane access on one hand and some boat or foot travel access on the other. Several comments noted that the activities of smaller operations often tend to be similar and compatible resulting in minimal conflicts, while larger operations often tend to detract from the setting and expectations of smaller groups. Some smaller operators believe that they are being displaced from their traditional use areas by larger commercial operations. On the other hand, some tour boat operators providing services to large groups felt they have been progressively excluded from areas on the Tongass National Forest over the past two decades (USDA Forest Service, 2002g).

The Outfitter/Guide Draft EIS also noted that the number of big game guides has increased substantially over the past decade, which has raised concerns that current levels of guided hunting may not be sustainable due to declining experiences and game population concerns. Some comments received on the Draft SEIS noted that growth in the guiding industry has led to these activities

expanding into portions of Southeast Alaska that were not historically subjected to this type of pressure.

While many Southeast Alaska residents support the growing tourism industry, some residents are questioning the benefits and believe that unregulated growth of this industry would be detrimental with high social costs to communities. Many people commenting during the scoping process for the Shoreline Outfitter/Guide Draft EIS indicated that the existing or increasing level of commercial use is causing crowding or displacement of local residents and independent travelers who recreate on the Forest (USDA Forest Service, 2002). The Shoreline Outfitter/Guide EIS also noted that while most respondents commenting on that document supported limits on commercial use, many were concerned about the economic impacts of restrictions and limitations on commercial use.

### Environmental Consequences

**Direct, Indirect, and Cumulative Effects**

This section describes the potential direct, indirect, and cumulative effects of the proposed alternatives on recreation and tourism. The section is divided into two broad parts that address the supply of recreation opportunities and use and demand, respectively. The supply section discusses the effects of the alternatives on the existing supply of recreation opportunities in terms of the Forest Service’s ROS classes and inventoried Recreation Places on the Tongass. The use and demand section discusses the potential effects on resident recreation, tourism, commercial outfitter/guide use, and projected demand by ROS setting.

**Effects on Supply**

The following section discusses the potential effects of the proposed alternatives upon ROS settings and recreation places.

### Recreation Opportunity Spectrum

As discussed in the preceding affected environment section, the ROS system is designed to help identify and quantify different types of recreation setting on the Tongass National Forest and portrays the appropriate combination of activities, settings, and experience expectations along a continuum that ranges from highly modified to primitive environments. The Forest-wide mix of ROS settings would vary by alternative. Estimated acres by ROS setting and alternative are presented in Table 3.3-32. The changes shown in this table are long-term changes that are expected to occur 150 years in the future and would take place gradually over several decades. ROS settings were projected to change in those areas allocated to intensive and moderate development LUDs. As a result, changes in settings are related to projected levels of future development.

Viewed in terms of total Forest-wide acres, Alternatives 6 and 8 would provide the greatest amount of primitive and semi-primitive opportunities, with little change occurring from the existing condition. Alternatives 1, 2, and 4 would result in the greatest shift from the existing condition to roaded opportunities, followed by Alternatives 3, 5, and 7, respectively. These shifts would occur as a result of development activities. The Rural and Urban classes remain essentially the same as the existing situation under all alternatives. The ROS projections provide a general overview of how the recreation settings of the Forest would change over time with each alternative. Roaded Modified areas, which currently comprise 11 percent of the Forest, would increase by nearly 73 percent under Alternatives 1, 2, and 4 to make up about 19 percent of Forest-wide acres. Even under these alternatives, however, 70 percent of the Forest would remain at the undeveloped end of the opportunity spectrum in 150 years.

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**Table 3.3-32  
Forest-wide Recreation Opportunity Spectrum (ROS) Acres after 150 Years of  
Alternative Implementation by Alternative**

Alternative	Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Roaded Modified	Rural	Urban
Current	10,313,048 61%	3,105,834 19%	1,373,954 8%	181,511 1%	1,791,768 11%	7,362 0%	16,773,477 1
1	9,400,471 56%	2,428,871 14%	1,249,701 7%	464,577 3%	3,222,495 19%	7,362 0%	16,773,477 1
2	9,400,472 56%	2,428,871 14%	1,249,701 7%	464,577 3%	3,222,495 19%	7,362 0%	16,773,477 1
3	9,602,536 57%	2,432,936 15%	1,264,499 8%	414,625 2%	3,051,519 18%	7,362 0%	16,773,477 1
4	9,425,891 56%	2,430,972 14%	1,253,418 7%	433,394 3%	3,222,440 19%	7,402 0%	16,773,518 1
5	9,703,152 58%	2,539,685 15%	1,269,378 8%	405,860 2%	2,848,058 17%	7,362 0%	16,773,494 1
6	10,308,750 61%	3,090,821 18%	1,363,155 8%	184,176 1%	1,819,354 11%	7,362 0%	16,773,617 1
7	9,953,040 59%	2,645,242 16%	1,287,946 8%	329,945 2%	2,549,959 15%	7,362 0%	16,773,494 1
8	10,308,772 61%	3,087,727 18%	1,356,872 8%	184,879 1%	1,828,022 11%	7,362 0%	16,773,634 1

Notes:

- All percentage figures are percent of total Forest acres (16,801,249). The Rural and Urban ROS settings have been combined and represent less than 1 percent under all alternatives.
  - ROS settings were projected to change in those areas allocated to the Semi-remote Recreation, Scenic Viewshed, Modified Landscape, and Timber Production LUDs. These projected changes are based on the following
    - Semi-remote Recreation: 5 percent of P, SPNM, and SPM would be converted to RN over the 150-year evaluation period.
    - Scenic Viewshed: 25 percent of P, SPNM, and SPM would be converted to RM, 25 percent of P would change to SPNM, and 50 percent of P and 75 percent of SPNM and SPM would stay the same over the 150-year evaluation period.
    - Modified Landscape: 50 percent of P, SPNM, and SPM would be converted to RM, 50 percent of P would change to SPNM, and 50 percent SPNM and SPM would remain the same
    - Timber Production: 80 percent of P, SPNM, and SPM would be converted to RM, 10 percent of P, SPNM, and SPM would change to RN, 10 percent of P would become SPNM, and 10 percent of SPNM and SPM would remain the same.
- assumptions:  
P=Primitive; SPNM=Semi-primitive Non-motorized; SPM=Semi-primitive Motorized; RN=Roaded Natural; RM=Roaded Modified; R=Rural; U=Urban
- The total acres by ROS class shown in this table is slightly lower than the Forest-wide total because the ROS inventory does not include the entire Forest.

It may be noted that these projections assume for the purposes of analysis that the supply of SPM settings would not increase over time. This is not necessarily the case. The ROS system helps identify, quantify, and describe recreation settings and essentially represents an inventory of existing recreation areas. Shoreline areas or other areas accessible by floatplane or helicopter that are presently allocated to P or SPNM settings could be reallocated to the SPM setting in the future if patterns of use or other factors change. This type of change would result in an increase in the supply of SPM settings.

**Recreation Places**

This analysis assesses the potential effects of the proposed alternatives upon recreation places based on projected changes in the LUDs within which these places are located. In general, the Intensive and Moderate Development categories would provide Roded Modified and Roded Natural setting opportunities in the future if they are not currently in these settings. Recreation places in the Natural Setting and Wilderness groups would likely retain their existing settings. It is important to remember that these effects are the result of long-term changes that are expected to occur gradually during the next 150 years.

**Home Range Recreation Places**

Home range recreation places are those inventoried recreation places within an approximate 20-mile radius from one or more communities. These places are displayed by LUD and alternative in Table 3.3-33. Home range recreation places in development LUDs would range from 13 percent of total home range acres under Alternative 6 to 30 percent under Alternatives 1, 2, and 4. The percent of home range recreation place acres allocated to Wilderness LUDs would range from 22 percent under Alternative 1 to 81 percent under Alternative 8.

**Important Recreation Places**

Recreation places are identified as either important or ordinary/common based on five categories: facilities, marine, hunting, fishing, and tourism. Individual recreation places may be important for one, several, or none of these categories. The following sections discuss the long-term effects of the proposed alternatives upon important recreation places by category.

**Facilities.** The long-term effects of the proposed alternatives on important recreation places with facilities are summarized in Table 3.3-34. These effects are presented in terms of the percentage of recreation place acres by LUD group, which indicates the general degree of development that each alternative would have on existing recreation places with important facilities. The potential effects of development would likely vary by the type of facility. The importance of a remote public recreation cabin may, for example, be enhanced greatly by the solitude and natural scenery the area provides. This type of setting may be of only secondary importance for a similar cabin where the attraction might be the outstanding steelhead fishing in the spring.

**Table 3.3-33  
Home Range Recreation Places by LUD and Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	30	48	22
2	30	41	30
3	29	44	27
4	30	45	26
5	26	34	39
6	13	53	34
7	24	29	47
8	14	5	81

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**Table 3.3-34  
Recreation Places Important for Facilities by LUD and  
Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	14	45	41
2	14	40	47
3	14	42	44
4	14	43	43
5	13	32	55
6	7	45	48
7	12	28	60
8	7	4	89

Approximately 29 percent of inventoried recreation places acres are currently important for recreation facilities. The overall percentage of acres that would be allocated to development LUDs is fairly consistent across alternatives, ranging from 7 percent (Alternatives 6 and 8) to 14 percent (Alternatives 1 through 4). Alternative 8 would have the highest proportion of recreation place acres (89 percent) important for facilities allocated to wilderness LUDs (Table 3.3-34). Forty-eight percent of recreation place acres important for facilities would be allocated to wilderness LUDs under Alternative 6, with 45 percent in natural setting LUDs.

Designating areas wilderness could have an effect on the facilities presently in these areas and would have an effect on future development of facilities. With respect to existing facilities, it is possible that designating certain areas wilderness could create management situations that are inconsistent with wilderness management guidelines. This may, for example, be the case with the wildlife observatory at Anan Creek, which received approximately 2,500 visitors in 2000. If the Anan Roadless Area were designated wilderness, which would be recommended under Alternatives 2, 5, 7, and 8, the area would be managed to be consistent with wilderness guidelines. This would likely involve limiting party sizes and managing the area to meet the appropriate levels of social encounters. It may also be necessary to redesign or remove the current wildlife observatory facilities. An alternate solution might involve including the observatory within the Recommended Wilderness area as an enclave or pre-existing use.

Public recreation cabins are another example of existing facilities that may be affected in areas designated wilderness. Existing recreation cabins may be inconsistent with wilderness design guidelines and might need to be redesigned or removed. This may, for example, be the case with large cabins that are primarily used by outfitter/guides. There are currently a total of 155 public use cabins on the Tongass, 53 and 76 of which are located within existing wilderness and roadless areas, respectively. The number of cabins located in areas that would be allocated to Recommended Wilderness is identified by alternative in Table 3.3-35. This table provides a count of all public recreation cabins located in areas that would be allocated to Recommended Wilderness. It does not identify those cabins that could need to be redesigned or removed. It should be noted that allocating areas to Recommended Wilderness would have no effect on existing facilities. Potential effects would only occur if an area were designated wilderness by Congress and existing facilities would be evaluated on a case-by-case basis at that time.

**Table 3.3-35  
Number of Cabins in Recommended Wilderness by Alternative**

	Alternative							
	1	2	3	4	5	6	7	8
Number of Cabins in Recommended Wilderness	0	13	12	12	28	14	36	76

Notes: There are a total of 155 public recreation cabins located on the Tongass, of which 76 are located in inventoried roadless areas. 53 cabins are currently located in existing Wildernesses.

Designating an area wilderness would also have effects on the potential development of facilities in that area in the future, as well as recreation-related capital improvements that are currently proposed. New public use cabins and shelters would, for example, only be considered when needed for health and safety purposes. Factors considered in a public health and safety need analysis include difficulty of access, particularly with regard to timely pick-up of users, presence of natural hazards, history of fatalities and life-threatening incidents, and natural attractions that entice people to use a particular area. Potential effects on the development of tourism-related facilities are discussed in the tourism portion of this effects discussion.

A review of recreation-related capital improvements proposed for the period 2003 to 2006 (proposals for 2005 and 2006 are currently tentative) suggests that only one of the proposed projects would likely need to be scaled back if the area it is proposed for were recommended for wilderness. This proposed project, which involves developing facilities at Anan at an approximate cost of \$270,000, would be affected under Alternatives 2, 5, 7, and 8. The remaining proposed projects would likely go ahead if the areas they are proposed for were recommended for wilderness. Costs would, however, likely increase by about one-third for those projects in wilderness. Estimated costs for the proposed projects, with the exception of the Anan facility construction project, would total approximately \$6.3 million under Alternative 1 (Table 3.3-36). Assuming that the costs of the projects that would be located in Recommended Wilderness increased by one-third would result in cost increases equivalent to one percent of the total estimated cost under Alternatives 2, 3, and 4. Projected cost increases under Alternatives 5, 6, and 7 would be approximately 4, 2, and 5 percent, respectively. Projected cost increases under Alternative 8 would be approximately 25 percent.

**Marine.** The long-term effects of the proposed alternatives on recreation places that are important for marine recreation are summarized in Table 3.3-37. These effects are presented in terms of the percentage of recreation place acres by LUD group. The perception of naturalness and scenery are very important values among Forest visitors engaged in the unique marine recreation opportunities offered by the Tongass. Approximately 32 percent of inventoried recreation places acres are currently important for marine recreation activities. Many of these recreation places are within the beach fringe and are allocated to the Semi-primitive Motorized ROS.

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**Table 3.3-36  
Potential Increase in Recreation-Related Capital Improvement  
Costs, 2003-2006, by Alternative**

	Alternative						
	2	3	4	5	6	7	8
Estimated CIP Cost Increase	1%	1%	1%	4%	2%	5%	25%

Notes: CIP = Recreation-Related Capital Improvement Project

1. Total estimated costs under Alternative 1 are approximately 6.3 million. Proposals for 2005 and 2006 are currently tentative.

2. Estimated cost increases are approximate.

**Table 3.3-37  
Recreation Places Important for Marine Recreation by LUD and  
Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	22	43	36
2	22	35	43
3	21	39	40
4	22	40	39
5	18	27	55
6	8	44	48
7	15	22	63
8	8	3	89

The overall percentage of recreation place acres that are important for marine recreation and would be allocated to development LUDs ranges from 8 percent (Alternatives 6 and 8) to 22 percent (Alternatives 1, 2, and 4). Alternatives 7 and 8 would have the highest proportion of recreation place acres in this category allocated to wilderness.

**Hunting.** The long-term effects of the proposed alternatives on recreation places that are important for hunting are summarized in Table 3.3-38. These effects are presented in terms of the percentage of recreation place acres by LUD group. Hunters who favor hunting in an undisturbed, natural setting would likely prefer those alternatives that have the most acres in the Natural Setting and Wilderness groups. Hunters who prefer using roads and road access would generally benefit from those alternatives with more acres in the intense and moderate groups. Approximately 41 percent of inventoried recreation places acres are currently important for hunting.

The overall percentage of recreation place acres that are important for hunting and are allocated to development LUDs would range from 8 percent (Alternatives 6 and 8) to 29 percent (Alternatives 1 through 4). Alternatives 7 and 8 would have the highest proportion of recreation place acres in this category allocated to wilderness.

**Table 3.3-38  
Recreation Places Important for Hunting by LUD and  
Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	29	44	26
2	29	33	38
3	29	41	30
4	29	42	29
5	19	26	55
6	8	46	45
7	15	19	66
8	8	3	88

**Fishing.** The long-term effects of the proposed alternatives on recreation places that are important fishing places are summarized in Table 3.3-39. These effects are presented in terms of the percentage of recreation place acres by LUD group. The standards and guidelines for all alternatives maintain fish habitat. The quantity of fish availability would likely remain constant across alternatives and immediate stream side areas would remain natural. However, access to streams and areas immediately adjacent to streams may be subject to modifications at various levels. This may affect the quality of the fishing experience for some. Approximately 14 percent of inventoried recreation places acres are currently important for fishing.

Alternatives with more acres in the Intensive and Moderate Development LUD groups would generally provide increased road access to fishing areas. However, the setting adjacent to the stream side corridors would appear more modified over time. The Natural Setting and Wilderness LUD groups maintain the settings in a more natural condition, with access generally more challenging. Access may affect the quality of the fishing experience regardless of the degree of setting changes leading up to the stream.

The percentage of recreation place acres that are important for fishing and would be allocated to development LUDs ranges from 10 percent (Alternatives 6 and 8) to 27 percent (Alternatives 1 through 4). Alternatives 7 and 8 would have the highest proportion of recreation place acres in this category allocated to wilderness.

**Effects on Use and Demand**

The alternatives being evaluated in this SEIS specifically address new wilderness-type recommendations, ranging from no additional wilderness under Alternative 1 to maximum wilderness under Alternative 8. The following section is divided into four parts that discuss the potential effects of the alternatives in terms of resident recreation use, tourism, commercial outfitter/guide use, and projected recreation demand by ROS setting.

**Resident Recreation**

Wildernesses on the Tongass National Forest are managed for Primitive and Semi-Primitive ROS settings that emphasize existing opportunities, while recognizing exceptions due to ANILCA authorizations and development activities outside of wilderness. Recreation activities are managed to meet the appropriate levels of social encounters, on-site development, methods of access, and visitor impacts indicated by the applicable ROS settings. General public use of wilderness is provided in accordance with ANILCA provisions for the use of

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**Table 3.3-39  
Recreation Places Important for Fishing by LUD and  
Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	27	42	31
2	27	35	38
3	27	37	36
4	27	37	35
5	22	26	52
6	10	49	41
7	21	24	55
8	10	5	85

snowmachines, motorboats, fixed-wing airplanes, and nonmotorized surface transportation methods for traditional activities that are legal and for travel to and from villages and homesites. Traditional activities include, but are not limited to, recreation activities such as sport fishing, sport hunting, boating, sightseeing, and hiking.

Forest-wide LUD allocations are presented by alternative in Table 3.3-40. This table also highlights the net change in development LUDs from Alternative 1. Net changes would range from 0 under Alternatives 2 and 4 to -70 and -69 percent of the Forest under Alternatives 6 and 8, respectively. This long-term preservation of Primitive and SPM ROS settings is reflected in Table 3.3-32, which shows projected changes in ROS settings 150 years into the future. The effects of the LUD allocations on important recreation places are discussed in the preceding section.

In many cases, designating new wilderness would be unlikely to affect current resident recreation use patterns in the short term. This lack of short-term change reflects the relatively unique nature of the Tongass with respect to other National Forests in the United States. The Tongass is unique in terms of its size and also the types of access that are permitted under ANILCA. Approximately 10.3 million acres, or 61 percent, of the Forest are presently classified under the Primitive ROS, with an additional 3.1 million acres (18 percent) assigned to SPM and 1.4 million acres (8 percent) assigned to SPM (Table 3.3-32). Designating areas presently characterized by one of these ROS settings as Wilderness would have little immediate effect on management activities in many of these areas and it would still be possible to access areas by motorboat and nonmotorized surface transportation methods. In these cases, the effects of designating new wilderness or LUD II would be felt in the long term as the existing character of certain areas would be permanently preserved affecting the type of recreation use that would be possible in the future. This would be especially the case for those areas that would be otherwise allocated to development LUDs.

In other cases, existing recreation use patterns could be affected because the number of visitors to an area may need to be limited to meet an appropriate level of social encounters. Areas currently receiving heavy use that could be affected by wilderness designation include the Anan, Revilla, Sitka Urban, and Juneau Urban Roadless Areas. As noted in the facilities discussion, designating an area wilderness could also potentially affect existing facilities that are not consistent with wilderness management guidelines. These types of changes could also affect resident recreation patterns. Helicopter landings for public access in areas

**Table 3.3-40  
Forest-Wide LUD Allocations and Net Change in Development LUDs  
by Alternative (percent)**

Land Use Designation	Alternative							
	1	2	3	4	5	6	7	8
Recommended Wilderness/Wilderness NM	---	4	6	4	12	19	28	57
Wilderness/Wilderness NM	35	35	35	35	35	35	35	34
Development LUDs	22	22	20	22	18	7	15	7
Non-development LUDS	43	39	38	39	35	39	22	2
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Net Change in Development LUDS from Alternative 1 (percent)	n/a	0	-7	0	-16	-70	-31	-69

Notes:

Wilderness NM = Wilderness National Monument

n/a = not applicable

designated wilderness would be limited to specific helicopter access areas. This could potentially limit access via helicopter for winter sports, such as cross country skiing.

Designating areas wilderness could also restrict the type of recreation activities allowed to develop in those areas in the future. Additional public use cabins and/or shelters would only be considered when needed for health and safety purposes. Trail development could also be affected, with trails managed to emphasize primitive and semi-primitive recreation opportunities and closed to motorized use.

It should be noted that allocating areas to Recommended Wilderness would have limited effects on existing resident recreation use. Potential effects would only occur if an area were designated wilderness by Congress.

### Tourism

As discussed with respect to outfitter/guide use in the affected environment section, the tourism industry and outfitter/guides in Southeast Alaska offer a wide spectrum of recreation activities, ranging from guided bear hunting through helicopter tours and guided wildlife-viewing boat tours. Some activities require developed facilities, utilities, and easy access, while others require vast and remote areas in a natural setting, with outfitter/guides providing only the basic essentials for their clients.

### Important Recreation Places

The effects of the proposed alternatives on recreation places that are important for tourism are summarized in Table 3.3-41. These effects are presented in terms of the percentage of recreation place acres by LUD group. Approximately 56 percent of inventoried recreation places acres are currently considered important for tourism. All of the proposed alternatives provide a mix of opportunities (although some emphasize those in natural settings), while others provide for those in developed settings. These changes may be viewed as opportunities or detriments to various sectors of the tourism industry and their clients. Based on numerous surveys and marketing campaigns for visitors, it is widely accepted that natural beauty and scenery are some of the principal factors

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**Table 3.3-41  
Recreation Places Important for Tourism by LUD and  
Alternative (% of Acres)**

Alternative	Development	Natural Setting	Wilderness
1	15	39	46
2	15	31	54
3	14	37	49
4	15	37	48
5	13	26	62
6	5	37	58
7	10	19	71
8	5	2	93

attracting visitors to the region. However, the State and part of the tourism industry have expressed a desire for increased access and opportunities for development, as they believe that existing areas are at or near capacity.

The overall percentage of recreation place acres that are important for tourism and would be allocated to development LUDs ranges from 5 percent (Alternatives 6 and 8) to 15 percent (Alternatives 1, 2, and 4). Alternatives 7 and 8 would have the highest proportion of recreation place acres in this category allocated to wilderness.

Designating areas that are important for tourism as wilderness could affect existing use of these areas by restricting outfitter/guide and general use to be consistent with wilderness management guidelines. Existing facilities in these areas could potentially require modification and future developments in these areas would be restricted, as discussed in the preceding *Important Recreation Places* subsection. The following section addresses the potential effects of the alternatives on future tourism developments.

#### **Developments**

The Recreation and Tourism Forest-wide Standards and Guidelines in the 1997 Forest Plan address commercial development of facilities and opportunities by LUD. Developments are classified as either major or minor. Abbreviated definitions of these terms are provided below.

**Major Development.** Major recreation and tourism developments provided by the private sector involve a long-term commitment of the land base, with a moderate to high level of site modification. They involve large buildings or complexes of buildings and facilities, and often provide several services in a concentrated area. Comfort and convenience are provided for guests, and facilities can generally accommodate more than 12 people. Subsequent site reclamation involves extensive removal of facilities and improvements, revegetation, recontouring, etc., and greater than 5 years to attain a natural appearance.

Examples of this type of development include destination resorts and lodges, food and beverage services, downhill ski areas, marinas and gas stations, and full-service campgrounds.

**Minor Development.** Minor recreation and tourism developments provided by the private sector involve only minor site modifications. They involve small rustic facilities and/or improvements, generally with

a single purpose or service, and may involve several sites or an extensive area. Basic essentials are typically provided and can generally accommodate 12 or fewer people per site. Site reclamation involves simple removal of facilities and little or no revegetation; a natural appearance can be attained in a few years.

Examples of this type of development include cabins, huts, small docks, cross-country ski trails with simple facilities, temporary or portable camps, and simple and rustic campgrounds.

Table 3.3-42 summarizes the major and minor recreation development standards and guidelines by LUD. The percent of Tongass acres available for tourism development is presented by alternative in Table 3.3-43.

Both major and minor developments are prohibited in Wilderness and national monument Wilderness; therefore, neither type of development would be allowed on 92 percent of the Tongass under Alternative 8. Major developments are discouraged in LUD II areas, with minor developments considered on a case-by-case basis. Neither type of development would be allowed on less than 50 percent of the Forest under Alternatives 1 through 5 and on 53 to 62 percent under Alternatives 6 and 7. About 1 percent of the Forest would be classified as compatible with either type of development under Alternatives 6 and 8, compared with 20 percent under Alternatives 1 and 2 (Table 3.3-43).

### **Commercial Outfitter/Guide Use**

A recent survey of commercial recreation businesses in Southeast Alaska indicated that the majority of surveyed businesses were small, with the majority of firms serving less than 100 clients, a smaller number of firms serving considerably larger numbers, and one firm serving more than 100,000 clients in 1999 (Alaska DCBD, 2001). Businesses serving larger volumes tend to serve relatively large groups and concentrate their use in a few areas on the Forest.

The Shoreline Outfitter/Guide Draft EIS noted that 90 firms received permits to operate in shoreline areas on the north part of the Forest in 1999, serving a total of 14,096 clients. Of these, the five largest firms accounted for over half of the client base, and their activity was largely focused on providing hiking and sightseeing experiences for relatively large groups (freshwater fishing excursions with relatively small groups were important for one firm) (USDA Forest Service, 2002).

Businesses serving large numbers of clients could be negatively affected if one or more of the areas they regularly use are designated wilderness. Outfitter/guide permits may be issued for wilderness if there is demonstrated need for the service and they are deemed appropriate for the area proposed. Current wilderness management standards and guidelines on the Tongass, however, direct the District Ranger to generally consider a party size of no more than 12 persons for any one site or activity. This restriction on party size generally applies to lands inventoried as Primitive ROS settings. Party sizes in Semi-primitive ROS settings outside of Wilderness, such as SPNM and SPM in LUD II areas, should generally be limited to 12 to 20 people. Larger party sizes may be allowed in some limited instances (see USDA Forest Service, 1997b, page 4-41).

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**Table 3.3-42  
Major and Minor Recreation Developments by LUD**

	Major	Minor
<b>Not Allowed</b>	Wilderness Wilderness National Monument Research Natural Area Wild River	Wilderness Wilderness National Monument Research Natural Area
<b>Discouraged</b>	Nonwilderness National Monument Remote Recreation Municipal Watershed LUD II Experimental Forest	Municipal Watershed Experimental Forest
<b>Case-by-Case</b>	Special Interest Area Old-growth Habitat Scenic River Modified Landscape Timber production Minerals Transportation and Utility Systems	Nonwilderness National Monument Remote Recreation Special Interest Area Old-growth Habitat Wild River Modified Landscape Timber production Minerals Transportation & Utility System LUD II
<b>Compatible</b>	Semi-remote Recreation Recreational River Scenic Viewshed	Semi-remote Recreation Recreational River Scenic Viewshed Scenic River

**Notes:**

**Not Allowed:** Recreation special-use developments are not allowed by law or regulation or are not consistent with agency policy and regulations.

**Discouraged:** Recreation special-use developments are generally not consistent with the objectives of the LUD. Development proposals require scrutiny of magnitude and scope for LUD conformance.

**Case-by-Case:** Recreation special-use developments may be compatible with the LUD objectives depending upon the scope, purpose, and magnitude of the proposal. Proposals will be evaluated on a case-by-case basis.

**Compatible:** Recreation special-use developments are generally compatible with this LUD, and applicants are encouraged to examine these areas first where there is a public need and no private lands are available or suitable for development.

Source: USDA Forest Service, 1997a (Table 3-51).

**Table 3.3-43  
Percent of Tongass Acres Available for Tourism Developments**

	Alternative							
	1	2	3	4	5	6	7	8
<b>Major Developments</b>								
Not Allowed	35	39	41	39	47	53	62	92
Discouraged	18	14	18	18	14	39	8	0
Case-by-case	27	27	25	26	22	7	19	7
Compatible	20	20	16	16	18	1	11	1
<b>Minor Developments</b>								
Not Allowed	34	39	41	39	46	53	62	92
Discouraged	0	0	0	0	0	0	0	0
Case-by-case	45	41	43	44	36	45	26	7
Compatible	20	20	16	16	18	1	11	1

Roadless areas used by outfitter/guides serving groups of more than 12 persons on the north part of the Tongass in 2000 included Granite Cove, Idaho Inlet, Pinta Cove, and Trail River (all in the Chichagof Roadless Area); Williams Cove (Taku-Snettisham Roadless Area); and Kelp Bay (North Baranof Roadless Area). Data compiled for the south portion of the Tongass indicate that permitted outfitter/guides served 19,179 clients in inventoried roadless areas on the south portion of the forest in 2000. Roadless areas used by outfitter/guides serving groups of more than 12 persons included Betton Island (Behm Islands Roadless Area), Halleck Harbor (Keku Roadless Area), and Cascade Creek (Spires Roadless Area) in 2000 (USDA Forest Service, 2002e).

Businesses that rely on serving large group sizes in areas designated wilderness could either be displaced to other areas or forced to change their operations. These types of potential effects could be significant under Alternative 8, which would allocate all inventoried roadless areas to Recommended Wilderness. Under this alternative, if party sizes were limited to no more than 12 persons in all of these areas, there would be few locations on the Forest that could accommodate large outfitter/guide groups seeking undeveloped areas. Displacing large guided tours from one location to another could also negatively affect users at other locations. In some locations, potential impacts on high volume outfitter/guide businesses might be mitigated by wilderness boundary adjustments, such as set backs from the shoreline, for example, or inclusion within wilderness as a pre-existing use.

At the same time, limiting the size of groups could serve to benefit other, smaller outfitter/guide businesses. The Alaska DCBD survey also asked questions about the sensitivity of businesses to competing forms of land use. High concentrations of other recreationists, particularly group sizes over 50, were identified by respondents as one of two factors having the greatest negative effect on their business (the presence of jet skis was the other).

Some comments received on the Draft SEIS pointed out that designating additional Wilderness or LUD II areas would have positive effects on outfitter/guide activities because it would provide long-term protection for areas that might otherwise be developed and, in effect, placed off limit to wilderness-related recreation. Under the current Forest Plan, in most cases designating additional areas Wilderness or LUD II would represent a change from a different non-development LUD classification. In some cases, it would prevent future development, but these areas represent a relatively small portion of the Tongass. In the short term, viewed from a programmatic perspective, it is not expected that designating additional Wilderness or LUD II areas would have a substantial effect on the availability of undeveloped areas. Under the current Forest Plan, the potential effects of development activities on other resources, including other human uses, such as outfitter/guide use, are analyzed in detail on a project-by-project basis. Wilderness or LUD II designation would, however, provide more assurance of long-term protection than the LUD classifications in the current Forest Plan that are subject to review during subsequent Forest Plan revisions.

The percentage of total acres on the Tongass National Forest that would be recommended for wilderness under each alternative is summarized by alternative in Table 3.3-40. These numbers provide some indication of the percentage of the Forest that could be placed off-limits to high volume outfitter/guide businesses by alternative. The percent of acres of recreation places considered important for tourism that would be recommended for wilderness is presented by alternative in Table 3.3-41. These figures represent the percentage of Forest-wide recreation place areas important for tourism that would likely not be accessible to commercial groups of more than 12 persons. Approximately 66 percent and 88 percent of recreation place acres important for tourism would be

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recommended for wilderness under Alternatives 7 and 8, respectively. More than half of important tourism recreation place acres would be recommended for wilderness under Alternatives 5 and 6. Approximately 41 percent occur in wilderness under existing conditions.

Designating areas that are presently helicopter tour destinations as wilderness could negatively affect those businesses providing this service. This would likely be the case with Alternative 8, which recommends wilderness designation for the roadless area that contains the Juneau Icefield. As discussed in the affected environment section, the Juneau Icefield received 85,531 visitors in 2000. Helicopter landing tours also occur in a number of locations elsewhere on the forest, including the Revilla and Spires roadless areas. The numbers of visitors are, however, much lower than those to the Juneau Icefield. The Revilla Roadless Area would be allocated to Recommended Wilderness under Alternative 8. The Spires Roadless Area would be allocated to Recommended Wilderness under Alternatives 3, 4, 6, 7, and 8.

It should be noted that allocating areas to Recommended Wilderness would have limited effects on existing outfitter/guide use. Potential effects would only occur if an area were designated wilderness by Congress.

#### Recreation Demand and Supply by ROS Setting

The 1997 Tongass Forest Plan Revision Final EIS identified a general concern among various groups about the capacity of the recreation resource base on the Tongass. This concern was also expressed by respondents commenting on the Draft SEIS. This section briefly discusses recreation demand by ROS setting. This is discussed in more detail in the *Economic and Social Environment* section of this document.

As discussed earlier in this section, precise information on recreation and tourism use on the Tongass is not available. Projections of future use were developed for the purposes of the recreation economics analysis based on RVD data compiled for 1984 through 1995 (see the *Economic and Social Environment* section of this document). Supply was estimated based on the distribution of ROS settings by recreation place. Recreation places were assigned an approximate capacity in RVDs based on their ROS class for the purposes of the 1997 Forest Plan Revision Final EIS analysis. The ratios of RVDs to ROS acres developed for the 1997 Tongass Forest Plan Revision Final EIS analysis are also used in the analysis presented in this document.

Forest-wide total recreation place capacity is estimated to be approximately 6.3 million RVDs (Table 3.4-7). This estimated capacity is, as noted above, based on ROS settings and will, therefore, change over time with changes in ROS settings. Each ROS group has a maximum capacity per acre based on the type of experience expected within the setting. ROS 1 has the lowest capacity per acre because it provides a setting for primitive activities in which users expect to be out of sight or sound of other users. ROS 2 has a larger capacity per acre than ROS 1, but users in this setting expect to see only a few other parties during their trip. ROS 3 has the highest capacity and offers opportunities for users to interact frequently with others.

The recreation economics analysis presented in the *Economic and Social Environment* section of this document, found that viewed in ROS terms the largest component of use on the Tongass is in the Semi-Primitive Motorized (ROS 2) category. Much of this use involves shoreline areas accessed by motor boats, with the land base in these areas often receiving limited use. Estimates for

1994 indicated that this ROS class accounted for approximately 62 percent of all RVDs occurring on the Tongass. The analysis summarized in the *Economic and Social Environment* section projected that the number of RVDs demanded in the ROS 2 category would exceed the existing supply in recreation places within a decade. It is, however, important to recognize that this analysis was developed for the purposes of the economic analysis and is based on a number of simplifying assumptions that limit its usefulness for more general assessments of future supply and demand. There are a number of important caveats that need to be noted. These include concerns with the baseline data, difficulties with projecting future demand over long periods, and the use of a linear projection in this analysis. These and other demand estimate-related concerns are discussed in the Affected Environment portion of the *Economic and Social Environment* section.

It is also important to note that the supply of ROS settings used in the recreation economics analysis is limited to identified recreation places, with most of the demand also assumed to occur in these places. There are an estimated 831,000 ROS 2 (SPM) acres in identified recreation places (Table 3.3-23), compared to approximately 1.4 million ROS 2 acres Forest-wide (Table 3.3-22). The recreation economic analysis assumes that demand would continue to focus on ROS 2 areas in recreation places and, therefore, exceed supply in these areas. Viewed on a Forest-wide basis, ROS 2 demand would not exceed Forest-wide supply until sometime after 2010.

The supply projections used in this analysis also assume that the supply of ROS 2 settings in identified recreation places will not increase over time. This is not necessarily the case for identified recreation places or the Forest as a whole. The ROS system helps identify, quantify, and describe recreation settings and essentially represents an inventory of existing recreation areas. Shoreline areas or other areas accessible by floatplane or helicopter that are presently allocated to P or SPNM settings could be reallocated to the SPM setting in the future if patterns of use or other factors change. This type of change would result in an increase in the supply of SPM settings.

Designating areas wilderness would preclude certain development activities and ensure that the designated area maintains its primitive character. Viewed in these terms, the proposed alternatives with the largest amount of Recommended Wilderness are less likely to result in the creation of new roaded recreation opportunities over time. Projected ROS settings are shown by alternative for 150 years in the future in Table 3.3-32. ROS settings were projected to change over time in those areas allocated to the Semi-remote Recreation, Scenic Viewshed, Modified Landscape, and Timber Production LUDs. The assumptions used to project these changes are identified in Table 3.3-32, footnote 2. Development activities are generally assumed to convert Primitive (P and SPNM [ROS 1]) and Semi Primitive Motorized (SPM [ROS 2]) settings to roaded settings (ROS 3), primarily Roaded Modified. As noted above with respect to the recreation economics analysis, the Forest-wide analysis presented in this section implicitly assumes that the supply of primitive and SPM settings is fixed and finite. As a result, none of the proposed alternatives are assumed to increase the supply of Semi Primitive Motorized settings over the 150-year study period. In fact, the supply of SPM settings is projected to decrease across all alternatives with projected declines ranging from about 16,000 acres, or 1.1 percent, under Alternative 8 to 125,000 acres, or 9.1 percent, under Alternatives 1 and 2 (Table 3.3-32).

The percentage of acres classified as Roaded Modified would increase over the 150-year period for all of the alternatives, with the exception of Alternatives 6

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and 8. Alternatives 1, 2, and 4 show the largest gain, with the percent of Forest-wide acres classified as Roded Modified increasing from 11 percent to 19 percent (Table 3.3-32). As previously noted, even under these alternatives 70 percent of the forest would remain at the undeveloped end of the opportunity spectrum.

## Scenery

### Affected Environment

The Tongass National Forest offers a variety of scenery to its visitors, from spectacular mountain ranges and the glaciers of the mainland to low-lying marine landscapes composed of intricate waterways, bays, and island groups. The Forest is viewed from a variety of vantage points, including the communities of Southeast Alaska, the Alaska Marine Highway ferry route, cruise ship routes, existing road systems, popular small boat routes and anchorages, developed recreation sites and facilities, and hiking trails. Tourist related flight-seeing via small aircraft is increasing in popularity and provides aerial views of the forest landscape.

This section addresses the current visual condition in the Tongass and the visual quality management objectives as adopted by the 1997 Tongass Forest Plan.

The Tongass is characterized by everything from vast tracts unmodified by human activity to extensive areas of heavily modified landscapes. An inventory of the existing visual condition (EVC) is used to document the degree of alteration that presently exists within an area. These ratings apply to the broad landscape affected, not just the acres altered. An EVC rating of I through IV categorizes the degree of alteration on the landscape on a continuum from a natural setting to a heavily altered landscape. Examples of these ratings are as follows: EVC I depicts a visually unaltered landscape; EVC III has alterations that might be noticed by the average person, but they do not attract attention; EVC V has changes to the landscape that are obvious to the average visitor and dominate the landscape; and EVC VI describes land with alterations that are in glaring contrast to the landscape.

Table 3.3-44 displays the acres of each EVC for the Tongass. In this and succeeding tables, a breakdown between “seen” and “seldom-seen” areas is presented. Seen areas are those areas that can be viewed in the foreground, middleground, or background from the inventoried travel routes and use areas (sensitivity level 1 or 2). Seldom-seen areas are all the rest of the Forest. The EVC for wilderness is also included in this table. Approximately 88 percent of the Tongass is rated in a Type I EVC, which is a visually unaltered condition. About 10 percent of the land is rated in a Type IV, V, or VI EVC, which is an indication of a noticeable development activity. The remainder of the Forest is rated as EVC II or III. Some of the wilderness is rated in an EVC higher than EVC I. This is mostly due to the landscape effect of developments adjacent to wilderness and to past development activities within wildernesses.

The Forest Service developed a Visual Management System (VMS) to inventory scenic resources and to provide measurable scenic quality management standards. Applying the VMS, forest landscape architects consider the relative scenic quality of each portion of the landscape and its sensitivity based on the visibility and the uses

**Table 3.3-44**  
**The Existing Visual Condition of the Tongass National Forest**

EVC Rating	Type I	Type II	Type III	Type IV	Type V	Type VI
Seen	3,863,034	28,828	189,482	267,297	562,659	24,911
Seldom-seen	5,034,075	12,895	41,431	237,898	556,098	14,505
Wilderness	5,645,856	20,695	15,234	21,412	3,701	–
<b>Subtotals</b>	<b>14,542,966</b>	<b>62,418</b>	<b>246,147</b>	<b>526,607</b>	<b>1,122,458</b>	<b>39,416</b>

Note: Less than 2 percent of the Forest is unclassified.

### 3 Environment and Effects

in the surrounding areas. The results of this analysis are used in Forest Plans, where management prescriptions and adopted Visual Quality Objectives (VQOs) are established for all National Forest System land.

Under the 1997 Forest Plan, all land has a designated LUD, which guides the types and intensity of development actions. The VQOs define the degree to which the natural landscape can be altered, and provide guidelines for timber harvest, road building, and other activities to ensure they are conducted in a way that allows the visual objectives to be achieved. A LUD may have different VQOs depending on the distance zone (foreground, middleground, background) in which the development activity is to take place. VQOs are described in terms of Preservation, Retention, Partial Retention, Modification, and Maximum Modification. For forest management, the VQOs can be defined as follows:

- ◆ Preservation—Activities are designed so as not to be visually evident. This VQO is typically assigned to wildernesses; however, it is not used for Tongass wilderness because of the potential alterations allowed under the Alaska National Interest Lands Conservation Act (ANILCA). In reality, the vast majority of wilderness acreage will be managed through the specific wilderness plans with a preservation VQO.
- ◆ Retention—Activities are designed so as not to be visually evident to the casual forest visitor.
- ◆ Partial Retention—Activities may be evident, but will remain visually subordinate to the characteristic landscape.
- ◆ Modification—Activities may dominate the characteristic landscape, but will borrow from existing form, line, color, and texture. Alterations appear to be natural when viewed as foreground or middleground.
- ◆ Maximum Modification—Activities may dominate the characteristic landscape. Alterations appear to be natural when viewed as background.

The current adopted VQOs for all land within the Tongass is displayed in Table 3.3-45. This table separates the acres of each VQO into three categories: seen area, seldom-seen area, and wilderness. A “seen area” is land that can be viewed in the foreground, middleground, or background from travel routes and use areas classified as sensitivity level 1 or 2 in the 1997 Forest Plan. The rest of the Tongass is classified as “seldom-seen” areas.

Demand for scenic quality can best be represented by the increase in tourist-related travel to the Tongass, as well as a heightened awareness and sensitivity of Alaskan residents to scenic resource values. Southeast Alaska’s Inside Passage is advertised and promoted by the Division of Tourism, cruise ship operators, and the

**Table 3.3-45  
Adopted Visual Quality Objectives for the Tongass**

	Visual Quality Objective				
	Retention	Partial Retention	Modification	Maximum Modification	Other <sup>1</sup>
Seen Areas	1,986,932	1,665,967	464,632	742,300	63,283
Seldom-seen	2,345,232	1,611,617	26,904	1,959,175	141,638
Wilderness	5,741,484	–	–	–	–

<sup>1</sup> Includes land in the Municipal Watershed and Nonwilderness National Monument LUDs. VQOs in these LUDs are to be determined on a project-by-project basis. Generally, the Retention VQO will be met.

Source: USDA Forest Service, 1997b.

Southeast Alaska Tourism Council. Their marketing strategy focuses on the scenery of the Tongass National Forest as a major attraction. The visitor to Southeast Alaska would, therefore, arrive with expectations and an image of the environment and scenery awaiting them. If current trends continue, demand for viewing scenic landscapes will increase. Lands adjacent to the Alaska Marine Highway, cruise ship routes, flight-seeing routes, high use recreation areas, and other marine and land-based travel routes will be seen by more people, more frequently, and for greater durations.

### Environmental Consequences

The Tongass has adopted specific VQOs for each LUD in the Forest. These adopted VQOs will indicate the desired or acceptable level of human-induced alteration to the natural landscape character. The alternatives discussed in this section suggest varying degrees of additional wildernesses to the Tongass. Each alternative (not including Alternative 1) could potentially alter the visual character of the landscape by potentially adding new areas of wilderness or LUD II, and would consequently add more of the adopted VQO of Retention. The adopted VQO is, therefore, the unit used to measure potential change in visual resources for each alternative.

The potential effects to the scenic resource are described in two ways:

1. A Forest-wide display of acres of each VQO adopted as a result of each alternative, discussed by alternative. This includes all acres of the Forest including Wilderness.
2. A display of the effects of each alternative on a selected group of key viewsheds throughout the Tongass.

#### Direct, Indirect, and Cumulative Forest-wide Effects

The Forest-wide VQOs adopted under each alternative are displayed in Table 3.3-46. Seen areas, seldom-seen areas, and wilderness are included. In this table, Recommended Wilderness is included with the Wilderness acres. Under each alternative, the acres in Retention VQO will be equal to or greater than acres currently in Retention. The differences between the action alternatives are evident when looking at the current adopted VQOs (under Alternative 1) that would be changed to Retention VQO.

Adopted VQOs are best thought of as an indicator of long-term cumulative effects, especially on development LUDs. VQOs are adopted to provide a threshold for the amount of modification to the landscape during land altering activities; therefore, land may have an adopted VQO of Modification, but currently meet the Retention VQO.

Another way to assess the relative effects of the alternatives on scenic quality is to compare the acres allocated to the moderate and intensive development LUDs (Experimental Forest, Scenic Viewshed, Modified Landscape, Timber Production), with the LUDs for the Natural Setting or Wilderness LUD Groups. These comparisons are shown in Table 2-24 and Figure 2-9 in Chapter 2.

**Alternative 1.** Under Alternative 1, most of the Forest, or 60 percent, would have an adopted VQO of Retention and would be managed for a natural setting. This alternative would protect the natural character of most key viewsheds by allocating LUDs with an adopted VQO of Retention, at least for activities in the foreground distance zone. About half of the land with Retention VQO would be within wildernesses. A Partial Retention VQO is adopted for approximately 20 percent of the Forest under Alternative 1. Landscapes with this VQO are managed to achieve a mostly natural condition. Much of the land with a Partial Retention VQO is allocated to the Semi-remote Recreation LUD and realistically meets the Retention VQO.

### 3 Environment and Effects

**Table 3.3-46  
Estimated Percentage of Forest Classified by Visual Quality Objective under Each Alternative**

	Visual Quality Objective					Total
	Retention	Partial Retention	Modification	Maximum Modification	Other <sup>1</sup>	
Alternative 1	60%	20%	3%	16%	1%	100%
Alternative 2	60%	20%	3%	16%	1%	100%
Alternative 3	66%	16%	3%	15%	1%	100%
Alternative 4	64%	16%	3%	16%	1%	100%
Alternative 5	66%	17%	3%	13%	1%	100%
Alternative 6	93%	1%	1%	4%	1%	100%
Alternative 7	75%	11%	2%	11%	1%	100%
Alternative 8	93%	1%	1%	5%	0%	100%

<sup>1</sup> Includes land in the Municipal Watershed and Nonwilderness National Monument LUDs. VQOs in these LUDs are to be determined on a project-by-project basis. Generally, the Retention VQO will be met.

Essentially all of the remaining 20 percent of the Forest would have an adopted VQO of Modification or Maximum Modification, which would allow noticeable development on the landscape.

**Alternative 2.** The overall distribution of adopted VQOs would be the same as under Alternative 1. The lands recommended for wilderness designation under this alternative are areas currently allocated to LUD II, which currently have an adopted VQO of Retention.

**Alternative 3.** Alternative 3 would slightly increase the amount of land in the Retention VQO relative to Alternative 1 by recommending additional areas for wilderness. Most of the increase in Retention VQO comes from land with a previous VQO of Partial Retention and that is currently managed for a natural setting (Semi-remote Recreation LUD). Approximately 1 percent of land with Maximum Modification VQO would be recommended for wilderness. This change from Maximum Modification to Retention would occur on Chichagof, Kupreanof, and Kuiu Islands and on the Cleveland Peninsula.

**Alternative 4.** This alternative would slightly increase the overall amount of land in the Retention VQO compared with Alternative 1 by recommending additional areas for wilderness. Under this alternative, all of the land recommended for wilderness is currently managed for a natural setting with a Partial Retention VQO (Semi-remote Recreation LUD).

**Alternative 5.** The increase in Retention VQO under this alternative is similar to Alternative 3; however, most of the land that would change to Retention VQO under Alternative 5 currently has a Modification or Maximum Modification VQO. This change from Maximum Modification to Retention would occur on Chichagof, Kupreanof, North Baranof, Mitkof, and Kuiu Islands, Cleveland Peninsula, and the Chuck River/Port Houghton area.

**Alternative 6.** Under Alternative 6, approximately 87 percent of the Forest would have an adopted VQO of Retention and would be managed in a natural setting. This alternative would generally leave about 5 percent of the land (spread throughout the Forest) with VQOs of Modification and Maximum Modification, which allow noticeable development on the landscape.

**Alternative 7.** Under this alternative, approximately 70 percent of the Forest would be managed for a natural setting with an adopted VQO of Retention. Some of the areas that would have a new VQO of Retention currently have an adopted VQO of Partial Retention, and are already managed for a natural setting (Semi-remote Recreation LUD). The other half of the increase in the Retention VQO would come

from land currently with adopted VQOs of Modification and Maximum Modification. This change from Maximum Modification to retention would occur in areas throughout the Forest.

**Alternative 8.** Alternative 8 is similar to Alternative 6; however, approximately 88 percent of the Forest would have an adopted VQO of Retention. The amount of land with a Modification or Maximum Modification VQO would still be approximately 5 percent.

### Effects on Selected Viewsheds

To help focus the visual effects on more familiar areas, the alternatives are also analyzed by selected viewsheds in the Tongass. These viewsheds were selected for their popularity and intensity of public use and travel. Table 3.3-47 compares the percent of the “seen areas” or viewsheds of each of these selected routes according to the adopted VQO it is assigned under each alternative. Wildernesses are included in the viewsheds. A qualitative discussion of the effects on scenic resources for each viewshed follows the table.

Two points to consider when reviewing the alternative effects include the following:

1. Where an area is allocated to the Semi-remote Recreation LUD, the resulting VQO is essentially Retention because this LUD precludes commercial timber harvest. The formally adopted VQO of Partial Retention is primarily intended to provide a standard for recreation and tourism types of development and facilities associated with these developments, from small cabins to resorts. In most cases, the effects would be confined to small sites that would be inconspicuous over a landscape.
2. The Tongass adopts the Retention VQO for wildernesses because of the restrictions in ANILCA; however, the preservation VQO is likely to be achieved in most areas within wilderness.

### ***Behm Canal (West)***

Alternative 1 (No Action) would manage this viewshed in a Partial Retention, Retention, and Modification VQO along much of this waterway. On the Revilla Island side (east side) of Behm Canal, the Partial Retention VQO (in the scenic foreground) and the Modification VQO (in the scenic middleground) dominate the seen areas. One exception on the east side of the canal is the coastline near Indian Point, which would have a Retention VQO. Most of the Cleveland Peninsula side (west) of Behm Canal would have an adopted VQO of Partial Retention and Retention, and, overall, would retain a natural setting due to the Semi-remote Recreation and Old-growth Habitat LUDs in this area. The southern end of the peninsula and the western slopes of Port Stewart have a Partial Retention VQO. Alternative 2 would produce no change to the visual management of this viewshed.

Under Alternatives 3, 5, and 7, the Cleveland Peninsula would be allocated to the Recommended Wilderness LUD. This alternative would assign the entire west side of the Behm Canal viewshed to the Retention VQO, to be managed in a natural setting. Alternative 4 would result in a similar change from the Partial Retention to the Retention VQO, but it would be limited to approximately 12 miles of the southernmost part of the peninsula. Essentially no management change would occur in this area because it is currently in the Semi-remote Recreation LUD and managed in a natural setting. Alternatives 6 and 8 would place the majority of this

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**Table 3.3-47  
Estimated Percentage of Selected Viewsheds Classified by Adopted VQOs under  
Each Alternative <sup>1, 2</sup>**

Travel Route/ Viewshed	Alternative							
	1	2	3	4	5	6	7	8
<b>Behm Canal</b>								
Retention	25%	25%	60%	43%	60%	85%	60%	83%
Partial Ret.	44%	44%	24%	26%	24%	4%	24%	5%
Modification	18%	18%	11%	18%	11%	8%	11%	9%
Max. Mod.	13%	13%	5%	13%	5%	3%	5%	4%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Chatham Strait</b>								
Retention	69%	69%	71%	71%	71%	90%	74%	89%
Partial Ret.	14%	14%	12%	12%	12%	1%	10%	1%
Modification	3%	3%	3%	3%	3%	2%	3%	2%
Max. Mod.	14%	14%	14%	14%	14%	7%	13%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Cholmondeley Sound</b>								
Retention	26%	26%	26%	26%	26%	88%	26%	86%
Partial Ret.	10%	10%	10%	10%	10%	0%	10%	0%
Modification	33%	33%	33%	33%	33%	3%	33%	4%
Max. Mod.	32%	32%	32%	32%	32%	9%	32%	10%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Clarence Strait</b>								
Retention	41%	41%	60%	54%	60%	84%	76%	84%
Partial Ret.	25%	25%	11%	12%	11%	2%	6%	3%
Modification	26%	26%	22%	26%	22%	10%	14%	11%
Max. Mod.	8%	8%	6%	8%	6%	3%	4%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Duncan Canal</b>								
Retention	46%	46%	71%	50%	71%	91%	82%	88%
Partial Ret.	31%	31%	15%	27%	15%	2%	6%	3%
Modification	14%	14%	11%	14%	11%	7%	10%	8%
Max. Mod.	9%	9%	3%	9%	3%	1%	2%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Eastern Passage</b>								
Retention	22%	22%	22%	22%	22%	74%	22%	82%
Partial Ret.	45%	45%	45%	45%	45%	10%	45%	2%
Modification	17%	17%	17%	17%	17%	7%	17%	7%
Max. Mod.	16%	16%	16%	16%	16%	9%	16%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Ernest Sound</b>								
Retention	57%	57%	61%	57%	61%	96%	74%	96%
Partial Ret.	14%	14%	14%	14%	14%	0%	6%	0%
Modification	15%	15%	13%	15%	13%	1%	9%	1%
Max. Mod.	14%	14%	12%	14%	12%	3%	12%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Frederick Sound</b>								
Retention	53%	53%	62%	59%	55%	90%	73%	88%
Partial Ret.	23%	23%	15%	17%	23%	3%	12%	3%
Modification	9%	9%	8%	9%	9%	3%	5%	4%
Max. Mod.	15%	15%	15%	15%	13%	4%	10%	5%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Helm Bay</b>								
Retention	0%	0%	100%	100%	100%	100%	100%	100%
Partial Ret.	100%	100%	0%	0%	0%	0%	0%	0%
Modification	0%	0%	0%	0%	0%	0%	0%	0%
Max. Mod.	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

**Table 3.3-47 (continued)**  
**Estimated Percentage of Selected Viewsheds Classified by Adopted VQOs under Each Alternative** <sup>1,2</sup>

Travel Route/ Viewshed	Alternative							
	1	2	3	4	5	6	7	8
<b>Hyder/Salmon River Highway</b>								
Retention	18%	18%	18%	18%	18%	98%	18%	96%
Partial Ret.	82%	82%	82%	82%	82%	2%	82%	4%
Modification	0%	0%	0%	0%	0%	0%	0%	0%
Max. Mod.	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Icy Strait</b>								
Retention	71%	71%	71%	71%	72%	90%	79%	90%
Partial Ret.	8%	8%	8%	8%	8%	2%	3%	2%
Modification	4%	4%	4%	4%	4%	2%	4%	2%
Max. Mod.	17%	17%	17%	17%	16%	6%	14%	6%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Lynn Canal</b>								
Retention	8%	8%	8%	8%	10%	98%	93%	96%
Partial Ret.	69%	69%	69%	69%	67%	1%	6%	1%
Modification	21%	21%	21%	21%	21%	1%	1%	2%
Max. Mod.	2%	2%	2%	2%	2%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Peril Strait/Neva-Olga Strait/Sitka</b>								
Retention	36%	36%	43%	36%	52%	87%	52%	85%
Partial Ret.	22%	22%	21%	22%	21%	5%	21%	6%
Modification	5%	5%	4%	5%	4%	1%	4%	1%
Max. Mod.	37%	37%	32%	37%	24%	7%	24%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Salmon Bay Lake</b>								
Retention	71%	71%	71%	71%	100%	85%	100%	85%
Partial Ret.	21%	21%	21%	21%	0%	13%	0%	13%
Modification	8%	8%	8%	8%	0%	3%	0%	3%
Max. Mod.	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Stephens Passage</b>								
Retention	66%	66%	66%	66%	72%	99%	83%	99%
Partial Ret.	23%	23%	23%	23%	22%	1%	17%	1%
Modification	3%	3%	3%	3%	3%	0%	0%	0%
Max. Mod.	8%	8%	8%	8%	3%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Stikine Strait</b>								
Retention	30%	30%	30%	30%	30%	76%	31%	84%
Partial Ret.	59%	59%	59%	59%	59%	23%	59%	15%
Modification	3%	3%	3%	3%	3%	1%	3%	1%
Max. Mod.	7%	7%	7%	7%	7%	0%	7%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Sumner Strait</b>								
Retention	47%	47%	59%	44%	66%	79%	74%	79%
Partial Ret.	26%	26%	17%	18%	17%	10%	13%	10%
Modification	11%	11%	9%	22%	8%	6%	7%	6%
Max. Mod.	16%	16%	16%	16%	9%	5%	6%	5%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Sweetwater Lake/Honker Divide</b>								
Retention	43%	43%	43%	43%	52%	66%	52%	68%
Partial Ret.	33%	33%	33%	33%	28%	17%	28%	21%
Modification	19%	19%	19%	19%	15%	14%	15%	8%
Max. Mod.	6%	6%	6%	6%	6%	3%	6%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%

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**Table 3.3-47 (continued)**  
**Estimated Percentage of Selected Viewsheds Classified by Adopted VQOs under Each Alternative**<sup>1, 2</sup>

Travel Route/ Viewshed	Alternative							
	1	2	3	4	5	6	7	8
<b>Tenakee Inlet to Tenakee Springs</b>								
Retention	47%	47%	47%	47%	47%	74%	58%	74%
Partial Ret.	6%	6%	6%	6%	6%	4%	4%	4%
Modification	3%	3%	3%	3%	3%	2%	2%	2%
Max. Mod.	45%	45%	45%	45%	45%	19%	35%	19%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>West Coast Waterway/Prince of Wales</b>								
Retention	35%	35%	35%	35%	43%	70%	43%	68%
Partial Ret.	22%	22%	22%	22%	20%	6%	20%	7%
Modification	16%	16%	16%	16%	14%	10%	14%	10%
Max. Mod.	27%	27%	27%	27%	23%	14%	23%	14%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Wrangell Narrows</b>								
Retention	34%	34%	34%	34%	34%	86%	49%	79%
Partial Ret.	52%	52%	52%	52%	52%	9%	38%	10%
Modification	13%	13%	13%	13%	13%	5%	12%	11%
Max. Mod.	1%	1%	1%	1%	1%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%
<b>Zimova Strait</b>								
Retention	38%	38%	38%	38%	38%	75%	54%	79%
Partial Ret.	35%	35%	35%	35%	35%	7%	21%	7%
Modification	15%	15%	15%	15%	15%	10%	13%	10%
Max. Mod.	12%	12%	12%	12%	12%	8%	12%	4%
Total	100%	100%	100%	100%	100%	100%	100%	100%

<sup>1</sup> VQO terms are defined in the *Affected Environment* portion of this section.

<sup>2</sup> The percentages in the table are based only on the approximate acres seen from a Visual Priority Travel Route and Use Area.

viewshed into Retention VQO, from Black Island and Yes Bay south to Clarence Strait. Under Alternatives 6 and 8, parts of Neets Bay and Traitors Cove, Hassler Island, and shoreline around Francis Cove are the only areas that would retain the Partial Retention, Modification, and Maximum Modification VQOs.

#### **Chatham Strait**

Alternative 1 (No Action) would manage this viewshed in a natural setting because most of the land is allocated to the Old-growth Habitat, Remote Recreation, Semi-remote Recreation, and Wilderness LUDs. One portion of the viewshed just below Tenakee Inlet is allocated to the Timber Production and Scenic Viewshed LUDs, which has the adopted VQOs of Partial Retention and Maximum Modification. Alternative 2 would produce no change to the visual management of this viewshed.

Under Alternatives 3, 4 and 5, a small portion of land in this viewshed would change from Partial Retention VQO to Retention. The visual resource management for these landscapes would not change because these areas are currently in the Semi-remote Recreation LUD. The VQO change under Alternatives 3, 4, and 5 occurs in the outer Bay of Pillars and southern Kuiu Island. Alternative 7 includes visual management changes to a few areas in the north part of Chatham Strait (including an area south of Tenakee Inlet). These areas are seen in the middleground and background of this viewshed and would change from a Maximum Modification VQO to Retention VQO. Alternative 7 would modify the Partial Retention VQO to Retention VQO in the Bay of Pillars, southern Kuiu, and North Admiralty Island areas. This change from Partial Retention to Retention VQO would not present a modification to the visual management of the landscape in this viewshed because the land is currently allocated to the Semi-remote Recreation LUD. Alternative 6 and 8 would have the

same effects as Alternative 7, except more land currently in the Maximum Modification VQO would be changed to Retention VQO. This change would be in the middleground and background areas around False Bay, between Tenekee Inlet and Peril Strait, and northern Kuiu Island. Under Alternative 8, seen areas south of Saginaw Bay would retain their current VQOs of Maximum Modification and Modification, while Alternative 6 would change the VQO in this area to Retention.

### ***Cholmondeley Sound***

Alternative 1 (No Action) would manage this viewshed with Retention, Partial Retention, Modification, and Maximum Modification VQOs. Most of this viewshed would be allocated to the Timber Production and Modified Landscape development LUDs or in private ownership. Pockets of the Old-growth Habitat LUD in West Arm and along the north shore of the bay would maintain the landscape in a natural setting. Overall, most of the outer part of the bay would be in an altered condition because of harvest on private lands and the amount of National Forest System land in the Timber Production LUD. Alternatives 2, 3, 4, 5, and 7 would produce no change to the visual management of this viewshed.

Under Alternatives 6 and 8, the majority of this viewshed would adopt the Retention VQO, which would alter the area's visual resource management direction. Under Alternative 6, only land along the south shore and in Dora Bay would retain the Modification and Maximum Modification VQOs. Under Alternative 8, a small portion of the Timber Production LUD along West Arm would also retain the Modification and Maximum Modification VQOs.

### ***Clarence Strait***

Alternative 1 (No Action) would allocate virtually all of the west side of Clarence Strait into Modified Landscape LUD and most of the east side into Wilderness, Old-growth Habitat, or Semi-remote Recreation LUD. The west side would, therefore, be managed for Modification VQO and the east side would be managed for a natural setting. Alternative 2 would produce no change to the visual management of this viewshed.

Alternative 4 would change the VQO for the southern half of the Cleveland Peninsula from Partial Retention to Retention. The visual resource management focus for this area would not change because it is currently allocated to Semi-remote Recreation LUD and is managed for a natural setting. Under Alternatives 3 and 5, the Cleveland Peninsula would be allocated to Recommended Wilderness LUD. This alternative would adopt a Retention VQO for this area, which would manage it for a natural setting. The visual resource management for most the Cleveland Peninsula would not change noticeably because it is currently allocated to Partial Retention VQO in the Semi-remote Recreation LUD. Under Alternatives 3 and 5, the visual management focus would change from Modification and Maximum Modification to Retention in the Union Bay and Mount Burnett areas. Overall, Alternatives 3 and 5 would manage the entire east side of this viewshed for a natural setting.

Changes under Alternative 7 are similar to Alternatives 3 and 5, except this alternative would also change land around Mosman and Burnett Inlets on Etolin Island from Partial Retention, Modification, and Maximum Modification VQOs to Retention VQO. The changes under Alternatives 6 and 8 are comparable to Alternative 7, except areas along the west side of the strait would also be managed with a Retention VQO. Under Alternatives 6 and 8, the change in VQOs from the Partial Retention, Modification, and Maximum Modification to Retention VQO would occur around Sweetwater Lake and Baird Peak. In addition to these areas, Tolstoi Mountain would change from the Modification to the Retention VQO under Alternative 6.

## 3 Environment and Effects

### ***Duncan Canal***

Alternative 1 (No Action) would allocate most of the waterway as Wilderness, Old-growth Habitat, or Semi-remote Recreation LUD, thereby adopting a Retention or Partial Retention VQO and managing the viewshed for a natural setting. A relatively small portion of the east side of this waterway is allocated to modified landscape and would be managed in Partial Retention and Modification VQOs. Alternative 2 would produce no change to the visual management of this viewshed.

Alternatives 3 and 5 would manage the entire west side of this viewshed with a Retention VQO. The visual resource management focus for the upper coastline would not change because it is currently allocated to a Partial Retention VQO in the Semi-remote Recreation LUD and, therefore, managed for a natural setting. Most of the change in visual management would occur in the middleground and background viewing areas (from Partial Retention, Modification, and Maximum Modification to Retention VQO). Alternative 4 would allocate the land around Castle River to the Recommended Wilderness LUD. The visual management direction would not change under this alternative because the area is already managed for a natural setting (Semi-remote Recreation LUD). Alternative 7 is similar to Alternatives 3 and 5, with the addition of Woewodski Island and the Duncan Creek area to be managed with Retention VQO. Overall, Alternative 7 would manage the entire viewshed in a natural setting, except for the Modified Landscape LUD in the east side of the canal. Alternative 6 and 8 are similar to Alternative 7, although these alternatives would also change the VQO in portions the Modified Landscape LUD on Mitkof Island from Modification to Retention.

### ***Eastern Passage***

Alternative 1 (No Action) would allocate half of this viewshed into the Old-growth Habitat and Semi-remote Recreation LUDs and would manage these areas for a natural setting. The Scenic Viewshed LUD would make up the other half of the viewshed and would be managed as Partial Retention and Retention VQOs. Alternatives 2, 3, 4, 5, and 7 would produce no change to the visual management of this viewshed.

Under Alternative 6, the entire eastern side of the passage and the southwest part of the route would be managed in the Retention VQO. Most of the change under this alternative would be in areas that are currently allocated to the Scenic Viewshed LUD and are generally managed to meet the Partial Retention, Modification, and Maximum Modification VQOs. Alternative 8 is similar to Alternative 6, except that in Alternative 8, the National Forest System land around Wrangell would also be changed from a Partial Retention VQO to a Retention VQO. Under Alternative 8, the central west side of this route is the only area not managed with a Retention VQO.

### ***Ernest Sound***

Alternative 1 (No Action) would allocate most of this waterway to the Wilderness, Old-growth Habitat, LUD II, and Semi-remote Recreation non-development LUDs. These LUDs would manage the land for a natural setting. The rest of this waterway would be allocated to the Modified Landscape and Scenic viewshed development LUDs, which would manage land to meet the Partial Retention, Modification, and Maximum Modification VQOs. Most of the development LUDs would be located in Vixen Inlet, Union Bay, south Wrangell Island, and Deer Island. Alternatives 2 and 4 would produce no change to the visual management of this viewshed.

Alternatives 3 and 5 would change the Vixen Inlet/ Mount Burnett area VQOs from the Partial Retention, Modification, and Maximum Modification VQOs to the Retention VQO. In addition to the areas added to the Retention VQO under Alternatives 3 and 5, Alternative 7 would also allocate land north of South Etolin

Wilderness Area into a Recommended Wilderness LUD. This addition would manage most of the route as a natural setting. Alternatives 6 and 8 would put almost the entire route in the Retention VQO, except for a very small portion of land around Frosty Bay. Alternatives 6 and 8 would generally manage the entire viewshed for a natural setting.

### ***Frederick Sound***

Under Alternative 1 (No Action), a little over half of this waterway would be allocated to the Wilderness, Old-growth Habitat, and Semi-remote Recreation LUDs, which would manage the land in a natural setting. The rest of this waterway would be allocated to the Scenic Viewshed, Timber Production, and Modified Landscape development LUDs. These LUDs would manage the scenery with a Partial Retention, Modification, or Maximum Modification VQO. Alternative 2 would produce no change to the visual management of this viewshed.

Alternative 3 would change the Francis Anchorage and Dry Bay areas, mostly in the Partial Retention VQO, to a Retention VQO. The only change in the management focus would be along the north shoreline where the development LUDs are currently located. Alternative 4 would change the Francis Anchorage area from the Partial Retention VQO to Retention. The visual resource management focus for this area would not change under this alternative because it is currently allocated to the Semi-remote Recreation LUD, which manages land for a natural setting. Under Alternative 5, the only VQO change would occur in the Dahlgren Peak area where the Maximum Modification VQO would be Retention. Alternative 6 would manage the entire viewshed in a Retention VQO. Out of all the alternatives, Alternative 6 would present the most modification to the visual resource management in this viewshed.

Alternative 7 would manage the entire northeast part of this route in a Retention VQO. Under this alternative, the overwhelming majority of the viewshed would be managed in a natural setting. Under Alternative 8, all of the viewshed would be managed with a Retention VQO for natural setting, except for a relatively small portion of the Partial Retention VQO south of Saginaw Bay.

### ***Helm Bay***

Under Alternative 1 (No Action), the entire viewshed would realistically be managed in a natural setting because the land is allocated to Semi-remote Recreation LUD with a Partial Retention VQO. Alternative 2 would produce no change to the visual management of this viewshed.

Alternatives 3, 4, 5, 6, 7, and 8 would change the entire viewshed from Partial Retention VQO to Retention VQO. No change in visual management would ensue under these alternatives because the land is currently managed for a natural setting.

### ***Hyder/Salmon River Highway***

Alternative 1 (No Action) would allocate the west side of this viewshed to the Semi-remote Recreation LUD, thereby maintaining a natural setting. The east side of the highway and river would be allocated to the Scenic Viewshed LUD and would be managed for Retention and Partial Retention VQOs. Alternatives 2, 3, 4, 5, and 7 would produce no change to the visual management of this viewshed.

Alternatives 6 and 8 would manage the entire viewshed with a Retention VQO. The only change in visual management would be in the eastern part of this viewshed, which is currently allocated to the Scenic Viewshed LUD.

## 3 Environment and Effects

### ***Icy Strait***

Under Alternative 1 (No Action), most of this viewshed would be managed for a Retention VQO. The other parts of this waterway would be allocated to the Scenic Viewshed and Timber Production development LUDs. These LUDs would manage the land with VQOs ranging from Partial Retention to Maximum Modification. The development LUDs would be located east and southeast of Hoonah and north of Hoonah, across the strait. Alternatives 2, 3, 4, and 5 would present no change to the visual management of this viewshed.

In small portions along the northeast part of the Icy Strait, Alternative 7 would change the VQOs from Partial Retention and Maximum Modification to Retention. Alternatives 6 and 8 are similar to Alternative 7, with the additional VQO change in the south side of the strait near Hoonah from Partial Retention and Maximum Modification to Retention. Under Alternatives 6 and 8, all of the viewshed would be managed with a Retention VQO, except for a few small areas close to Hoonah and north across the strait from Hoonah.

### ***Lynn Canal***

Alternative 1 (No Action) would allocate most of this waterway to the Semi-remote Recreation and Old-growth Habitat non-development LUDs, which would manage the land in a natural setting. A few spots of the Modified Landscape, Scenic Viewshed, and Timber Production LUDs would be scattered along this waterway. These LUDs would have VQOs ranging from Partial Retention to Maximum Modification. Alternatives 2, 3, and 4 would present no change to the visual management of this viewshed.

Alternative 5 would change the VQO on Sullivan Island from Partial Retention to Retention. No change in visual management would ensue under this alternative because the land is currently allocated to Semi-remote Recreation LUD and managed for a natural setting. Alternatives 6 and 8 would manage the entire viewshed for a Retention VQO and would result in the most change in the visual resource management of this viewshed. Alternative 7 is similar to Alternatives 6 and 8, except under Alternative 7, small areas on Lincoln and Shelter Island, east of Chilkat Islands and east of Benjamin Island, would retain their current VQO of Partial Retention. Like Alternatives 6 and 8, the entire viewshed would be managed for a natural setting because the areas with Partial Retention VQO would be allocated to Semi-remote Recreation LUD.

### ***Mendenhall Glacier***

Alternative 1 (No Action) would manage the entire viewshed in a natural setting because of the land allocations to Special Interest Area, Semi-remote Recreation, or Remote Recreation LUDs. One exception is in the foreground in the Special Interest Area LUD, which has a VQO of Modification to accommodate the developed recreation and interpretive portions of this area. This exception would not effect the natural setting over the landscape in this area. Alternatives 2, 3, 4, 5, and 7 would present no change to the visual management of this viewshed.

Alternatives 6 and 8 would change the VQOs in the entire viewshed to Retention. Under Alternatives 6 and 8, the only effect on visual management would take place in the foreground on land allocated to the Special Interest Areas LUD, which might preclude developing recreation facilities and interpretive centers unless those developments meet the Retention VQO.

### ***Peril Strait/Neva-Olga Strait/Sitka***

Alternative 1 (No Action) would manage most of Peril Strait in VQOs ranging from Partial Retention to Maximum Modification. The area allocated to the Wilderness

LUD and pockets of the Old-growth Habitat LUD scattered along this waterway would be managed with a Retention VQO. Most of waterway from Neva-Olga Strait to Sitka would be allocated to the Semi-remote Recreation LUD, which would manage the landscape for a natural setting. Alternatives 2 and 4 would present no change to the visual management of this viewshed.

Alternative 3 would allocate the area around Ushk Bay south to Dry Bay (Peril Strait) to the Recommended Wilderness LUD, which would change the VQOs from Partial Retention, Modification, and Maximum Modification to Retention. Most of this change in visual resource management would occur in the middleground and background viewing areas. Alternatives 5 and 7 are similar to Alternative 3 except, in Alternatives 5 and 7, the Timber Production LUD area around Saook Bay would also be changed from the Maximum Modification to Retention VQO. Alternatives 6 and 8 would manage the entire waterway in a natural setting with a Retention VQO, except for a few relatively small areas on north and south shorelines of eastern Peril Strait. Under Alternative 8, more land in northeast Peril Strait would retain the Partial Retention, Modification, and Maximum Modification VQOs, than under Alternative 6.

### ***Salmon Bay Lake***

Alternative 1 (No Action) would manage most of this viewshed in a Retention VQO. Under Alternative 1, the middleground viewing areas would have a Partial Retention VQO and the background viewing areas would have a Modification VQO. Alternatives 2, 3, and 4 would present no change to the visual management of this viewshed.

Alternative 5 and 7 would manage the entire viewshed in a Retention VQO. Under Alternatives 5 and 7, most of the change to the Retention VQO would take place in areas seen in middleground and background from Salmon Bay Lake. Alternatives 6 and 8 would change some areas with the Partial Retention and Modification VQOs to Retention, which would manage the majority of the land for a natural setting. Under Alternatives 6 and 8, however, the roaded areas would retain their current VQOs of Partial Retention and Modification.

### ***Stephens Passage***

Alternative 1 (No Action) would allocate most of this area in the Wilderness national monument, Semi-remote Recreation, and Old-growth Habitat non-development LUDs, which would manage the landscape for a natural setting. The Scenic Viewshed and Timber Production LUDs would be scattered along this waterway. These development LUDs would manage the area with VQOs ranging from Partial Retention to Maximum Modification. Alternatives 2, 3, and 4 would present no change to the visual management of this viewshed.

Alternative 5 would change the visual management west of the Chuck River Wilderness Area and Dahlgren Peak from Partial Retention and Maximum Modification VQOs to a Retention VQO. Under Alternative 7, the entire east side of Stephens Passage would be managed with a Retention VQO. Land east of Juneau, allocated to the Scenic Viewshed LUD, would be the only area not managed for a natural setting under Alternative 7. Under Alternatives 6 and 8, the entire waterway would be managed with the Retention VQO.

### ***Stikine Strait***

Alternative 1 (No Action) would manage almost all of this area in the Partial Retention and Retention VQOs. The modification VQO would be allocated to some middleground views of Zarembo Island. Alternatives 2, 3, 4, 5, and 7 would present no change to the visual management of this viewshed.

## 3 Environment and Effects

Alternative 6 would change some Partial Retention and Maximum Modification VQOs to the Retention VQO on east Zarembo, Woronkofski, and north Etolin Islands. Alternative 8 is similar to Alternative 6, except north Wrangell Island would also change to the Retention VQO. Under both Alternatives 6 and 8, the viewshed would be dominated by the Retention VQO.

### ***Sumner Strait***

Alternative 1 (No Action) would allocate this waterway to a mix of LUDs, including Scenic Viewshed, Timber Production, Modified Landscape, LUD II, Semi-remote Recreation, Old-growth Habitat, and Wilderness. The resulting VQOs would range from Retention to Maximum Modification. Alternative 2 would present no change to the visual management of this viewshed.

Alternative 3 would change southern Kuiu Island and areas around Reid and Alvin Bay to the Retention VQO. This alternative would produce a visual resource management change in only the Reid and Alvin Bay areas because southern Kuiu Island is currently allocated to the Semi-remote Recreation LUD. Alternative 4 is similar to Alternative 3, however, only southern Kuiu Island is changed to the Retention VQO in Alternative 4. In addition to the effects under Alternative 3, Alternative 5 would change the VQO around southwest Kupreanof Island and Mitkof Island from the Maximum Modification VQO to Retention. Alternative 7 is similar to Alternative 5, however, VQOs on northeast Prince of Wales and Woronkofski Island would also change to the Retention VQO. Almost all of this viewshed would be managed with the Retention VQO under Alternatives 6 and 8. The areas not changed to a Retention VQO under Alternatives 6 and 8 are located in north Prince of Wales, north Zarembo Island, and the islands northeast of Zarembo Island. The VQOs in these excluded areas would range from Partial Retention to Modification.

### ***Sweetwater Lake/Honker Divide***

Under Alternative 1 (No Action), most of this area would be managed to meet a Retention VQO because most of the land is in the Old-growth Habitat, Recreational River, or Scenic River LUD. The rest of the area would be allocated to the Modified Landscape, Scenic Viewshed, and Timber Production LUDs, which would have VQOs ranging from Partial Retention to Maximum Modification. Alternatives 2, 3, and 4 would result in no change to the visual management of this viewshed.

Under Alternatives 5, 6, 7, and 8, the land with the Partial Retention and Modification VQOs east of Thorne Lake would be changed to the Retention VQO. Alternative 8 would also modify the VQOs in areas around Sweetwater Lake from Partial Retention and Modification to Retention.

### ***Tenakee Inlet to Tenakee Springs***

Alternative 1 (No Action) would allocate most of this area to the Old-growth Habitat and LUD II LUDs, which would manage land with a Retention VQO. The rest of this viewshed would be allocated to the Scenic Viewshed and Timber Production LUDs. These LUDs would manage the landscape with VQOs ranging from Partial Retention to Maximum Modification. Alternatives 2, 3, 4, and 5 would present no change to the visual management of this viewshed.

Under Alternative 7, some of the land west of Trap Bay with a Maximum Modification VQO would change to the Retention VQO. In addition to the changes under Alternative 7, Alternatives 6 and 8 would change the VQO in land north of Tenakee Springs from Maximum Modification to Retention.

### ***West Coast Waterway/Prince of Wales***

Under Alternative 1 (No Action), this viewshed would be managed with a variety of VQOs ranging from Retention to Maximum Modification. Alternative 1 would assign an adopted VQO of Retention to land allocated to the LUD II and Old-growth Habitat LUDs. In land allocated to the Modified Landscape LUD in Calder Bay and along the north side of Dry Pass, the foreground viewing areas would be managed in a Partial Retention VQO. The Semi-remote Recreation LUD located north of Craig would essentially manage land for natural setting. The remainder of the viewshed would be allocated to the Timber Production LUD, which would have Modification and Maximum Modification VQOs. Alternatives 2, 3, and 4 would result in no change to the visual management of this viewshed.

Under Alternatives 5 and 7, San Fernando Island and east Kosciusko Island would change to Retention VQO. Because San Fernando Island is currently managed for a natural setting (adopted VQO of Partial Retention in the Semi-remote Recreation LUD), the only realistic visual management change is in east Kosciusko Island. Land in east Kosciusko Island would change from a Modification and Maximum Modification VQO to Retention. Alternatives 6 and 8 are similar to Alternative 7, however, VQOs around Calder and Salt Lake Bay would also change from Partial Retention, Modification, and Maximum Modification to Retention.

### ***Wrangell Narrows***

Alternative 1 (No Action) would manage most of this viewshed in the Retention and Partial Retention VQOs. Pockets of land allocated to the Modified Landscape LUD would have a Modification VQO. Alternatives 2, 3, 4, and 5 would present no change to the visual management of this viewshed.

Under Alternative 7, Woewodski Island and a small part of the Lindenberg Peninsula would change from the Partial Retention, Modification, and Maximum Modification VQOs to the Retention VQO. Alternatives 6 and 8 are similar to Alternative 7, except the entire east side of the viewshed and parts of north and south Mitkof Island would be managed with a Retention VQO. Under Alternative 6, more land would have a Retention VQO on Mitkof Island than under Alternative 8.

### ***Zimova Strait***

Under Alternative 1 (No Action), most of the viewshed would be managed in a Retention or Partial Retention VQO because most of the land is in the Scenic Viewshed or Old-growth Habitat LUD. The remainder of this viewshed would be allocated to the Modified Landscape or Timber Production LUDs, which have VQOs of Modification and Maximum Modification. Alternatives 2, 3, 4, and 5 would present no change to the visual management of this viewshed.

Under Alternative 7, the southwest part of this viewshed changes from Partial Retention and Modification VQOs to a Retention VQO. In addition to the changes under Alternative 7, Alternatives 6 and 8 would change the VQOs in land near Chichagof Pass and South Wrangell Island from Partial Retention, Modification, and Maximum Modification to Retention. Under Alternative 8, the VQO in land north of Thoms Lake would also change to the Retention VQO.

## 3 Environment and Effects

### Subsistence

#### Affected Environment

Subsistence hunting, fishing, trapping, and gathering activities represent a major focus of life for many Southeast Alaska residents. Some individuals participate in subsistence activities to supplement personal income and provide needed food. Others pursue subsistence activities to perpetuate cultural customs and traditions. Still others participate in subsistence activities for reasons unconnected with income or tradition. For all these individuals, subsistence is a lifestyle reflecting deeply held attitudes, values, and beliefs.

Within the context of Southeast Alaska's highly seasonal and cyclical resource-based employment, subsistence harvest of fish and wildlife resources takes on special importance. The use of these resources may play a major role in supplementing cash incomes during periods when the opportunity to participate in the wage economy is either marginal or nonexistent. Because of high prices of commercial products provided through the retail sector of the cash economy, especially in remote communities, the economic role of locally available fish and game takes on added importance.

The opportunity to participate in subsistence activities reinforces a variety of cultural and related values in both Native and non-Native communities. For example, distribution of fish and wildlife contributes to the cohesion of kinship groups and to community stability through sharing of resources derived through harvest activities. Subsistence resources provide the foundation for Native culture, ranging from the totemic basis of clan divisions, to norms governing the distribution of wealth in potlatch ceremonies, to reinforcement of basic values of respect for the earth and its resources. Participating in subsistence activities contributes to the self-reliance, independence, and ability to provide for oneself—values that social surveys indicate are important reasons why many non-Native people emigrate to or remain in Southeast Alaska (Alves, 1979).

While there are a variety of cultural, popular, and sociological definitions and interpretations of subsistence, Congress addressed this subject in Title VIII of the 1980 Alaska National Interest Lands Conservation Act (ANILCA). Section 803 of ANILCA defines subsistence use as:

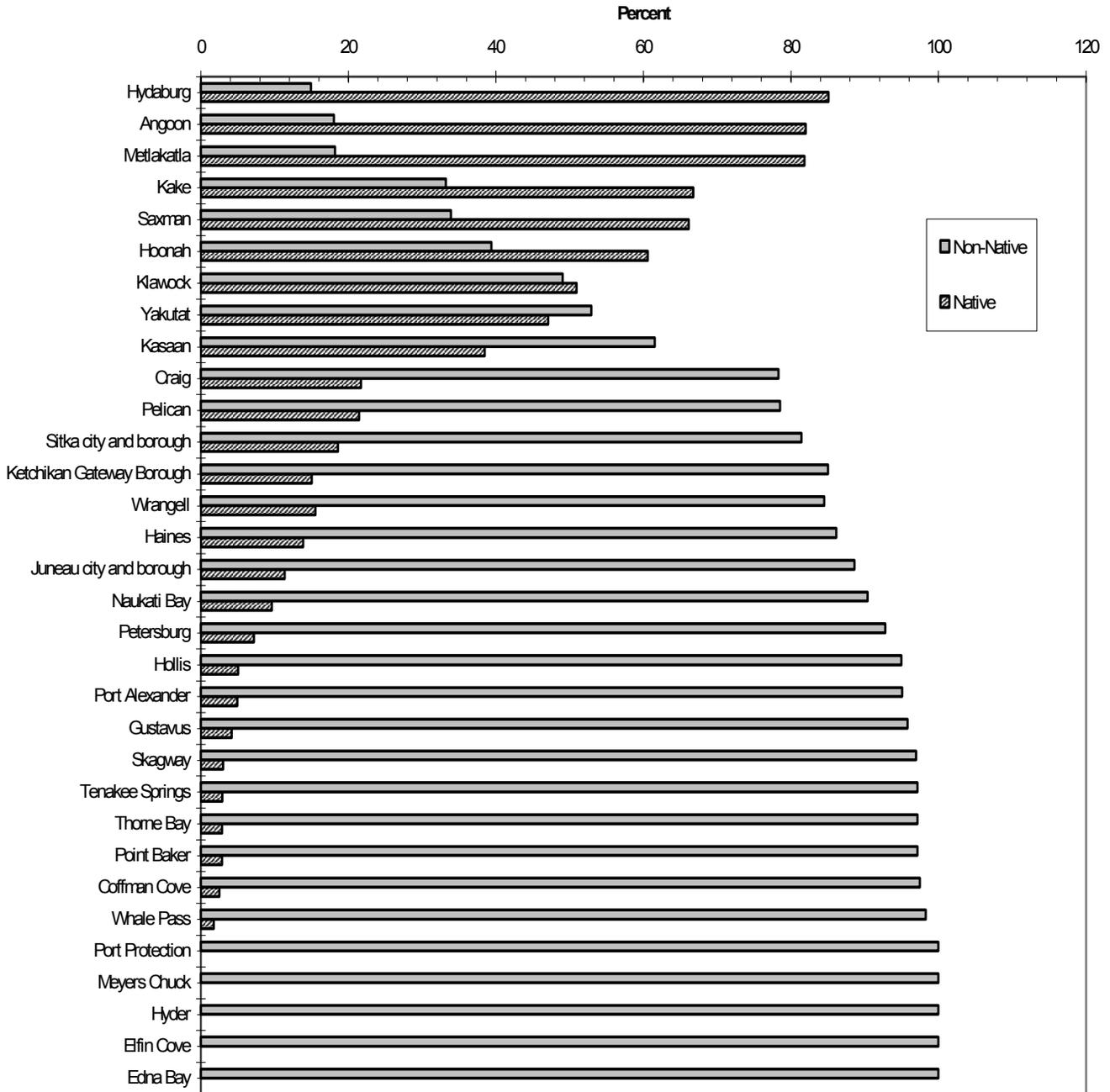
the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal, or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.

ANILCA provides for “the continuation of the opportunity for subsistence uses by rural residents of Alaska, including both Natives and non-Natives, on the public lands.” It also states, in part, that “customary and traditional” subsistence uses of the renewable resources “shall be the priority consumptive uses of all such resources on the public lands of Alaska.”

Legal challenges, increased competition from other users of the Tongass National Forest, introduction of other cultures and races into the one-time predominantly Native societies, alternative food sources, transportation improvements, and increases in jobs and income have prompted Native residents of Southeast Alaska to

actively protect subsistence rights of Alaskan Natives. The Native Alaskan population represents 23 percent of the total population of Southeast Alaska’s 30 rural communities (Figure 3.3-4). The importance of subsistence rights is of paramount concern to this segment of the region. Historic subsistence use on the Tongass is described in the 1997 Tongass Forest Plan Revision Final EIS.

**Figure 3.3-4  
Native/Non-Native Components of Southeast Communities, 2000**



Source: U.S. Census Bureau, 2001b.

### 3 Environment and Effects

#### Subsistence Users

There is now a discrepancy between how federal law and state law defines subsistence users. The federal subsistence law clearly states that only rural Alaska residents qualify for subsistence hunting and fishing on federal lands. Alaska residents living in urban areas can harvest under sport, personal use, or commercial regulations, but not under subsistence regulations. The rural preference is contained in ANILCA.

Until December 1989, the State's subsistence law, like Federal law, permitted only rural residents to qualify for subsistence hunting and fishing; however, the Alaska Supreme Court ruled in *McDowell v. State of Alaska* that the rural provision was not permissible under the Alaska Constitution. Consequently, every Alaska resident qualifies as a subsistence user on State lands.

Southeast Alaska has a population of approximately 73,000 people. Most of this population is located in 32 established communities, with Juneau and Ketchikan Gateway Borough accounting for approximately 60 percent of the regional population. Juneau and Ketchikan, the only two designated urban communities in Southeast Alaska, do not qualify for subsistence use on Federal, public lands under current Federal laws and regulations. Sitka, Petersburg, and Wrangell account for about 20 percent of the region's total population. Most of the remaining 20 percent of Southeast Alaska's population live in 27 small communities throughout the region.

In addition to permanent communities, there are a few floating and land-based logging camps across the Tongass National Forest that are large enough and have existed long enough to have an effect on local uses of fish and wildlife. Camp residents appear to be split between Alaska residents and nonresidents with some leaving Alaska for the winter months when the working season is over (ADF&G, 1989).

A relatively small number of Southeast Alaska residents live at remote isolated locations. These include people living at homesites throughout Southeast Alaska, at summer fishing sites along the outer coast, tree thinners camped near areas where they have Forest Service contracts, trappers, and people living on floathouses and on fishing boats. This diverse group is typically transient, generally has very low cash income, and is closely tied to non-commercial harvest of fish, game, and other renewable natural resources.

As in other parts of Alaska, Southeast Alaska's population grew with the expansion of government services following the oil boom. In the late 1980s, the population decreased, but is now increasing again. A number of new communities have evolved around State land selections or timber harvesting activities. Edna Bay, Coffman Cove, North Whale Pass, Thorne Bay, and other small Prince of Wales Island communities are examples.

#### Economy

Subsistence use of fish and wildlife continues to be an important component of the economies of Southeast Alaska communities. In Native communities, harvest and use of wild resources supported the subsistence-based economy that predated the introduction of cash income. In the modern era, beginning in the late-1700s, the economies of Native communities have undergone a progressive transformation, incorporating cash income into the subsistence-based system. Southeast Alaska communities that settled primarily by non-Native immigrants have also depended on a mix of subsistence use of wild resources and cash income.

Cash income in most Southeast Alaska rural communities is limited and intermittent, and frequently supports the purchase of fuel and equipment that are part of subsistence harvest technology. Subsistence harvests have been found to fill essential food needs in most rural communities in the region. These harvests are also customarily shared among community residents and between members of

different communities. Some subsistence products are traded and bartered within the region. Subsistence harvests are not geared toward market sale or accumulated profit. A mixed subsistence-market economy in which subsistence harvests and cash income are complementary characterizes the economies of most of the region's rural communities (ADF&G, 1994).

The amount of subsistence harvest, and the types of fish and game species and other resources harvested by rural Southeast Alaska households is described in the 1997 Forest Plan Revision Final EIS. The ADF&G Subsistence Community Profile Database (available at <http://www.state.ak.us/local/akpages/FISH.GAME/subsist>), also presents updated information where it is available.

### **Where Subsistence Harvest Occurs**

Historically, subsistence use occurred where access to the resources cost less in energy than the resources gathered. Many of the gathering activities occurred in easily accessible areas. These activities occurred close to settlements where they could be accessed by foot or boat. Over time, as new technology developed, ease of access meant a movement outward into new resource use areas. The motorboat and development of road systems associated with timber harvest activities in Southeast Alaska have had perhaps the greatest influence on subsistence gathering activity. Today, all communities may either be accessed by motorized boats or many are tied to nearby lands by road systems. As new roads are developed, subsistence use has moved from areas with higher access costs to areas with easily achieved access.

The distribution of subsistence harvest activity is described in further detail in the 1997 Forest Plan Revision Final EIS. Many of the fish and wildlife resource values of Southeast Alaska watersheds, based on the VCU (Value Comparison Unit) classification of the Tongass, are summarized in the 1998 Tongass Fish and Wildlife Resource Assessment (ADF&G, 1998). This report portrays the relative value of areas for black bear, brown bear, deer, sport fishing, salmon production, and subsistence use. This resource assessment also includes a ranking of the VCUs that have the highest community use values.

### **Abundance and Distribution**

Southeast Alaska subsistence resources include terrestrial wildlife (including deer, moose, mountain goat, black and brown bear, furbearers, and small game), waterfowl (including ducks, geese, and seabirds), marine mammals (only the harbor seal), salmon, other finfish, marine invertebrates, plants, and firewood. The abundance and distribution of these resources on the Tongass are described in the 1997 Forest Plan Revision Final EIS, as well as in other sections of this SEIS.

### **Access**

Many Southeast Alaska communities are accessible only by air and water. Only Skagway, Haines, and Hyder have access to the continent (Canada) by road, with many other communities served by ferry, such as the Alaska Marine Highway System.

Road building, a byproduct of timber harvesting and, to a much lesser extent, mining, is an important agent of change in Southeast Alaska. These road networks provide greater access to areas previously unconnected and can affect subsistence both positively and negatively by providing access, dispersing hunting and fishing pressure, and creating the potential for increased competition. On Prince of Wales Island, for example, areas that have become road-connected are now more easily reached through the ferry system, thus providing greater access from Ketchikan, one of the most populated cities in the region. While road systems tend to bring more people into an area, they also give subsistence hunters access to previously remote regions and provide a greater opportunity for subsistence harvest (USDI Fish and Wildlife Service, 1988).

### 3 Environment and Effects

Southeast Alaska is comprised of isolated islands unconnected by road systems; however, with the transportation means available (floatplanes, ferry systems, automobiles, boats), Southeast Alaska residents are very mobile in their subsistence resource use activities. Wrangell, the fifth largest community in Southeast Alaska, has documented their subsistence gathering from the southern tip of Prince of Wales Island to Yakutat, covering most of the islands in between (Kruse and Muth, 1989).

#### Competition

Southeast Alaska is a land of abundant resources, however, all the resources are not evenly distributed across the Tongass National Forest. Where the resources are confined to island groups or river systems, where access is costly or nonexistent, use of the resources is low. Where the resource is abundant, and a community is present but access by other communities is costly, the resource tends to be used primarily by the community that resides in the area. Where resources are abundant and access is available to local and other communities of Southeast Alaska, competition for the resources may exist (USDA Forest Service, 1988).

Increased competition may result when less expensive access to the area or within the area is provided. Such is the case when road systems are established to local communities. When areas historically not used for subsistence purposes are made available because of easier, more cost-effective access, the new area then tends to be used. When communities with road access to abundant resources are connected to the ferry systems or to commercial air services, competition for the resources may be generated from outside communities with lower abundance of the same resource.

Examples of the effect of ease of access are readily available in Southeast Alaska. Chichagof Island, Prince of Wales Island, and the Yakutat Forelands at one time were isolated portions of the Tongass with limited use from communities in the vicinity. Today, road construction, primarily a result of timber harvest activities, has created relatively large areas in each location readily available from the local community. Access provided by the ferry systems and small commuter planes to Chichagof and Prince of Wales Islands allows relatively easy access by off-island communities. The Yakutat Forelands have been made readily available from the access provided by commercial jet service to the community of Yakutat. Access to the Yakutat Forelands is one of the more popular contacts of the lower 48 to Alaska's abundant fisheries and brown bear populations.

Competition for subsistence resources is likely to increase as long as Southeast Alaska's population grows and additional access is created. The Southeast Alaska Federal Subsistence Regional Advisory Council has noted this increased use of the resources, and recommended decreases in harvest of deer, moose, and other wildlife species for non-rural residents.

#### Environmental Consequences

The analysis of the likely effects of the SEIS alternatives on subsistence resources and uses is in two parts. Effects on subsistence resources and uses important to each rural community are discussed individually by community in the *Communities* subsection of the *Economic and Social Environment* section. Here, the Forest-wide evaluation is presented, based on general considerations in the three categories of effects previously identified: abundance and distribution, access, and competition. This general analysis relies on the community discussions and also on the Forest-wide effects analyses from the related resource sections (primarily *Fish and Wildlife*) where abundance and distribution are of concern.

Section 810 of ANILCA requires the Forest Service, in determining whether to withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition of National Forest System land in Alaska, to evaluate the potential effects on

subsistence uses and needs, followed by specific notice and determination procedures should there be a significant possibility of a significant restriction of subsistence uses. The Alaska Land Use Council's definition of "significantly restrict subsistence use" is one guideline used in the evaluation: "A proposed action shall be considered to significantly restrict subsistence uses, if after any modification warranted by consideration of alternatives, conditions, or stipulations, it can be expected to result in a substantial reduction in the opportunity to continue subsistence uses of renewable resources." Considerations of abundance and distribution, access, and competition (by non-rural residents) are mentioned.

The U.S. District Court Decision of Record in *Kunaknana v. Watt* provided additional clarification. In part it states: "restrictions for subsistence uses would be significant if there were large reductions in abundance or major redistribution of these resources, substantial interference with harvestable access to active subsistence-use sites, or major increases in non-rural resident hunting."

**Direct and Indirect Effects**

**Abundance and Distribution**

Based on the 1987 survey information presented above, 61 percent of subsistence resources (by weight) are fish or marine invertebrates, 21 percent are deer, 4 percent are other land mammals, and another 3 percent are marine mammals. Subsistence analysis for the 1997 Forest Plan Revision Final EIS found that the primary subsistence resource likely to be significantly affected by the alternatives was Sitka black-tailed deer. Some effects to fish habitat may also result from land management activities, but the magnitude of the effects could not be calculated. Risk to fish habitat increases with increased timber harvest, increased roading, and narrower riparian areas along streams. A panel evaluation of alternatives was conducted for the 1997 Final EIS. Alternative 11, which essentially represents the adopted Forest Plan, was judged to have relatively low risk relative to the other alternatives.

Because of their association with old-growth forest habitat, which is the main terrestrial habitat type affected by the alternatives, deer become the "indicator" for potential subsistence resource consequences concerning the abundance and distribution of the resources. The community-based subsistence analysis (*Communities* section) focuses largely on deer, which is by far the largest terrestrial component of subsistence food resources.

In the subsistence analysis in the 1991 Forest Plan Revision Supplemental Draft EIS (SDEIS), it was determined that at that time all of the Forest Plan alternatives, if implemented, could result in a significant restriction on the abundance and/or distribution of subsistence uses of Sitka black-tailed deer, brown bear, and marten sometime during the next 50 years. This conclusion was based on an analysis of the current status of huntable wildlife resources, and identified portions of the Tongass where such restrictions may already be occurring (i.e., were the result of existing conditions) (USDA Forest Service, 1991, pp. 3-762 and 3-763). The unpublished 1992 draft Final EIS reached the same conclusion for deer and brown bear. Such restrictions were most likely for communities with subsistence use areas in the northern portion of the Tongass (Chichagof and Baranof Islands, primarily). The RSDEIS came to the same conclusion in its analysis for deer.

In the 1997 Forest Plan Revision Final EIS, hunting demand and huntable populations of wildlife were only re-examined for Sitka black-tailed deer. Using a revised habitat capability model, the new deer analysis reached similar conclusions to that of the RSDEIS, based on specific areas where recent deer harvests are high relative to deer habitat capability. (This analysis was summarized at the end of the affected environment portion of the *Wildlife* section of the 1997 Forest Plan Revision Final EIS; see also Iverson, 1996.) This analysis identified seven areas (near Juneau, Hoonah,

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Sitka, and Craig/Klawock) where current deer harvests exceeded 20 percent of the estimated habitat capability. This analysis also found another 23 areas exceeding 10 percent of capability (4 on Admiralty, 5 on Chichagof, 4 on Baranof, 8 on Prince of Wales, and 2 near Ketchikan). Areas exceeding 20 percent are those where deer harvest may be restricted, either directly through restrictions in seasons and bag limits, or indirectly through reduced hunter efficiency and increased difficulty in obtaining deer relative to historical rates. Hunters in areas between 10 to 20 percent may experience reduced hunter efficiency and moderate difficulty in obtaining deer. This analysis may underestimate negative effects when deer populations are below carrying capacity. Adverse effects to deer hunters may be further amplified with either reductions in deer habitat capability or increases in deer demand/harvest or both.

The 1997 deer analysis was much in line with the earlier (1991, 1992, and 1996) analyses, which also used the 10 and 20 percent harvest cutoffs and the same land units. It indicated that deer habitat capabilities in several portions of the Tongass may not be adequate to sustain the current levels of deer harvests, and that implementation of any Forest Plan alternative could therefore be accompanied by a significant possibility of a significant restriction on the abundance and/or distribution of subsistence uses of deer. (Sport hunting restrictions would, however, occur first, followed by selective subsistence reductions, based on ANILCA Section 804.) This possibility, at least in the short term, is largely due to the continuation of reduced habitat capabilities resulting from past habitat alterations, which is why it applied to all alternatives.

Under the alternatives analyzed in this SEIS, the possibility of a significant restriction, resulting from a change in abundance or distribution, would be the same as or less than the possibility under Alternative 11 of the 1997 Forest Plan Revision Final EIS. In the short term, the risk of a significant restriction would be about the same under any of the SEIS alternatives. This is because the effects of past harvest would override the effects of new harvest during the next 10 years. In the long term, those alternatives that reduce areas available for future timber harvesting the most would result in the largest reduction in risk. Alternatives 1, 2, and 4 would result in the same possibility of a significant restriction relative to Alternative 11 of the 1997 Final EIS because they would not produce a change in old-growth harvest rates relative to the 1997 Forest Plan. Very slight reductions in harvest rates would occur relative to Alternative 11 of the 1997 Final EIS due to increases in the acreage of land in old-growth reserves and land adjustments that have occurred since 1997; however, these reductions would be negligible (on the order of 2 percent). Alternatives 3, 5, and 7 would reduce the possibility of a significant restriction because of a 7, 16, and 31 percent reduction, respectively, in development LUD acreage. Alternatives 6 and 8 would result in a larger reduction in the possibility of a significant restriction due to a 70 and 69 percent reduction, respectively, in development LUD acreage.

#### **Access**

None of the alternatives would directly limit the use of public lands for the purposes of subsistence gathering activities. Historical access (by foot, boat, and floatplane) is available under all the alternatives for present and proposed foreseeable future activities. Although wilderness designation often results in prohibitions of motorized access, Congress re-affirmed and expanded upon the purposes of wilderness in ANILCA, as stated in the 1964 Wilderness Act, specifically for wilderness established in Alaska. Section 811 of ANILCA mandates that the Secretary “shall ensure that rural residents engaged in subsistence uses shall have reasonable access to subsistence resources on public lands.” Other laws (including the Wilderness Act) notwithstanding, this section further directs that the Secretary “shall permit on the public lands appropriate use for subsistence purposes of snowmobiles, motorboats,

and other means of surface transportation traditionally employed for such purposes by local residents, subject to reasonable regulation.” In Section 1110(a) ANILCA also requires that the use of snowmachines, motorboats, airplanes, and nonmotorized surface transportation methods shall be permitted for traditional activities and travel to and from villages and homesites. Wilderness designations resulting from this SEIS would not, therefore, affect existing accessibility.

All communities having new road access to previously under-utilized subsistence areas have capitalized on the opportunity to expand their range provided by the road systems. As a result of new road construction, new use patterns are likely to develop around some communities. Such changes are not likely to lead to a significant possibility of a significant restriction of subsistence access to the resources.

### Competition

Competition for subsistence resources is a result of factors, such as fish and game regulations; mobility; the natural distribution of game species across the Tongass; decreases in resource populations as a result of habitat reductions; decreases in resource populations as a result of over-harvest; and access provided to rural communities in the form of roads, ferries, and commercial air carriers. The majority of the population (Juneau and Ketchikan residents) of Southeast Alaska is non-rural. Competition for the more abundant wildlife and fisheries resources near rural communities results from the combination of these factors.

For analyzing competition, the following assumptions are made:

1. New road construction adjacent to communities with ferry access will result in increased competition from outside communities.
2. New road construction adjacent to existing road systems where interties between communities exist will result in increased competition from surrounding communities associated with the inter-connected roads.
3. Habitat reductions will result in increased competition if regulations allow sport use to remain constant, with the same number of users seeking fewer huntable resources.
4. The demand for resources will remain constant or increase slightly as the habitat capability remains the same or declines over time.

Given these assumptions, the 1997 Forest Plan Revision Final EIS concluded that implementation of Alternative 11 (the Selected Alternative) would result in a significant possibility of a significant restriction of subsistence use by increasing competition for some subsistence resources by non-rural, as well as rural residents. This was judged most likely to occur on Chichagof, Baranof, and/or Prince of Wales Islands, where competition for deer and some other land mammals is currently heavy, and habitat capability has been reduced as a result of timber harvest.

Under the alternatives analyzed in this SEIS, the possibility of a significant restriction, resulting from a change in competition, would be the same as or less than the possibility under Alternative 11 (the Selected Alternative) of the 1997 Forest Plan Revision Final EIS. Based on the mileage of new road construction, there would be no change in risk under Alternatives 1, 2, and 4; a slight reduction in risk under Alternatives 3, 5, and 7; and a larger reduction in risk under Alternatives 6 and 8 (see the *Transportation and Utilities* section).

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#### Cumulative Effects

Cumulative effects are discussed in four categories.

1. **Effects Resulting from Timber Harvesting of Private Lands.** Native Corporation lands adjacent to the Tongass National Forest support extensive timber harvest operations. Over the last two decades, primarily on North Chichagof, Kupreanof, Admiralty (localized), and Prince of Wales Islands, and mainland areas, old-growth forest wildlife habitat capability in these lands (especially that for deer) has declined, and this decline is expected to continue for at least the next two decades. The resulting lower habitat capabilities on these private lands are likely to increase hunting demands in adjacent National Forest areas, increasing competition and potentially leading to reduced hunter success, reduced or eliminated sport seasons, and in some places reduced or eliminated subsistence seasons.
2. **Effects from Past Activities.** Timber harvest has been more influential in changing the landscape than any other use of the resources of the Tongass. With timber harvest comes roading, log transfer facility development, crew camps ranging from a few years in duration to establishment of new towns, and reductions in old-growth forest habitat. Intensive timber harvesting since the 1950s has resulted in approximately 430,000 acres of old growth becoming second growth.
3. **Effects of Present Activities.** Implementation of the 1997 Forest Plan allows an annual maximum timber harvest of approximately 259 MMBF (based on the ASQ), with an annual conversion of up to 8,900 acres of old-growth habitat to second growth (although a much lower volume and acreage has been harvested in recent years). Up to 106 miles of classified road would be constructed annually to harvest this timber. One major mining operation, the Greens Creek Mine, came on line and was under full-scale production until about 7 years ago, with some localized effects. It has since reopened and is back in operation. Other large mines are in the exploratory or permitting phases of development.
4. **Effects of Reasonably Foreseeable Future Activities.** The conversion of old-growth forest habitat to second growth will occur at varying rates under all alternatives. The principal subsistence resource effect will be on Sitka black-tailed deer habitat, as previously discussed. If timber harvesting were to continue at maximum allowable rates over the next 10 years, a maximum of 89,000 acres of old-growth habitat would change to second-growth and 1,060 miles of road would be built. The comparison of alternatives at the end of Chapter 2, as well as the *Timber* and *Transportation and Utilities* sections, displays the maximum values predicted under each alternative. With timber harvest activities will come new access, probably new camps, and potential increased use of subsistence resources by rural and non-rural residents.

Timber harvest of Native Corporation lands is anticipated to continue at a relatively low but constant level over the next decade. Land selections could result in some previously unharvested areas being logged. Actual mineral development is difficult to predict, but where it occurs, effects to subsistence resources would be highly localized.

#### ANILCA Determination

An ANILCA Section 810 evaluation and determination is not required for approval of a Forest Plan revision, a programmatic level decision that is not a determination whether to “withdraw, reserve, lease, or otherwise permit the use, occupancy, or disposition” of National Forest land. This SEIS is part of the Forest Plan Revision process and, therefore, does not require an ANILCA Section 810 evaluation and determination. A Forest-wide evaluation and determination was, however, included for the 1997 Tongass Forest Plan Revision Final EIS to facilitate project level

planning and decisionmaking in compliance with ANILCA Section 810. The analysis and findings conducted for this SEIS will complement the 1997 effort.

Consistent with Section 810 of ANILCA, the alternatives considered in the RSDEIS were evaluated for potential effects on subsistence uses and needs, as described above. Based on that evaluation, it was determined that, in combination with other past, present, and reasonably foreseeable future actions, one or more of the RSDEIS alternatives (if implemented through project-level decisions and actions) may result in a significant restriction of subsistence uses of deer, and possibly other land mammals, due to potential effects on abundance and distribution, and on competition.

As a result of this finding, the Forest Service notified the appropriate State agencies, local communities, the Southeast Alaska Federal Subsistence Regional Advisory Council, and State Fish and Game Advisory Committees, and held hearings in affected communities throughout Southeast Alaska after publication and dissemination of the RSDEIS.

Using the information described earlier in this section and comments from the ANILCA 810 Subsistence Hearings, the alternatives considered in the 1997 Forest Plan Revision Final EIS were evaluated for potential effects on subsistence uses and needs, as described above. Based on this evaluation it was again determined that, in combination with other past, present, and reasonably foreseeable future actions, one or more of the 1997 Final EIS alternatives (if implemented through project-level decisions and actions) may result in a significant restriction of subsistence uses of deer, and possibly other land mammals, due to potential effects on abundance and distribution, and on competition.

ANILCA 810 Subsistence Hearings were again held in conjunction with the public meetings/hearings on the Draft SEIS. These meetings took place in 17 communities across Alaska, including Juneau, Wrangell, Yakutat, Petersburg, Angoon, Kake, Ketchikan, Craig, Skagway, Tenakee Springs, Thorne Bay, Haines, Port Protection, Sitka, Hoonah, Gustavus, and Anchorage. An internet hearing was also conducted. Considering the input from these hearings and the analysis presented here, the same conclusion is reached regarding the alternatives of this SEIS. The risk of a significant restriction would be the same or less than for the Selected Alternative from the 1997 Final EIS (current Forest Plan).

Section 810 (a)(3) of ANILCA requires that when a significant restriction may result, three determinations must be made.

1. **Necessary and Consistent with Sound Management of Public Lands.**

The alternatives proposed in this SEIS have been examined to determine whether they are necessary and consistent with sound management of public lands. In this regard, the National Forest Management Act; the Alaska National Interest Lands Conservation Act; the Tongass Timber Reform Act; the Wilderness Act; the Alaska Regional Guide; the 1997 Forest Plan Revision Final EIS, as amended; the Alaska State Forest Resources and Practices Act; and the Alaska Coastal Zone Management Program have been considered.

National Forest land management plans are required by the National Forest Management Act and must provide for the multiple-use and sustained yield of renewable forest resources in accordance with the Multiple-Use Sustained Yield Act of 1960. Multiple-use is defined as “the management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people” (36 CFR 219.3). The alternatives presented herein represent different ways of managing Tongass National Forest

### 3 Environment and Effects

resources in combinations that are intended to meet the needs of the American people. Each provides for different amounts of new wilderness or LUD II recommendations and varying levels of resource uses and opportunities. Each alternative has some potential to affect subsistence uses, although the effects would be the same or less than under the current Forest Plan. The potential restrictions associated with each alternative are necessary, consistent with the sound management of public lands.

2. **Amount of Public Land Necessary to Accomplish the Proposed Action.** The amount of land necessary to implement each alternative is, considering sound multiple-use management of public lands, the minimum necessary to accomplish the purpose of that alternative. The entire forested portion of the Tongass (except the Yakutat area) is used by at least one rural community for subsistence purposes for, at a minimum, deer hunting. It is not possible to avoid all of these areas in implementing resource use activities, such as timber harvesting and road construction, under any Forest Plan alternative, and attempting to reduce effects in some areas can mean increasing the use of others. The current Forest-wide standards and guidelines and LUD prescriptions provide for special management or limit activities in many of the areas most important for subsistence uses, such as beaches and estuaries, areas adjacent to roads, and areas with high fish and wildlife habitat values. The alternatives considered in this SEIS would maintain the same levels of resource use and associated activities or would reduce them.
3. **Reasonable Steps to Minimize Adverse Impacts to Subsistence Uses and Resources.** The Forest-wide standards and guidelines and LUD prescriptions of the 1997 Forest Plan will continue to be implemented as part of any alternative action where they apply, except for the new LUDs described in Appendix D (Recommended Wilderness and Recommended LUD II). Subsistence use is addressed specifically in a Forest-wide standard and guideline, and subsistence resources are covered by the Forest-wide standards and guidelines for wildlife, fish, riparian areas, and biological diversity, among others. Fish and wildlife habitat productivity will be maintained at the highest level possible, consistent with the overall multiple-use goals of the 1997 Forest Plan.

A final determination was made in the Record of Decision for the 1997 Tongass Forest Plan Revision Final EIS, which was consistent with the analysis above. A summary of the evaluation, findings, and determination for the SEIS selected alternative will be contained in the SEIS Record of Decision.

## Heritage Resources

### Affected Environment

Heritage resources located within the Tongass National Forest include a diverse range of prehistoric and historic sites and artifacts that span approximately 10,000 years of human occupation and resource use. Prehistoric remains include campsites, village sites, graves, resource areas, rock art, portages, and rock shelters. Historic sites include houses, cabins, mines, trails, portages, canneries, boatworks, shipwrecks, and military installations. Many of these cultural remains provide the only record of former human occupation, work areas, and lifestyles. Many areas have traditional or spiritual significance for contemporary Native Americans and other ethnic groups.

Between 1976 and 1994, approximately 149,000 acres of National Forest lands were inventoried for cultural resources, with over 2,000 cultural resource sites identified. These and more recent surface inspections account for less than 1 percent of Tongass National Forest acreage. A similar, relatively high, density of cultural sites is expected to be located within the Forest in the future. Specific locations associated with Native Alaskan traditional and religious use are identified on an ongoing basis. Information gathered from these inventory efforts provides information about heritage resource distribution and sensitivity to damage.

Certain types of heritage resources, such as sites, artifacts, and other observable results of human activity, have a greater probability of being located in specific areas, including intertidal zones, beach fringes, riparian zones, areas of known mineral deposits, and uplifted fossil beaches. The environmental characteristics that invited human use and habitation in prehistoric times are often the same factors that invite use today. However, because of elevation and sea level changes after deglaciation, the locations of the earliest human activity areas may be farther inland and at higher elevations than more recent activity areas.

The Forest has established and maintained a cultural resource management program to identify, evaluate, preserve, and protect significant cultural resources on a Forest-wide and project-specific level in compliance with the National Historic Preservation Act, as amended, as well as a number of other acts and implementing regulations. The Forest's ability to preserve and protect its cultural resources is affected by three factors: the location of the cultural property, the type of management activity conducted in that location, and the environmental characteristics of the locality. Impacts to the resource may result from natural forces, from public use, or from project-related activities. Future management options will vary and are likely to be influenced by increased demands for scientific study, educational interpretation, and public enjoyment.

Inventory of these cultural resources is an ongoing process. Information gathered from inventories will provide insight into resource distribution and the sensitivity of sites to damage. Further scientific study will increase knowledge about early human migration, and later exploration and development of the region, and human behavior in response to social and environmental change.

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#### Direct, Indirect and Cumulative Effects

#### Environmental Consequences

Erosion and other environmental processes may deteriorate heritage sites through decomposition or mechanical destruction. Decomposition is most evident in objects or structures made of wood. Stabilization, regular maintenance, rehabilitation, and data recovery are means for preventing the loss of such objects or structures and the information they contain.

Public use may destroy heritage sites inadvertently or by intent. Inadvertent damage results from driving over sites resulting in compaction, or from other ground-disturbing activities. Intentional damage is looting and vandalism, including relic collecting, theft, and defacement, which result in the loss of information and destruction of the resource. Significant sites may be protected from destructive public uses by establishing public education programs, maintaining confidentiality about specific-site locations, monitoring, and directing public use away from the most vulnerable sites.

Areas managed for recreation provide opportunities for heritage resource protection and for interpretation to promote public education and enjoyment. Active educational and interpretive programs can create a greater awareness of the importance of heritage resources and foster a sense of stewardship, while adding to the recreational experience. At the same time, protective measures must be implemented to control or eliminate intentional destruction of these areas by relic collecting, theft, and other forms of vandalism.

While multiple-use activities have benefited heritage resources by providing opportunities for inventory, evaluation, and interpretation in remote areas of the Forest, ground-disturbing activities have the most potential to adversely affect these resources and their environmental settings. The amount of impact an activity has is determined largely by the location and nature of the activity, the characteristics of the soils, and the degree of use.

Heritage resource management may increase the cost of project implementation. Some areas may need to be avoided entirely in order to protect the resource. This may increase the cost of site access and result in some loss of commercial products, such as timber or minerals. Protection of significant cultural resources often precludes timber or mining activities within a designated site boundary. When preservation in place is not desired or possible, mitigation of adverse effects to the resources may be necessary, and this in turn may delay projects and increase project costs. Normally, when the Section 106 process of the National Historic Preservation Act is completed early in the planning process, project delays and additional costs are minimal.

Under all of the alternatives, the preferred management of sites eligible for, nominated to, or listed in the National Register of Historic Places is avoidance and protection. When this is not possible or feasible, it may be necessary to implement a mitigation program in order to achieve a finding of no adverse effect. Mitigation plans are developed in consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. The potential for adverse effects, and therefore the need for mitigation, is diminished when the physical settings around significant cultural resources are maintained in a natural state.

LUDs allowing timber harvesting, mining, and road construction are most likely to affect Heritage Resources through alteration of environmental settings or damage to unknown sites as projects are implemented. In many instances, retention of a natural setting is crucial to imparting and protecting the values that qualify a cultural resource for National Register status. Conversely, the opportunity for identifying new sites is greater within these areas because such developments require more

intensive heritage resource inventory efforts. Sites that are determined to be ineligible for the National Register of Historic Places may be directly affected by these activities without concern. An indirect effect common to all alternatives and prescriptions is that the discovery of new sites can lead to vandalism if locations become known to the public

Potential effects to cultural resources and the differences in risk between the alternatives are difficult to measure. Table 3.3-48 identifies the percent of the Tongass in the Wilderness, Natural Setting, and Development LUD Groups under each alternative. These percentages provide relative indicators of potential adverse effects, with the alternatives having the highest percentage in Development LUDs producing the highest risk of effects. Alternatives 1, 2, and 4 have the highest risk because they include more area where development is permitted. However, because project areas are inventoried for cultural and historic sites prior to implementation and avoidance of impacts is the preferred alternative for resource protection, the levels of risk are considered relatively low for all alternatives. In addition, the percentage of the area in the Development LUD Group is less than 23 percent under all alternatives.

**Table 3.3-48**  
**Percent of Tongass National Forest by LUD Group under Each Alternative\***

Alternative	% of Tongass in the Wilderness LUD Group	% of Tongass in the Natural Setting LUD Group	% of Tongass in the Development LUD Group
1	35	43	22
2	39	39	22
3	42	38	20
4	40	39	22
5	47	35	18
6	54	39	7
7	63	22	15
8	91	2	7

\* Note that Recommended Wilderness is added to the Wilderness LUD Group and Recommended LUD II is added to the Natural Setting LUD Group.

While it is true that increased project activity might accelerate the loss of cultural resources, primarily by improving public access and increasing the probability for looting and vandalism of cultural resource sites, there are potential positive effects as well. Over time, decay, neglect, and natural landscape changes threaten the preservation of significant cultural resources. By expanding the Forest’s inventory of its heritage resources, development projects result in identification of many sites that might otherwise decay unnoticed. Once sites are known, the Forest is better able to protect and encourage collection of information from a greater number of them.

The Forest Plan and all of the alternatives include requirements for inventory, protection, preservation, and interpretation, and for consultation with the State Historic Preservation Office as described in the Heritage Resource Standards and Guidelines (see Forest Plan, Chapter 4). Effects are avoided or mitigated through a variety of measures at the project level. Avoidance measures may include protective enclosures, systematic monitoring of project activities, or mandatory restrictions on project design. Mitigation is done when impacts cannot be avoided, and includes systematic recovery of the information through excavation, collection of materials, and detailed documentation as determined through consultation with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. Protection of significant heritage resource sites from damage through public use

### **3 Environment and Effects**

includes establishing public education programs, maintaining confidentiality about specific locations, monitoring, and directing public use away from the vulnerable sites.

## Roadless Areas

### Affected Environment

#### Introduction

This section addresses the roadless areas that meet the minimum criteria for potential inclusion in the National Wilderness System. Identifying this potential does not imply that areas should or should not be recommended for designation as wilderness, but is intended to portray the remaining undeveloped portions of the National Forest for which wilderness is a future option.

Once an area is roaded, it is generally no longer available for wilderness consideration. Depending on when and how the activity was conducted, evidence of previous timber harvest, abandoned habitations, and historic mining may not necessarily result in an irreversible removal of land from future wilderness consideration.

The minimum criteria for considering a roadless area in the evaluation of wilderness potential was established by the Wilderness Act of 1964 and in subsequent regulation and policies. To qualify, an area must contain at least 5,000 acres of undeveloped land that does not contain improved roads maintained for travel by passenger-type vehicles. Areas less than 5,000 acres may also qualify if they are a self-contained ecosystem, such as an island, are contiguous to existing wilderness; or are ecologically isolated by topography and manageable in a natural condition (see the *Wilderness* section in this chapter).

#### Roadless Area Inventory

Prior to developing this SEIS, the 1996 Tongass roadless inventory was updated. This process began with the comprehensive updating of the inventory of existing roads (including all classified and unclassified roads), harvest units, and land ownership on the Tongass National Forest. Next, developed areas were identified by buffering existing roads and harvest units. All areas within 1,200 feet of an existing road and within 600 feet of an existing harvest unit were considered developed; however, in order to be more inclusive, isolated beach-logged and helicopter units were not identified as developed areas. Narrow stringers of land between developed areas were also included as developed. All National Forest System land outside of areas defined as developed was identified as roadless. These roadless areas were then stratified into areas greater than 5,000 acres and into areas less than 5,000 acres. Inventoried roadless areas were identified as all roadless areas greater than 5,000 acres, as well as all inventoried roadless areas identified in previous inventories, which included some areas less than 5,000 acres. In addition, all other areas less than 5,000 acres were examined to determine if they were eligible for wilderness consideration. These included small roadless areas adjacent to existing wilderness. The 115 inventoried roadless areas and the other unroaded areas, defined in this way, were analyzed in the Draft SEIS.

After the Draft SEIS was published, the roadless area inventory was circulated to all ranger districts on the Tongass National Forest for review and comment on the delineation of roadless areas. These comments and the comments received during the public comment period were then considered, and the inventoried roadless area boundaries were refined by giving more emphasis to their manageability as defined in Chapter 7 of Forest Service Handbook 1909.12. In addition, changes were made because of limited road construction, powerline construction, and timber harvest that occurred since the Draft SEIS. As a result, six roadless areas were not carried forward to the final inventory due to their small size and heavy influence from adjacent development. They were, however, retained in Alternatives 6 and 8. The final inventory now includes 109 inventoried roadless areas covering 9.6 million

#### Roadless Area Terms

**Roadless Area:** For purposes of this SEIS, this is a generic term that includes inventoried roadless areas and unroaded areas.

**Inventoried Roadless Area:** An undeveloped area typically exceeding 5,000 acres that meets the minimum criteria for wilderness consideration under the Wilderness Act.

**Unroaded Area:** An undeveloped area typically less than 5,000 acres but of a size and configuration sufficient to protect the inherent characteristics associated with its roadless condition.

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acres. This is the inventory that was analyzed in the Final SEIS, along with the other unroaded areas described above.

All 109 inventoried roadless areas on the Tongass and other unroaded areas are shown on a roadless inventory map and on each of the alternative maps provided in the *Map Packet* and in the *Map Section* of the SEIS CD. Larger scale maps of each inventoried roadless area are also available in the *Map Section* of the SEIS CD and on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net).

Detailed descriptions of each individual roadless area have been extensively updated (including additional updates between the Draft SEIS and Final SEIS) to include an overview and a description of the capability, availability, and need for each area to be designated as wilderness. These descriptions reflect current conditions and Forest Service Manual and Handbook direction. They also include an updated rating for each roadless area called the Wilderness Attribute Rating System (WARS), as well as a description of how each individual roadless area could contribute to the National Wilderness Preservation System. These individual roadless area descriptions are included as Appendix C to this SEIS.

The roadless area inventory displays the extent of the roadless resource and provides data for use by managers, legislators, and others to formulate land management proposals. Roadless areas may retain their roadless character by being managed in a way that emphasizes relatively large undeveloped or natural areas, such as are usually required for old-growth habitat, scenic backdrops, or primitive recreation. Roadless areas identified in the inventory that are outside of existing designated Wilderness may be considered for wilderness recommendation or may be managed for a wide range of other resource management activities.

On the Tongass, a Congressional designation has been used for long-term designation of roadless areas. LUD II is a permanent land use designation that was used by Congress in the Tongass Timber Reform Act (TTRA). This Act established 12 permanent LUD II areas totaling 727,762 acres (including 3,477 acres of non-National Forest System land), a designation that will maintain, in a primarily roadless state, an area's wildland characteristics (Table 3.3-49). Because LUD II areas are still available for future consideration as wilderness and meet the minimum criteria for consideration, those parts that are unroaded are included within the roadless areas described in Appendix C and in the tables of this section.

**Table 3.3-49  
National Forest System Land, Non-National Forest System Land, and Productive Old Growth within Each of the Legislated LUD II Areas Designated by the Tongass Timber Reform Act (in acres)**

Name of LUD II Area	Total	National Forest System	Non-National Forest System	Productive Old Growth
Yakutat	139,045	139,035	10	72,312
Berners Bay	45,233	45,233	0	15,390
Anan	38,313	38,313	0	16,426
Kadashan	34,441	34,281	160	20,609
Lisianski/Upper Hoonah	149,088	147,132	1,956	44,178
Mt. Calder-Holbrook	60,863	60,863	0	38,682
Nutkwa	21,723	21,723	0	13,102
Outside Islands	75,720	75,342	378	45,999
Trap Bay	6,595	6,595	0	4,297
Pt. Adolphus/Mud Bay	116,877	116,695	182	38,249
Naha	31,365	31,350	15	17,875
Salmon Bay	11,200	11,200	0	4,811
<b>Total</b>	<b>730,463</b>	<b>727,762</b>	<b>2,701</b>	<b>331,930</b>

Source: USDA Forest Service, 1997a, Table 3-55.

**Roadless Area Conservation Rule**

In May 2001, the Forest Service issued the Roadless Area Conservation Rule (Roadless Rule). This rule established prohibitions on road construction, road reconstruction, and timber harvest in inventoried roadless areas on National Forest System lands. In May 2001, the U.S. District Court for the District of Idaho enjoined the Forest Service from implementing the Roadless Rule, a decision that was subsequently appealed. In December 2002, a three-justice panel of the Ninth Circuit Court of Appeals reversed the Idaho ruling. The case was returned to the State of Idaho for evaluation of the merits, and the State of Idaho then requested review by the full Ninth Circuit. Several other states, including the State of Alaska, filed lawsuits similar to that by the State of Idaho. These lawsuits are still pending. Meanwhile, the Forest Service initiated a review of the Roadless Rule and is evaluating public comment taken on an Advanced Notice of Proposed Rulemaking for roadless conservation. This effort has been undertaken to consider making adjustments to the Roadless Rule.

The inventoried roadless areas to which these prohibitions apply are identified in a set of maps, contained in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000. For the Tongass, these maps represent 9.3 million acres and correspond closely with the 1996 roadless area inventory that was done for the 1997 Forest Plan Revision. Table 3.3-50 compares the areas protected by the Roadless Rule with the areas included in inventoried roadless areas for the Final SEIS, which covers 9.6 million acres. The differences are due to additional road building between 1996 and 2003, refinements of boundaries in 2003, and projects that were expected to be built in 1996 that were never implemented. Approximately 9.1 million of the 9.6 million acres in the Final SEIS inventoried roadless areas are also included under the Roadless Rule.

**Wilderness Attributes of Roadless Areas**

In order to systematically rate the wilderness quality of roadless areas, the Forest Service developed a methodology referred to as the Wilderness Attribute Rating System during the Roadless Area Review and Evaluation (RARE) II process in 1977. This methodology was developed by a team of resource managers, researchers, university professors, and environmental representatives and was based on the wilderness definition in the Wilderness Act (Hendee et al., 2002). It considers four main attributes and several supplemental ones. The main attributes are natural integrity, apparent naturalness, opportunity for solitude, and opportunity for primitive recreation. Each of the four main attributes is rated on a scale of one to seven, and a composite wilderness attribute score is determined by summing them; as a result, the score for a roadless area ranges from 4 to 28. There are two additional area ratings: a supplementary wilderness attribute rating (ecological, geological, historical, etc.) and a scenic value rating. These ratings are not part of an area's overall composite wilderness attribute score, but instead are viewed as supplemental information to help make marginal decisions or to identify areas that might be placed in the Forest Service Special Interest Area System (Hendee et al., 2002).

**Wilderness Attribute Rating System (WARS)**  
 Considers four main attributes and several supplemental ones. The main attributes are: natural integrity, apparent naturalness, opportunity for solitude, and opportunity for primitive recreation.

**Current Situation**

The Tongass National Forest, the largest in the National Forest System, is more than 90 percent roadless, including wilderness. Only small areas where communities are developing, or where road construction and timber harvest have occurred, are "developed" to any noticeable degree. At various times in the past, "boom and bust" development (associated with fox farming, salmon canneries, mining, and military activity) resulted in the temporary development and occupation of small areas, mostly near the shoreline, that have since been largely reclaimed by nature. Developed areas cover about 1.3 million acres, or about 8 percent of the Tongass (based on updated roadless mapping). Southeast Alaska residents, who number approximately 73,000, are virtually surrounded by land they consider wilderness. Routine travel and ordinary outdoor recreation activities may require a higher degree of skill, risk-taking, and self-reliance than are typically required of adventurous

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**Table 3.3-50  
Tongass National Forest Inventoried Roadless Areas Analyzed in the Final SEIS  
Compared with Roadless Areas Covered by the Roadless Area Conservation  
Rule**

Roadless Area		Final SEIS National Forest	Roadless Rule National Forest	Acreage Difference
Number	Roadless Area Name	Acres	Acres	
201	Fanshaw	48,446	48,194	252
202	Spires	542,829	533,269	9,560
203	Thomas	5,232	0	5,232
204	Madan	69,126	68,502	624
205	Aaron	79,147	78,689	458
206	Cone	127,874	127,776	98
207	Harding	179,350	174,209	5,141
208	Bradfield	204,133	198,919	5,214
209	Anan	38,162	36,648	1,514
210	Frosty	45,522	39,865	5,656
211	North Kupreanof	99,566	114,590	(15,023)
212	Missionary	14,825	16,662	(1,837)
213	Five Mile	19,284	19,433	(149)
214	South Kupreanof	213,122	216,645	(3,523)
215	Castle	52,432	49,151	3,281
216	Lindenberg	25,136	25,836	(699)
217	Green Rocks	11,059	11,074	(15)
218	Woewodski	10,647	10,046	601
220	East Mitkof	9,444	8,770	674
223	Manzanita	10,436	8,394	2,042
224	Crystal	19,609	18,962	647
225	Kadin	2,022	2,022	0
227	North Wrangell	11,602	8,089	3,513
229	South Wrangell	14,959	14,211	748
231	Woronkofski	12,932	11,097	1,835
232	North Etolin	41,740	40,911	829
233	Mosman	56,757	53,226	3,531
234	South Etolin	28,678	26,230	2,449
235	West Zarembo	8,544	6,781	1,764
236	East Zarembo	16,175	10,844	5,331
237	South Zarembo	41,999	36,246	5,752
238	Kashevarof Islands	5,743	4,623	1,120
239	Keku	11,170	10,829	340
240	Security	35,497	31,375	4,122
241	North Kuiu	9,544	6,352	3,192
242	Camden	40,395	36,671	3,725
243	Rocky Pass	79,103	77,580	1,523
244	Bay of Pillars	28,728	27,363	1,365
245	East Kuiu	46,395	27,513	18,882
246	South Kuiu	63,063	62,150	913
247	East Wrangell	7,634	7,610	24
288	West Wrangell	-	10,281	(10,281)
289	Central Wrangell	15,210	13,394	1,815
290	Southeast Wrangell	20,297	18,363	1,934
301	Juneau-Skagway Icefield	1,201,473	1,186,606	14,867
302	Taku-Snettisham	685,712	662,400	23,312
303	Sullivan	66,143	67,252	(1,110)
304	Chilkat-West Lynn Canal	198,109	199,418	(1,310)
305	Juneau Urban	94,800	101,518	(6,718)
306	Mansfield Peninsula	51,988	54,883	(2,895)
307	Greens Creek	19,959	27,166	(7,207)
308	Windham-Port Houghton	161,922	161,697	225
310	Douglas Island	25,008	28,055	(3,047)
311	Chichagof	534,309	555,200	(20,891)
312	Trap Bay	13,821	13,213	608
313	Rhine	16,675	22,979	(6,304)
314	Point Craven	10,961	10,900	61
317	Point Augusta	15,629	15,438	191

**Table 3.3-50 (continued)**  
**Tongass National Forest Inventoried Roadless Areas Comparison**

Roadless Area Number	Roadless Area Name	Final SEIS National Forest Acres	Roadless Rule National Forest Acres	Acreage Difference
318	Whitestone	5,747	5,617	130
319	Pavlof-East Point	4,731	5,368	(638)
321	Tenakee Ridge	21,854	20,523	1,330
323	Game Creek	51,436	54,432	(2,995)
325	Freshwater Bay	47,070	44,909	2,160
326	North Kruzof	25,373	32,961	(7,588)
327	Middle Kruzof	15,127	14,698	428
328	Hoonah Sound	97,329	79,661	17,668
329	South Kruzof	55,726	55,074	653
330	North Baranof	324,317	313,611	10,706
331	Sitka Urban	114,460	111,983	2,477
332	Sitka Sound	20,878	13,390	7,488
333	Redoubt	74,570	67,993	6,577
334	Port Alexander	124,021	120,183	3,838
338	Brabazon Addition	500,597	498,589	2,008
339	Yakutat Forelands	337,374	321,402	15,973
341	Upper Situk	18,411	16,772	1,639
342	Neka Mountain	53,019	6,130	46,889
343	Neka Bay	7,826	7,090	736
501	Dall Island	111,245	105,178	6,066
502	Suemez Island	24,478	19,853	4,626
503	Outer Islands	99,891	99,439	452
504	Sukkwan	49,759	44,055	5,704
505	Soda Bay	63,147	77,937	(14,790)
507	Eudora	200,493	194,220	6,273
508	Christoval	7,367	9,081	(1,714)
509	Kogish	71,420	65,081	6,340
510	Karta	55,527	52,106	3,421
511	Thorne River	74,362	72,971	1,391
512	Ratz	6,414	5,323	1,091
514	Sarkar	62,170	51,635	10,535
515	Kosciusko	71,578	63,878	7,699
516	Calder	12,218	9,807	2,411
517	El Capitan	30,854	26,688	4,166
518	Salmon Bay	27,412	22,697	4,714
519	McKenzie	80,650	82,766	(2,117)
520	Kasaan	7,605	7,573	31
521	Duke	46,863	44,535	2,328
522	Gravina	38,978	37,299	1,679
523	South Revilla	53,559	51,942	1,617
524	Revilla	30,941	29,293	1,648
525	Behm Islands	4,944	4,735	210
526	North Revilla	225,444	215,371	10,073
528	Cleveland	191,477	189,007	2,471
529	North Cleveland	109,639	105,131	4,509
530	Hyder	116,304	121,703	(5,399)
531	Nutkwa	56,818	53,632	3,186
532	Fake Pass	876	466	410
533	Hydaburg	13,720	11,161	2,559
534	Twelvemile	34,333	37,921	(3,587)
535	Carroll	11,180	11,364	(184)
536	Kasaan Bay	-	7,358	(7,358)
577	Quartz	146,657	142,941	3,716
<b>Total Acres</b>		<b>9,558,266</b>	<b>9,320,651</b>	<b>237,613</b>

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backcountry visitors on other National Forests. This wilderness and the lifestyles associated with it are highly prized by residents and visitors alike.

A total of 106 inventoried roadless areas were identified and examined for potential wilderness recommendations early in the 1997 Tongass Forest Plan Revision Final EIS process that resulted in the 1997 Tongass National Forest Land and Resource Management Plan (referred to in this SEIS as the 1997 Tongass Forest Plan or the 1997 Forest Plan). The results of this analysis were recorded in Appendix C of the 1989 Analysis of the Management Situation (AMS). An update of this analysis was produced and included as Appendix C to the 1997 Forest Plan Revision Final EIS. This update addressed 110 roadless areas, the total number having increased primarily due to the splitting of some roadless areas by development.

The 110 roadless areas identified in the 1997 Final EIS covered approximately 9.4 million acres of National Forest System land. Based on an updated inventory that was more inclusive in terms of what qualified as roadless, the Draft SEIS addressed 115 roadless areas that totaled approximately 9.7 million acres. After further refinement between the Draft and Final SEIS, the number and size of the areas has changed slightly and now includes 109 areas covering 9.6 million acres for the Final SEIS. The size of each area, the amount of each area that is in productive old growth, and the amount in land that is considered suitable for timber harvest is shown in Table 3.3-51. The table also lists the WARS score for each of the roadless areas as a general indication of the wilderness attributes of the area. The location and relative size of the roadless areas are depicted on a roadless inventory map and on each of the alternative maps provided in the *Map Packet* and in the *Map Section* of the SEIS CD. Larger scale maps of each inventoried roadless area are also available in the *Map Section* of the SEIS CD and on the SEIS Web site at [www.tongass-seis.net](http://www.tongass-seis.net). Updated detailed descriptions of each roadless area are provided in Appendix C to this SEIS.

Several characteristics of roadless areas on the Tongass are rather unique relative to other areas in the National Forest System. The Tongass has very large undeveloped land areas that could potentially be managed as wilderness or in an unroaded condition. Several portions of the Forest constitute contiguous roadless areas exceeding one million acres, and thus represent large, unfragmented wildlife habitats and exceptional opportunities for solitude.

Many of the Tongass roadless areas represent wildlife habitats, ecosystems, and visual character, such as coastal islands facing the open Pacific, extensive beaches on inland saltwater, old-growth temperate rain forests, ice fields, and glaciers, that exist nowhere else in the National Forest System. All of these features are represented in the existing 5.8 million acres designated as wilderness. Many of these areas are remote and difficult to access for primitive recreation, and many contain other important resources, such as timber, minerals, and salmon-producing streams. Of the estimated 664,000 acres of suitable forest land on the Tongass National Forest, approximately 307,000 acres, or 46 percent, are within roadless areas.

#### Historic and Future Trends

Until World War II, the entire Tongass National Forest was virtually unroaded and undeveloped, with the exception of a few small communities and isolated fox farms and canneries. Small-scale "hand logging" along shorelines had occurred in many areas, but was not accompanied by roads and other development. Significant industrial timber harvest did not begin until the early 1950s with the opening of pulp mills and the advent of long-term timber sale contracts. Since 1900, over 400,000 acres have had timber harvest activities, with 88 percent of the harvest occurring since 1952. Since the approval of the Tongass Land Management Plan in 1979, about 120,000 acres of National Forest System land have been altered by

**Table 3.3-51  
Tongass National Forest Inventoried Roadless Area Descriptors**

Roadless Area Number	Roadless Area Name	National Forest Acres	Productive Old-growth Forest Acres	Estimated Suitable Forest Lands Acres <sup>1</sup>	Wilderness Attribute Rating (WARS) <sup>2</sup>
201	Fanshaw	48,443	29,508	8,251	26
202	Spires	543,319	68,220	6,833	26(27)
203	Thomas	5,297	2,031	480	18
204	Madan	69,128	33,372	11,386	25
205	Aaron	79,147	17,159	4	27
206	Cone	127,874	10,698	-	28
207	Harding	179,350	58,288	3,165	20(22)
208	Bradfield	204,128	23,623	1,999	20
209	Anan	38,162	16,038	-	22
210	Frosty	45,522	22,583	4,989	19(21,24)
211	North Kupreanof	103,094	20,746	5,475	19(22)
212	Missionary	17,382	7,307	1,709	16
213	Five Mile	19,272	8,247	2,232	23
214	South Kupreanof	215,391	82,241	19,365	24
215	Castle	52,432	20,313	3,098	25
216	Lindenberg	26,757	11,793	4,639	18
217	Green Rocks	11,216	5,052	337	19
218	Woewodski	10,632	5,786	2,346	21
220	East Mitkof	10,332	3,502	427	15
223	Manzanita	10,792	6,037	1,921	18
224	Crystal	20,003	8,330	2,129	19
225	Kadin	2,022	1,997	-	20
227	North Wrangell	11,518	7,202	2,206	15(17)
229	South Wrangell	14,959	6,489	1,935	20
231	Woronkofski	12,932	6,690	2,216	20
232	North Etolin	42,519	20,276	3,973	18
233	Mosman	56,757	27,040	5,576	22(21,23,24)
234	South Etolin	28,678	11,109	3,204	24(23,25)
235	West Zarembo	8,544	3,945	68	14
236	East Zarembo	21,469	7,113	2,490	14
237	South Zarembo	42,191	17,294	3,634	20
238	Kashevarof Islands	5,743	4,197	-	23
239	Keku	10,770	6,266	1,096	19
240	Security	35,952	24,185	1,510	22
241	North Kuiu	10,214	8,479	3,538	15
242	Camden	40,260	20,549	5,901	23(19,26)
243	Rocky Pass	81,107	39,493	863	26
244	Bay of Pillars	28,994	20,541	3	25
245	East Kuiu	46,438	29,626	7,656	26
246	South Kuiu	63,063	37,388	-	27
247	East Wrangell	7,634	5,032	1,241	17
289	Central Wrangell	15,654	6,887	1,326	16
290	Southeast Wrangell	20,353	8,686	1,109	17
301	Juneau-Skagway Icefield	1,201,474	60,528	1,722	25(24,25)
302	Taku-Snettisham	685,704	99,498	4,027	24
303	Sullivan	66,143	12,883	955	26
304	Chilkat-West Lynn Canal	198,525	47,442	5,981	25
305	Juneau Urban	95,633	34,833	3,256	21
306	Mansfield Peninsula	52,553	25,794	-	20
307	Greens Creek	20,703	12,464	-	19(22)
308	Windham-Port Houghton	161,867	107,308	20,546	25(25,25)
310	Douglas Island	27,761	13,557	-	17
311	Chichagof	545,419	173,701	11,164	25(20,22,23,23,26,26)
312	Trap Bay	13,923	7,058	266	19(23)
313	Rhine	19,628	2,332	335	18

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**Table 3.3-51 (continued)  
Tongass National Forest Roadless Area Descriptors**

Roadless Area Number	Roadless Area Name	National Forest Acres	Productive Old-growth Forest Acres	Estimated Suitable Forest Lands Acres <sup>1</sup>	Wilderness Attribute Rating (WARS) <sup>2</sup>
314	Point Craven	11,310	6,907	895	18
317	Point Augusta	15,629	9,246	1,170	19(20)
318	Whitestone	5,745	2,841	439	19
319	Pavlof-East Point	5,348	3,628	255	16
321	Tenakee Ridge	22,014	6,375	1,309	18
323	Game Creek	51,994	18,999	2,243	18
325	Freshwater Bay	48,227	18,612	1,928	17
326	North Kruzof	25,373	12,519	489	22
327	Middle Kruzof	15,127	7,894	1,815	15
328	Hoonah Sound	97,329	34,993	2,226	25
329	South Kruzof	55,840	17,164	885	22
330	North Baranof	331,425	82,901	6,521	25
331	Sitka Urban	114,875	13,747	550	20
332	Sitka Sound	20,878	10,260	486	20
333	Redoubt	74,516	33,122	1,448	21
334	Port Alexander	124,021	30,875	-	25
338	Brabazon Addition	500,597	-	-	27
339	Yakutat Forelands	336,976	34,829	4,137	22
341	Upper Situk	18,411	6,885	1,236	19
342	Neka Mountain	53,014	23,090	2,066	21
343	Neka Bay	7,826	4,128	-	20
501	Dall Island	110,667	64,784	2,547	23(21,23,24)
502	Suemez Island	24,940	15,060	2,904	20
503	Outer Islands	99,873	52,919	1,170	23(25)
504	Sukkwon	49,614	19,801	1,829	23
505	Soda Bay	63,363	21,288	5,621	20(20,20)
507	Eudora	201,729	87,687	11,572	24(19,25)
508	Christoval	7,367	5,396	24	19
509	Kogish	72,553	29,497	8,090	20(23)
510	Karta	56,816	19,863	6,121	19
511	Thorne River	76,454	38,611	2,816	21(22)
512	Ratz	6,414	3,298	812	19
514	Sarkar	63,656	30,407	2,177	23
515	Kosciusko	71,613	40,810	3,013	24
516	Calder	12,519	8,983	302	22
517	El Capitan	31,141	16,658	3,046	20
518	Salmon Bay	28,602	11,157	1,682	20
519	McKenzie	83,822	30,391	4,849	22(24)
520	Kasaan	7,602	3,082	-	18
521	Duke	46,863	7,360	-	26
522	Gravina	38,845	18,849	4,468	21
523	South Revilla	55,321	21,896	1,598	20(19,20,22)
524	Revilla	30,826	10,427	585	17
525	Behm Islands	4,943	3,263	-	14
526	North Revilla	230,679	102,108	10,274	20(18,19,21,22,23)
528	Cleveland	191,363	98,658	15,556	25
529	North Cleveland	109,639	47,354	199	26
530	Hyder	122,408	11,135	54	25
531	Nutkwa	56,477	32,739	4,697	23
532	Fake Pass	876	765	-	22
533	Hydaburg	13,688	7,880	-	19
534	Twelvemile	36,171	11,811	1,035	16
535	Carroll	11,152	4,474	1,744	16
577	Quartz	146,655	48,475	-	25
<b>Total Acres</b>		<b>9,558,266</b>	<b>2,684,657</b>	<b>307,465</b>	

<sup>1</sup> The estimated suitable acreage is based on the 1997 Tongass Forest Plan and was adjusted by the MIRF and a Scheduling factor (see *Timber* section).

<sup>2</sup> The WARS rating has a potential range from a minimum of 4 to a maximum of 28. When more than one number is given, the roadless area was rated once for the entire roadless area and separate rating(s) were done for identified portions of the area. The ratings for portions of the roadless area are in parentheses.

timber harvest. Currently, approximately 87 percent of nonwilderness National Forest System land is roadless.

Recreation and tourism use of Southeast Alaska’s roadless lands is growing rapidly from a sight-seeing perspective from cruise ships, helicopters, and float planes. Use levels that involve more primitive forms of recreation are low, but are also increasing. Modern technology has made available improved rainwear, camping equipment, high-quality ocean kayaks, portable marine radios, and other gear that respond to new trends, or lead to increased use. Continued tourism marketing may also lead to increased public use of wilderness and roadless area recreation opportunities. Demand for natural areas to provide clean water and air, reduce effects of global warming, and to counter deforestation in other countries is also increasing as these global issues increase in importance.

**Direct, Indirect,  
and Cumulative  
Effects**

**Environmental Consequences**

Alternative 1 does not propose any changes to the management of existing roadless areas; however, each of the other alternatives considered in this SEIS propose to change various combinations of roadless area acreages to Recommended Wilderness or Recommended LUD II areas. Table 3.3-52 displays how the roadless lands were allocated to Recommended Wilderness or Recommended LUD II areas in each alternative.

Table 3.3-53 displays how the roadless lands are allocated to LUDs by alternative. Subtotals in this table indicate groupings into categories of natural setting, moderate development, and intensive development. The groupings indicate the potential for development or for maintaining the natural setting and, therefore, a future wilderness option. Implementation will determine the location, timing, or intensity of actual project activities within any particular area.

In general, management prescriptions for LUDs that allow moderate to intensive development include timber harvest with associated road and log transfer facility construction. There are guidelines for the extent and visual impact of such activities. The LUDs that emphasize maintaining the natural setting and undeveloped character of the area generally do not allow timber harvesting or the development of major recreation facilities, although roads linking transportation systems, particularly major State corridors, may occur.

Not all areas subject to development allowed by the LUD would actually be developed. Development will occur mainly in areas with suitable forest lands. Some of the road construction will occur in areas already roaded. Some of the road construction will fragment existing roadless areas, either creating new roadless areas (if more than 5,000 acres remains) or simply resulting in small blocks of undeveloped land surrounded by roads and harvest areas.

The analysis at the Forest-wide level serves primarily as a general indication of the effects of the alternatives on the future potential to recommend roadless areas for designation as wilderness. In addition, not all of the effects of the alternatives occur at once. The maximum amount of road construction and timber harvest that would occur in the first decade in any alternative is estimated to be about 1,060 miles of road and about 89,000 acres of timber harvest (Alternatives 1, 2, and 4). Assuming that roadless acres become roaded at the rate of about 300 acres per mile of new road and that all new roads are built in roadless areas, a maximum of 320,000 acres of current roadless area are estimated to become roaded by the end of the first decade. This indicates that at least 97 percent of the currently roadless lands on the Forest would still be roadless at the time of the next Forest Plan revision.

### 3 Environment and Effects

**Table 3.3-52  
Tongass National Forest Roadless Areas Recommended for Wilderness or LUD II Designation by  
Alternative**

Roadless Area Number	Name	Alternative							
		1	2	3	4	5	6	7	8
201	Fanshaw						48,446	48,446	48,446
202	Spires			500,076	482,756		542,830	542,830	542,830
203	Thomas						5,232	5,232	5,232
204	Madan						69,126 <sup>1</sup>		69,126
205	Aaron						79,147 <sup>1</sup>		79,147
206	Cone						127,874 <sup>1</sup>		127,874
207	Harding		40				179,310 <sup>1</sup>		179,350
208	Bradfield						204,133 <sup>1</sup>		204,133
209	Anan		38,162			38,161		38,162	38,162
210	Frosty						45,522 <sup>1</sup>		45,522
211	North Kupreanof						30,963/ 68,603 <sup>1</sup>	30,963	99,566
212	Missionary						14,825 <sup>1</sup>		14,825
213	Five Mile						19,284 <sup>1</sup>		19,284
214	South Kupreanof			76,081	410	107,719	210,083/ 3,039 <sup>1</sup>	213,122	213,122
215	Castle			32,377	18,512	32,378	52,432	52,432	52,432
216	Lindenberg						8,094/ 17,043 <sup>1</sup>	8,094	25,136
217	Green Rocks						11,059 <sup>1</sup>		11,059
218	Woewodski						10,647	10,647	10,647
220	East Mitkof						9,444 <sup>1</sup>		9,444
223	Manzanita					6,556	10,436 <sup>1</sup>	6,556	10,436
224	Crystal						19,609 <sup>1</sup>		19,609
225	Kadin						2,022 <sup>1</sup>		2,022
227	North Wrangell								11,602
229	South Wrangell						14,959 <sup>1</sup>		14,959
231	Woronkofski						12,932 <sup>1</sup>		12,932
232	North Etolin						41,740 <sup>1</sup>		41,740
233	Mosman						56,757	56,757	56,757
234	South Etolin						28,658/ 20 <sup>1</sup>	28,658	28,678
235	West Zarembo						8,544 <sup>1</sup>		8,544
236	East Zarembo						16,175 <sup>1</sup>		16,175
237	South Zarembo						41,999 <sup>1</sup>		41,999
238	Kashevarof Islands						5,743 <sup>1</sup>		5,743
239	Keku						11,170 <sup>1</sup>		11,170
240	Security						35,497 <sup>1</sup>		35,497
241	North Kuiu						9,544 <sup>1</sup>		9,544
242	Camden			24,130		17,195	40,395 <sup>1</sup>	17,195	40,395
243	Rocky Pass			74,130	69,826	73,985	119/ 78,984 <sup>1</sup>	74,132	79,103
244	Bay of Pillars			23,281	20,926	20,852	28,719/ 11 <sup>1</sup>	28,728	28,728
245	East Kuiu		3,071	46,395		41,598	43,324	46,395	46,395
246	South Kuiu			63,063	63,063	63,063	63,063	63,063	63,063
247	East Wrangell						7,634 <sup>1</sup>		7,634
289	Central Wrangell						15,210 <sup>1</sup>		15,210
290	Southeast Wrangell						20,297 <sup>1</sup>		20,297
301	Juneau-Skagway Icefield		42,921			42,024	248,438/ 953,035 <sup>1</sup>	248,433	1,201,474

**Table 3.3-52 (continued)**  
**Tongass National Forest Roadless Areas Recommended for Wilderness or LUD II Designation by Alternative**

Roadless Area Number	Name	Alternative							
		1	2	3	4	5	6	7	8
302	Taku-Snettisham					7,644	423,963/ 261,749 <sup>1</sup>	423,963	685,712
303	Sullivan					3,976	62,167/ 3,976 <sup>1</sup>	66,143	66,143
304	Chilkat-West Lynn Canal						197,942/ 165 <sup>1</sup>	197,942	198,109
305	Juneau Urban						20,355/ 74,445 <sup>1</sup>	20,355	94,800
306	Mansfield Peninsula						51,988	51,988	51,988
307	Greens Creek						11,603	11,603	19,959
308	Windham-Port Houghton					123,602	161,922	161,922	161,922
310	Douglas Island						25,008 <sup>1</sup>		25,008
311	Chichagof		238,456			348,599	33,003/ 295,314 <sup>1</sup>	349,291	534,310
312	Trap Bay		6,415			6,426	13,821	13,821	13,821
313	Rhine						16,675 <sup>1</sup>		16,675
314	Point Craven						10,961 <sup>1</sup>		10,961
317	Point Augusta						15,629 <sup>1</sup>		15,629
318	Whitestone						5,747 <sup>1</sup>		5,747
319	Pavlof-East Point						4,731 <sup>1</sup>		4,731
321	Tenakee Ridge						21,854 <sup>1</sup>		21,854
323	Game Creek						51,436 <sup>1</sup>		51,436
325	Freshwater Bay						47,070 <sup>1</sup>		47,070
326	North Kruzof						25,373 <sup>1</sup>		25,373
327	Middle Kruzof						15,127 <sup>1</sup>		15,127
328	Hoonah Sound		53,667	43,662		97,329	43,662	97,329	97,329
329	South Kruzof						55,726 <sup>1</sup>		55,726
330	North Baranof					22,574	324,317 <sup>1</sup>	22,574	324,317
331	Sitka Urban						114,460 <sup>1</sup>		114,460
332	Sitka Sound						20,878 <sup>1</sup>		20,878
333	Redoubt						74,570 <sup>1</sup>		74,570
334	Port Alexander						100,621/ 23,400 <sup>1</sup>	100,621	124,021
338	Brabazon Addition						500,597	500,597	500,597
339	Yakutat Forelands		137,099			219,651	12,716/ 187,559 <sup>1</sup>	232,366	337,374
341	Upper Situk						2,543/ 15,868 <sup>1</sup>	2,543	18,411
342	Neka Mountain					20,814	53,019 <sup>1</sup>	20,814	53,019
343	Neka Bay						7,826 <sup>1</sup>		7,826
501	Dall Island					103,939	111,245 <sup>1</sup>	103,939	111,245
502	Suemez Island						24,478 <sup>1</sup>		24,478
503	Outer Islands		74,112			95,953	25,779 <sup>1</sup>	95,952	99,891
504	Sukkwan					16,142	49,759 <sup>1</sup>	16,142	49,759
505	Soda Bay						63,147 <sup>1</sup>		63,147
507	Eudora					24,437	150,458/ 50,035 <sup>1</sup>	150,459	200,493
508	Christoval						7,367 <sup>1</sup>		7,367
509	Kogish						71,420 <sup>1</sup>		71,420
510	Karta						55,527 <sup>1</sup>		55,527
511	Thorne River					61,027	74,362 <sup>1</sup>	61,027	74,362
512	Ratz						6,414 <sup>1</sup>		6,414
514	Sarkar					24,765	62,170 <sup>1</sup>	24,765	62,170
515	Kosciusko		43,265			58,214	28,313 <sup>1</sup>	58,214	71,578
516	Calder		10,278			10,321	1,940 <sup>1</sup>	10,321	12,218

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**Table 3.3-52 (continued)**  
**Tongass National Forest Roadless Areas Recommended for Wilderness or LUD II Designation by Alternative**

Roadless Area		Alternative							
Number	Name	1	2	3	4	5	6	7	8
517	El Capitan					18	30,854 <sup>1</sup>	18	30,854
518	Salmon Bay		11,076			18,306	16,335 <sup>1</sup>	18,306	27,412
519	McKenzie						80,650 <sup>1</sup>		80,650
520	Kasaan						7,605 <sup>1</sup>		7,605
521	Duke						46,863 <sup>1</sup>		46,863
522	Gravina						38,978 <sup>1</sup>		38,978
523	South Revilla						53,559 <sup>1</sup>		53,559
524	Revilla						30,941 <sup>1</sup>		30,941
525	Behm Islands						4,944 <sup>1</sup>		4,944
526	North Revilla		31,316			31,473	194,128 <sup>1</sup>	31,473	225,444
528	Cleveland			191,477	80,852	191,458	191,477 <sup>1</sup>	191,458	191,477
529	North Cleveland						109,639 <sup>1</sup>		109,639
530	Hyder						116,304 <sup>1</sup>		116,304
531	Nutkwa		21,455			51,907	30,539/ 4,824 <sup>1</sup>	51,997	56,818
532	Fake Pass						876 <sup>1</sup>		876
533	Hydaburg						13,720 <sup>1</sup>		13,720
534	Twelvemile						34,333 <sup>1</sup>		34,333
535	Carroll						11,180 <sup>1</sup>		11,180
577	Quartz								146,657
	<b>Total Acres</b>		711,334	1,074,674	736,345	1,982,109	3,195,704/ 5,566,413 <sup>1</sup>	4,607,787	9,558,266

<sup>1</sup> Numbers identified with this footnote represent the acreage recommended for LUD II (only occurs under Alternative 6). If there are two numbers separated by a slash mark, the first number represents the acreage recommended for wilderness and the second number represents the acreage recommended for LUD II designation.

**Table 3.3-53**  
**Allocation of Total Roadless Area (9,558,266 acres) to LUDs by Alternative**

Land Use Designation	Alternative							
	1	2	3	4	5	6	7	8
<b>Natural Setting Group</b>								
Recommended Wilderness	0	711,334	1,074,674	736,345	1,982,109	3,195,704	4,607,787	9,558,266
Recommended LUD II	0	0	0	0	0	5,566,413	0	0
Nonwild. Nat. Monument	155,106	155,106	155,106	155,106	155,106	155,013	155,013	0
Research Natural Area	25,615	25,615	25,615	25,615	23,995	0	14,701	0
Special Interest Area	167,118	167,118	154,848	154,848	161,107	0	145,279	0
Remote Recreation	2,130,728	2,130,728	2,071,074	2,071,315	1,999,874	0	1,091,165	0
Municipal Watershed	39,292	39,292	39,292	39,292	39,292	408	39,292	0
Old-growth Habitat	971,309	971,309	890,415	945,679	756,671	3,408	607,603	0
Semi-remote Recreation	2,789,117	2,789,117	2,145,623	2,164,144	2,436,852	0	1,452,153	0
Legislated LUD II	711,334	0	708,263	711,334	35,232	629,535	34,285	0
Wild, Scenic, and Rec. Rivers	103,609	103,609	89,527	89,551	71,230	0	50,173	0
<b>Subtotal</b>	<b>7,093,228</b>	<b>7,093,228</b>	<b>7,354,437</b>	<b>7,093,228</b>	<b>7,661,467</b>	<b>9,550,481</b>	<b>8,197,452</b>	<b>9,558,266</b>
<b>Moderate Development Group</b>								
Experimental Forest	12,746	12,746	12,746	12,746	12,746	0	6,202	9,558,266
Scenic Viewshed	355,314	355,314	338,589	355,314	315,160	7,785	195,044	0
Modified Landscape	372,180	372,180	317,077	372,180	304,309	0	193,647	0
<b>Subtotal</b>	<b>740,240</b>	<b>740,240</b>	<b>668,411</b>	<b>740,240</b>	<b>632,215</b>	<b>7,785</b>	<b>394,894</b>	<b>0</b>
<b>Intensive Development</b>								
Timber production	1,724,797	1,724,797	1,535,417	1,724,798	1,264,584	0	965,922	0
<b>Subtotal</b>	<b>1,724,797</b>	<b>1,724,797</b>	<b>1,535,417</b>	<b>1,724,798</b>	<b>1,264,584</b>	<b>0</b>	<b>965,922</b>	<b>0</b>
<b>Total</b>	<b>9,558,266</b>							

**Effects of Alternatives**

The roadless lands allocated to natural setting LUDs will essentially remain roadless for the life of the current Forest Plan (5 to 10 years); therefore, there will be no effect on roadless values unless a vital transportation linkage or major utility system is proposed (see the LUD map in the *Map* section for potential locations). Should any major road or power transmission corridor study be undertaken, appropriate site-specific environmental analysis would occur.

Those roadless lands within moderate and intensive development LUDs would change over time. The amount of acreage that would change from a roadless to a “developed” status by alternative is estimated in Table 3.3-54.

It should be noted that the discussion below for each alternative assumes that the current Forest Plan is in effect and does not assume any effects of the new Roadless Rule. If the Roadless Rule does become effective as currently written, approximately 9.1 million acres of the inventoried roadless areas on the Tongass would be affected. In addition, approximately 200,000 acres outside of the current roadless inventory would be subject to the Roadless Rule. The Roadless Rule would result in these areas being managed in a manner similar to LUD II. As a result, the differences among the alternatives would be much smaller and each of the alternatives would produce effects similar to the effects under Alternative 6. These effects would be modified to the degree that each alternative would recommend additional wilderness.

**Alternatives 1, 2, and 4**

Approximately 2.5 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs under these alternatives. A maximum of approximately 320,000 of these acres would become developed after Decade 1 and a maximum of approximately 835,000 acres would become developed by the end of Decade 5. At the end of Decade 5, approximately 8.7 million acres of roadless areas, in addition to the 5.8 million acres of existing wilderness, would still remain on the Tongass.

**Table 3.3-54  
Current Roadless Acreage That Could Change to “Developed” after 10 and 50 Years by Alternative<sup>1</sup>**

Alternative	After 10 Years	After 50 Years
1	320,000	835,000
2	320,000	835,000
3	285,000	745,000
4	320,000	835,000
5	244,000	639,000
6	69,000	180,000
7	192,000	502,000
8	75,000	196,000

<sup>1</sup> Based on the assumption that roadless acres become developed at the rate of 300 acres per mile, that all new roads are built in roadless areas, and that the maximum timber allowed under the ASQ is harvested.

**Alternative 3**

Approximately 2.2 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs under Alternative 3. A maximum of approximately 285,000 of these acres would become developed after Decade 1 and

### 3 Environment and Effects

a maximum of approximately 745,000 acres would become developed by the end of Decade 5. At the end of Decade 5, approximately 8.8 million acres of roadless areas, in addition to the 5.8 million acres of existing wilderness, would still remain on the Tongass.

#### ***Alternative 5***

Approximately 1.9 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs under Alternative 5. A maximum of approximately 244,000 of these acres would become developed after Decade 1 and a maximum of approximately 639,000 acres would become developed by the end of Decade 5. At the end of Decade 5, approximately 8.9 million acres of roadless areas, in addition to the 5.8 million acres of existing wilderness, would still remain on the Tongass.

#### ***Alternative 7***

Approximately 1.3 million acres of the existing roadless areas would remain allocated to moderate and intensive development LUDs under Alternative 7. A maximum of approximately 192,000 of these acres would become developed after Decade 1 and a maximum of approximately 502,000 acres would become developed by the end of Decade 5. At the end of the 5th decade, approximately 9.1 million acres of roadless areas, in addition to the 5.8 million acres of existing wilderness, would still remain on the Tongass.

#### ***Alternatives 6 and 8***

Less than 10,000 acres under Alternative 6 and no acres under Alternative 8 of the existing roadless areas would remain allocated to moderate and intensive development LUDs. A maximum of 69,000 to 75,000 acres would become developed after Decade 1 and a maximum of 180,000 to 196,000 acres would become developed by the end of Decade 5. At the end of Decade 5, approximately 9.4 million acres of roadless areas, in addition to the 5.8 million acres of existing wilderness, would still remain on the Tongass.

## Wilderness

### Affected Environment

#### Introduction

This section discusses a number of general aspects about wilderness, describes existing wilderness on the Tongass National Forest, discusses the relative contribution of Tongass wilderness to the National Wilderness Preservation System, and presents some general aspects of wilderness management direction in Alaska. The roadless area map, the current LUD map, and the alternative maps display the locations and boundaries of each wilderness on the Tongass. The only other National Forest in Alaska, the Chugach National Forest, currently has no designated wilderness.

The Wilderness Act of 1964 defines wilderness “as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.” The Act further elaborates on the definition to mean:

an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Based on the wording in the Act, four attributes of wilderness are considered to be the most critical for measuring wilderness quality. These are: 1) natural integrity, 2) apparent naturalness, 3) outstanding opportunities for solitude, and 4) primitive recreation opportunities. In addition, ecological, geological, scenic, cultural, and other features are considered supplemental measures. These attributes are captured in the Wilderness Attribute Rating System (WARS) described in the *Roadless Areas* section.

People value wilderness for a variety of reasons, but most reasons seem to center around three central themes – the *experiential* value *scientific and ecological resource* value, and the *symbolic and spiritual* values (slightly modified from Hendee and Dawson, 2002). The *experiential* value is the direct value of the wilderness experience. The experience is seen as valuable in its own right because of its primitive recreation, aesthetic, closeness to nature, education, freedom, solitude, simplicity, spiritual, and mystical dimensions. The value of wilderness as a *scientific and ecological resource* includes the importance of wilderness to science, including its importance in preservation of fauna and flora, particularly those species requiring large tracts of unmodified habitats. Finally, the *symbolic and spiritual* values of wilderness are represented by the high values some people place on the knowledge that wilderness exists, whether they use it or not. In a world characterized by rapid change and complexity, wilderness symbolizes comforting stability and simplicity to many.

#### Wilderness in Alaska and the Tongass

Congress has the sole authority for designating additions to the National Wilderness Preservation System. Congressionally designated wilderness in the Tongass National Forest comes from two pieces of legislation. The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 established 14 wildernesses totaling 5.5 million acres within the Tongass. Two of the areas, Admiralty Island and Misty Fjords, were also designated as national monuments. Prior to ANILCA there was no

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designated wilderness on the Tongass. In 1990, the Tongass Timber Reform Act (TTRA) amended ANILCA and designated five new wildernesses and one wilderness addition totaling 296,080 acres. This brings the total to 5.8 million acres in 19 wildernesses on the Tongass National Forest. These 19 wildernesses are listed in Table 3.3-55. Each of the action alternatives for this SEIS would recommend additional wilderness.

The wilderness acreages in Table 3.3-55 reflect the legal descriptions as reported to Congress. These acres are not exactly the same as those generated by the Geographic Information System (GIS) used in the analysis for the 1997 Tongass Forest Plan Revision Final EIS or for this SEIS. The differences are due to different resolutions in mapping and the method of generating acres. The 1997 Final EIS used a point grid system to measure acreage using the GIS, based on the legal descriptions. This SEIS measures the area based on the mapped GIS polygons. In addition, there were slight differences in mapping small islands or large rocks in saltwater. The total National Forest System acreage for all wilderness on the Tongass using GIS for this SEIS is 5,756,472, compared to the legal description total of 5,752,221. This difference, less than one-tenth of one percent, is not considered significant.

**Table 3.3-55  
Existing Wildernesses on the Tongass National Forest**

Name	Total Acres	Non-National Forest Acres	National Forest Acres
<b>Wildernesses Established December 2, 1980, by ANILCA</b>			
Kootznoowoo Wilderness (Admiralty Island National Monument)	988,050 <sup>1</sup>	32,129	955,858 <sup>1</sup>
Coronation Island Wilderness	19,232	0	19,232
Endicott River Wilderness	98,729	0	98,729
Maurelle Islands Wilderness	4,937	0	4,937
Misty Fiords National Monument Wilderness	2,142,907	600	2,142,307
Petersburg Creek-Duncan Salt Chuck Wilderness	46,849	0	46,849
Russell Fiord Wilderness	348,701	0	348,701
South Baranof Wilderness	319,568	0	319,568
South Prince of Wales Wilderness	91,018	50	90,968
Stikine-LeConte Wilderness	449,951	1,025	448,926
Tebenkof Bay Wilderness	66,839	27	66,812
Tracy Arm-Fords Terror Wilderness	653,179	0	653,179
Warren Island Wilderness	11,181	0	11,181
West Chichagof-Yakobi Wilderness	265,529	1,038	264,491
<b>Wildernesses Established November 28, 1990, by TTRA</b>			
Chuck River Wilderness	74,990	692	74,298
Karta Wilderness	39,894	5	39,889
Kuiu Wilderness	60,581	0	60,581
Pleasant-Lemusurier-Inian Islands Wilderness	23,151	55	23,096
South Etolin Wilderness	83,371	752	82,619
<b>Total Acreage</b>	<b>5,788,657</b>	<b>36,436</b>	<b>5,752,221</b>

<sup>1</sup> Kootznoowoo Wilderness includes 18,486 acres, including 24 acres of Non-National Forest System land in the Young Lake Addition established by TTRA, November 28, 1990.

Source: Total acreages are as reported to Congress with official boundary maps. These wildernesses include only the public lands above mean high tide.

**Relative Contribution of Tongass Wilderness to the NWPS and in Preserving Landforms and Ecosystems**

**General Perspective**

The National Wilderness Preservation System (NWPS) includes almost 105 million acres. More than half of this acreage is in Alaska (Figure 3.3-5). In addition to having the highest land area in wilderness, Alaska also has the highest percentage of its land area in wilderness among the 50 states (Figure 3.3-6). The states with both the highest land area and highest percent land area in wilderness are Alaska, California, Washington, Idaho, and Arizona (Landres and Meyer, 2000).

In addition to having the greatest amount of land and the highest percentage of its land base in wilderness, Alaska also has the highest number of wilderness acres per resident, with almost 90 acres per resident. When only Southeast Alaska is considered, the number of acres per resident increases to slightly more than 120. These figures compare with the next closest state of Wyoming with about 6 acres per resident. These figures are relevant only as one measure of the need for more wilderness from a local resident perspective.

There are currently a total of 5.8 million acres in 19 wildernesses on the Tongass National Forest. This represents approximately 34 percent of the Tongass and 28 percent of the land in Southeast Alaska. Viewed on a national basis, existing wilderness on the Tongass represents 17 percent of all wilderness on National Forest System lands and 5.5 percent of all lands in the National Wilderness Preservation System (USDA Forest Service, 2000).

Two of the largest wildernesses on the Tongass, Kootznoowoo (Admiralty Island) Wilderness (almost 1 million acres) and Misty Fiords National Monument Wilderness (2.1 million acres), contain vast, virtually intact ecosystems. Five other wildernesses are each over 0.25 million acres in size. The wildernesses of the Tongass are mostly in a pristine condition, with the imprint of humans generally not noticeable. They offer outstanding opportunities for solitude and primitive recreation.

In the remainder of this section, the Tongass National Forest is evaluated in terms of how well its landforms and ecosystems are represented in existing wilderness (and LUD II areas). Four ways of classifying the Tongass landforms and ecosystems are considered, ranging from very broad (e.g., ecoregions, with two categories covering the Tongass) to fairly detailed (e.g., ecological subsections, with 73 categories covering the Tongass).

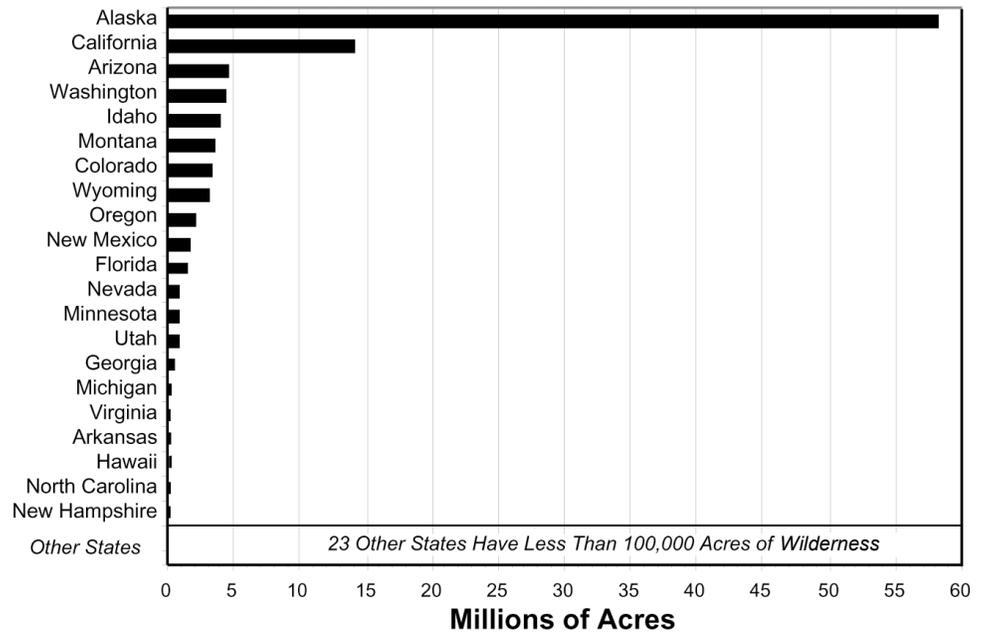
**Ecoregions**

DeVelice and Martin (2001) provide a national summary of acreage in National Forest roadless areas versus designated wilderness, National Parks, and other areas primarily managed to maintain natural values (i.e., conservation reserves). In Alaska, all but one of 15 ecoregions (as defined by Ricketts et al., 1999) have greater than 12 percent of its area in reserves. No other region in the country surpasses Alaska in ecological representation in reserves.

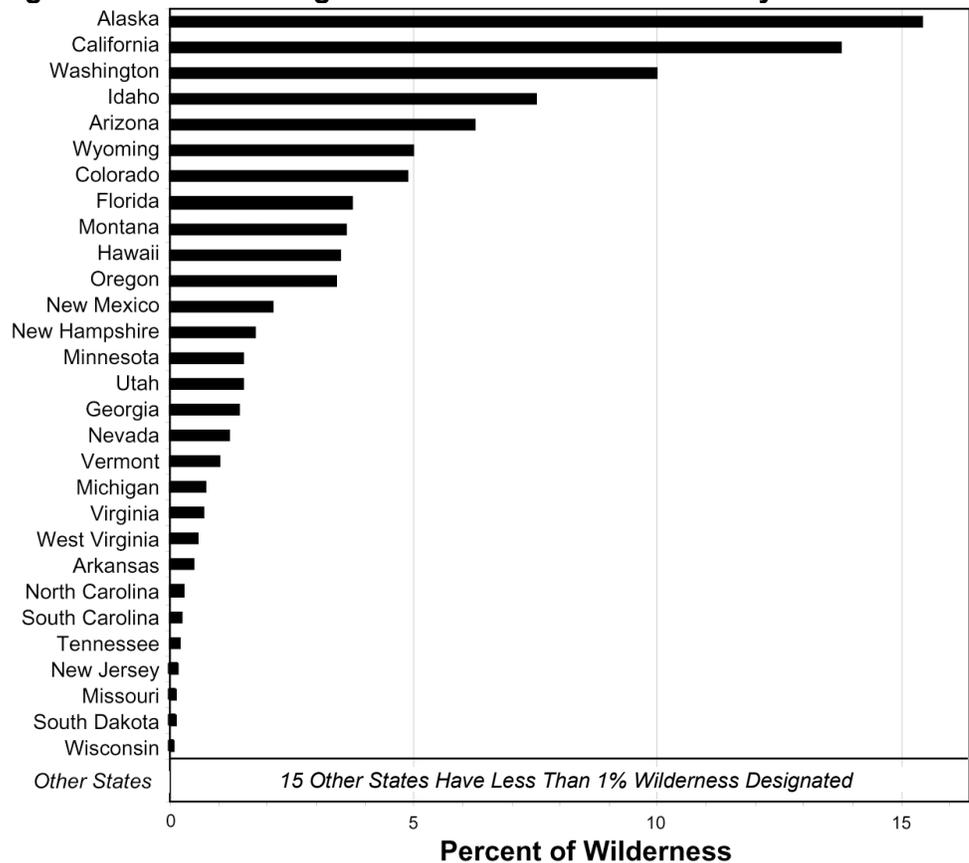
Two ecoregions cover the Tongass National Forest: the Northern Pacific Coastal Forest and the Pacific Coastal Mountain Tundra and Ice Fields (Ricketts et al., 1999). These two ecoregions extend from eastern Kodiak Island to the southern end of the Alaska panhandle. Approximately 19 percent of the Northern Pacific Coastal Forest and 37 percent of the Pacific Coastal Mountain Tundra and Ice Fields ecoregions are in reserves (DeVelice and Martin, 2001). The portions of both of these areas protected in wilderness are well above the 12 percent threshold considered by some authorities (e.g., World Commission on Environment and Development, 1987) as the minimum area for representation (see DeVelice and Martin, 2001).

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**Figure 3.3-5. Acres of Wilderness by State**



**Figure 3.3-6. Percentage of Land Area in Wilderness by State**



When the acreage of inventoried roadless areas is added to the acreage of conservation reserves in the two ecoregions, the percentage increases to 64 percent for the Northern Pacific Coastal Forest and to 66 percent for the Pacific Coastal Mountain Tundra and Ice Fields ecoregions (DeVelice and Martin, 2001). These values are in the 25 to 75 percent range that Noss and Cooperrider (1994) argue is required to achieve representation and are substantially higher than the 12 percent threshold.

When one considers only National Forest System lands, the percentage of National Forest System land area in wilderness in these ecoregions is 25 percent for the Northern Pacific Coastal Forest and 21 percent for the Pacific Coastal Mountain Tundra and Ice Fields. It should be noted that there is no designated wilderness on the Chugach National Forest, so all references to designated wilderness on National Forest System lands in Alaska pertain to the Tongass. If all inventoried roadless areas are counted along with wilderness, then the total area of wilderness plus inventoried roadless areas on National Forest System lands in these ecoregions increases to 69 percent and 79 percent, respectively (DeVelice and Martin, 2001).

### Land Cover Classes

The various wildland ecosystems of Southeast Alaska are generally represented within the Tongass' wilderness. These areas include glaciers and ice fields, off-shore islands and seacoasts facing both the open Pacific Ocean and inland passages, major river systems, and 1.5 million acres of old-growth temperate rain forests. Viewed in terms of broad National Forest land cover classes, designated wilderness on National Forest System lands in Alaska exceeds 12 percent of the area in five land cover classes that are prevalent in Southeast Alaska. These five classes are: 1) Evergreen Forest (23 percent), 2) Tundra (15 percent), 3) Barren Land (37 percent), 4) Water (23 percent), and 5) Glaciers-Snow (15 percent). Designated Wilderness does not exceed 12 percent of the area for Deciduous Forest (0 percent), Mixed Forest (0 percent), and Shrub-Bush (9 percent) (Martin et al., 2000). However, these latter three land cover types are not prevalent in Southeast Alaska.

### Biogeographic Provinces

The extent to which identifiable landform types and ecosystems are represented in the wildernesses (and other Natural Setting LUDs) of the Tongass National Forest is addressed by reviewing the extent to which the biogeographic provinces of Southeast Alaska are represented. The Tongass National Forest can be subdivided into 21 biogeographic provinces characterized by similar species composition, similar patterns in distribution for many species, similar geologic barriers and historic events (such as glaciation), and similar climatic conditions. These provinces are discussed in the *Biodiversity* section of Chapter 3. Table 3.3-56 identifies the percentage of each biogeographic province that is covered by existing wilderness. The table also identifies the percentage in LUD II areas because these are Congressionally designated areas managed for long-term protection to retain their wildland character. It also includes the percentage of each biogeographic province in other Natural Setting LUDs.

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**Table 3.3-56**  
**Percent of Each Biogeographic Province in Wilderness, LUD II, or other Natural Setting LUD (within the Tongass National Forest boundary)**

Province	Percent in Wilderness or National Monument	Percent in LUD II	Percent in Other Natural Setting LUDs <sup>1</sup>	Total Percent in Wilderness or Natural Setting LUDs <sup>1</sup>
1 Yakutat Forelands	2%	39%	38%	79%
2 Yakutat Uplands	37%	0%	62%	100%
3 East Chichagof Island	6%	25%	16%	47%
4 West Chichagof Island	81%	6%	12%	99%
5 East Baranof Island	23%	0%	50%	73%
6 West Baranof Island	29%	0%	55%	84%
7 Admiralty Island	90%	0%	5%	96%
8 Lynn Canal	15%	6%	58%	78%
9 North Coast Range	23%	0%	48%	71%
10 Kupreanof/Mitkof Island	6%	0%	27%	32%
11 Kuiu Island	26%	1%	38%	64%
12 Central Coast Range	38%	0%	37%	75%
13 Etolin Island	16%	0%	25%	41%
14 North Central Prince of Wales	3%	5%	28%	35%
15 Revilla Island/Cleveland	18%	5%	35%	58%
16 South Outer Islands	16%	33%	23%	72%
17 Dall Island and Vicinity	0%	0%	51%	51%
18 South Prince of Wales	22%	5%	33%	61%
19 North Misty Fjords	82%	0%	14%	96%
20 South Misty Fjords	100%	0%	0%	100%
21 Ice Fields	33%	0%	62%	95%
<b>Total</b>	<b>33%</b>	<b>4%</b>	<b>37%</b>	<b>74%</b>

<sup>1</sup> Note that totals may not add due to rounding.

Seventeen of the 21 biogeographic provinces on the Tongass National Forest have 20 percent or more of their lands, within the National Forest boundary, in wilderness, national monument, or LUD II areas, and 18 of the 21 have 15 percent or more. Three provinces—Dall Island and Vicinity, Kupreanof/Mitkof Island, and North Central Prince of Wales—have from 0 to 8 percent in wilderness, national monument, or LUD II areas. However, these areas have from 32 to 51 percent of their land areas within wilderness or Natural Setting LUDs. Overall, 17 of the 21 provinces have more than 50 percent of their land areas in either wilderness or Natural Setting LUDs. The remaining four have 32 to 47 percent.

#### Ecological Subsections

The extent to which identifiable landform types and ecosystems are represented in wilderness (and other Natural Setting LUDs) of the Tongass National Forest can also be evaluated by reviewing the extent to which the ecological subsections of Southeast Alaska are represented (Nowacki et al., 2001). These subsections are discussed in the Biodiversity section of Chapter 3. Table 3.3-57 identifies the percentage of each subsection that is covered by existing wilderness (or national monument), LUD II areas, and other Natural Setting LUDs.

Forty-two of the 73 ecological subsections on the Tongass National Forest have 20 percent or more of their lands inside the National Forest boundary within wilderness,

**Table 3.3-57**  
**Percent of Each Ecological Subsection in Wilderness, LUD II, or Other Natural Setting**  
**LUD (within the Tongass National Forest boundary)**

Number	Ecological Subsection	Percent in Wilderness or National Monument	Percent in LUD II	Percent in Other Natural Setting LUDs <sup>1</sup>	Total Percent in Wilderness or Natural Setting LUDs <sup>1</sup>
M244Ca	St. Elias-Fairweather Icefields	27%	1%	70%	98%
M244Cb	Puget Peninsula Metasediments	100%	0%	0%	100%
M245Bc	Yakutat-Lituya Forelands	9%	33%	39%	80%
M246Aa	Chilkat Complex	0%	0%	95%	95%
M246Ba	Boundary Ranges Icefields	32%	1%	61%	94%
M246Bb	Stikine-Taku River Valleys	43%	0%	53%	97%
M247Ac	Wachusett-Adams Hills	100%	0%	0%	100%
M247Ag	Berg Bay Complex	99%	0%	0%	99%
M247Ak	Chilkat Peninsula Carbonates	26%	0%	51%	77%
M247Bb	North Chichagof Granitics	19%	38%	15%	72%
M247Bc	Outer Coast Wave-cut Terraces	75%	0%	21%	96%
M247Bd	West Chichagof Complex	94%	6%	0%	99%
M247Be	Ushk-Patterson Bay Granitics	19%	43%	6%	67%
M247Bf	Peril Strait Granitics	0%	25%	15%	40%
M247Bg	North Baranof Complex	0%	0%	36%	36%
M247Bh	Sitka Sound Complex	0%	0%	67%	67%
M247Bi	Mount Edgecumbe Volcanics	0%	0%	75%	75%
M247Bj	Central Baranof Metasediments	20%	0%	64%	84%
M247Bk	Necker Bay Granitics	83%	0%	16%	100%
M247Bl	South Baranof Sediments	32%	0%	68%	100%
M247Ca	Point Adolphus Carbonates	0%	16%	32%	48%
M247Cb	Freshwater Bay Carbonates	0%	0%	28%	28%
M247Cc	Kook Lake Carbonates	0%	15%	16%	31%
M247Da	Stephens Passage Glaciomarine Terraces	36%	5%	31%	72%
M247Db	North Admiralty Complex	82%	0%	7%	89%
M247Dc	Stephens Passage Volcanics	58%	0%	26%	84%
M247Dd	Thayer Lake Granitics	100%	0%	0%	100%
M247De	Mitchell-Hasselborg Till Lowlands	100%	0%	0%	100%
M247Df	Hood-Gambier Bay Carbonates	98%	0%	0%	98%
M247Dg	South Admiralty Volcanics	100%	0%	0%	100%
M247Ea	Holkham Bay Complex	32%	0%	28%	60%
M247Eb	Cape Fanshaw Complex	0%	0%	29%	29%
M247Ec	Thomas Bay Outwash Plains	0%	0%	25%	25%
M247Ed	Wrangell Narrows Metasediments	11%	0%	18%	29%
M247Ee	Eastern Passage Complex	23%	3%	29%	55%
M247Ef	Stikine River Delta	77%	0%	5%	82%
M247Eg	Bell Island Granitics	14%	9%	57%	81%
M247Eh	Stikine Strait Complex	0%	0%	42%	42%
M247Ei	Etolin Granitics	37%	0%	19%	55%
M247Ej	Zimovia Strait Complex	5%	0%	26%	30%
M247Ek	Clarence Strait Volcanics	15%	0%	34%	50%
M247El	Ketchikan Mafics/Ultramafics	0%	0%	46%	46%
M247Em	Vixen Inlet Till Lowlands	0%	0%	40%	40%
M247En	Traitors Cove Metasediments	0%	10%	26%	36%
M247Eo	Behm Canal Complex	65%	0%	18%	83%

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**Table 3.3-57 (continued)**  
**Percent of Each Ecological Subsection in Wilderness, LUD II, or Other Natural Setting LUD (within the Tongass National Forest boundary)**

Number	Ecological Subsection	Percent in Wilderness or National Monument	Percent in LUD II	Percent in Other Natural Setting LUDs <sup>1</sup>	Total Percent in Wilderness or Natural Setting LUDs <sup>1</sup>
M247Fa	Kuiu-POW Granitics	19%	23%	36%	78%
M247Fb	Rowan Sediments	27%	0%	27%	54%
M247Fc	North POW-Kuiu Carbonates	0%	2%	25%	27%
M247Fd	Alvin Bay Sediments	53%	0%	25%	78%
M247Fe	Affleck Canal Till Lowlands	38%	2%	60%	100%
M247Ff	North POW Complex	0%	28%	18%	46%
M247Fg	Elevenmile Till Lowlands	0%	0%	52%	52%
M247Fh	Gulf of Esquibel Till Lowlands	12%	40%	48%	100%
M247Fi	Klawock Inlet Till Lowlands	0%	0%	7%	7%
M247Fj	Soda Bay Till Lowlands	0%	0%	44%	44%
M247Ga	Kake Volcanics	0%	0%	23%	23%
M247Gb	Duncan Canal Till Lowlands	6%	0%	35%	41%
M247Gc	Sumner Strait Volcanics	0%	1%	32%	32%
M247Gd	Central POW Till Lowlands	0%	3%	42%	45%
M247Ge	Kasaan Peninsula Volcanics	0%	0%	21%	21%
M247Gf	Skowl Arm Till Lowlands	0%	0%	29%	29%
M247Ha	Outer Islands Complex	100%	0%	0%	100%
M247Hb	Dall-Outside Complex	0%	19%	40%	59%
M247Ia	Central POW Volcanics	8%	0%	23%	31%
M247Ib	Hetta Inlet Metasediments	1%	9%	14%	25%
M247Ic	Moira Sound Complex	23%	0%	35%	59%
M247Ja	South POW Granitics	39%	0%	48%	88%
M247Jb	Duke Island Till Lowlands	0%	0%	72%	72%
M247Jc	Thorne Arm Granitics	19%	0%	40%	58%
M247Jd	Princess Bay Volcanics	62%	0%	8%	70%
M247Je	Foggy Bay Till Lowlands	100%	0%	0%	100%
M247Jf	Boca De Quadra Complex	100%	0%	0%	100%
M247Ka	Misty Fiords Granitics	96%	0%	2%	98%
	<b>Total</b>	<b>33%</b>	<b>4%</b>	<b>37%</b>	<b>74%</b>

<sup>1</sup> Note that totals may not add due to rounding.

national monument, or LUD II areas, and 47 of the 73 subsections have 15 percent or more. Twenty-six of the subsections are not represented in wilderness, national monument, or LUD II areas. All of these subsections are represented in Natural Setting LUDs. Sixteen of the 17 ecological subsections with no wilderness, national monument, or LUD II representation have more than 20 percent of their areas in Natural Setting LUDs. The Klawock Inlet Till Lowlands has only 7 percent in Natural Setting LUDs.

#### Wilderness Management in Alaska

Monitoring has been minimal in most of the wilderness, but some resource damage and user conflicts have been observed in localized concentrated use areas. Monitoring in some of the more remote areas, such as South Prince of Wales and Coronation Island Wildernesses, indicates very little use but some resource damage and occupancy trespass. The areas with the greatest use and most management activities tend to have the greatest need for additional management direction to help resolve user conflicts and preserve the wilderness resource.

Implementation of existing direction has varied greatly between the various wildernesses. Some areas, such as Kootznoowoo (Admiralty Island) and Misty

Fiords Wildernesses, have had significant management programs and accomplishments, while others have had minimal management activities. Some of these activities, such as fisheries enhancement projects and the authorization of temporary facilities for the taking of fish and wildlife, have resulted in administrative appeals by user groups who view these activities as conflicting with their use or with wilderness values.

### **Management Under the Wilderness Act**

The Wilderness Act of 1964 mandates that designated “wilderness areas ... shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.”

Subject to existing private rights, the Act prohibits permanent roads and, except as necessary for realizing the recreation and other wilderness purposes of the area, commercial enterprises. Temporary roads, the use of motor vehicles, motorized equipment, other mechanized equipment, motorboats, the landing of aircraft, and structures and installations are prohibited except as necessary to meet minimum requirements for the administration of the area as wilderness. The Act provides that the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to restrictions by the Secretary of Agriculture. Wildernesses were withdrawn from mineral entry as of December 31, 1983, and patenting of valid claims is limited to subsurface mineral rights.

### **Alaska National Interest Lands Conservation Act**

In ANILCA, Congress reaffirmed and expanded upon the purposes of wilderness as stated in the 1964 Wilderness Act, specifically for wilderness established in Alaska. In recognition of unique situations and established uses in Alaska, ANILCA also provided a number of important specific exceptions to the prohibitions of the Wilderness Act. Some of these follow. These apply equally to TTRA Wilderness.

#### ***Subsistence Policy***

Section 811 mandates that the Secretary “shall ensure that rural residents engaged in subsistence uses shall have reasonable access to subsistence resources on public lands.” This section further directs that, other laws (including the Wilderness Act) notwithstanding, the Secretary “shall permit on the public lands appropriate use for subsistence purposes of snowmobiles, motorboats, and other means of surface transportation traditionally employed for such purposes by local residents, subject to reasonable regulation.”

#### ***Special Access***

Section 1110(a) requires that the Secretary “shall permit” on Conservation Units, which include Wilderness, “the use of snowmachines (during periods of adequate snow cover or frozen river conditions, in the case of Wild or Scenic rivers), motorboats, airplanes, and nonmotorized surface transportation methods for traditional activities (where such activities are permitted by this Act or other law) and travel to and from villages and homesites.” Such use is subject to reasonable regulation but shall not be prohibited unless after notice and hearing the Secretary finds that such use would be detrimental to the resource values of the area.

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### ***Inholding Access***

Section 1110(b) assures adequate and feasible access to State and private land and to valid occupancies, including valid mining claims.

### ***Navigation Aids and Facilities***

Section 1310(a) provides that reasonable access to, and operation and maintenance of, existing air and water navigation aids, communication sites, facilities for national defense, and related facilities and existing facilities for weather, climate and fisheries research, and monitoring shall be permitted. "Nothing in the Wilderness Act shall be deemed to prohibit such access, operation and maintenance within wilderness areas designated by this Act." Section 1310(b) provides that the establishment, operation, and maintenance of new such facilities shall be permitted within wilderness after consultation with the Secretary and in accordance with mutually agreed upon terms and conditions to minimize the adverse effects within the unit.

### ***Aquaculture***

Section 1315(b) provides that the Secretary may permit fishery research, management, enhancement, and rehabilitation activities within National Forest System Wilderness, in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource. Subject to reasonable regulations, permanent improvements and facilities such as fishways, fish weirs, fish ladders, fish hatcheries, spawning channels, stream clearance, egg planting, and other accepted means of maintaining, enhancing, and rehabilitating fish stocks may be permitted.

### ***Public Use Cabins***

Section 1315(c) provides for the continued use, maintenance, and replacement of existing public use cabins within wilderness. Section 1315(d) authorizes the construction and maintenance of a limited number of new public use cabins and shelters, if necessary, for public health and safety, and also requires the Secretary to notify Congress of his intention to remove an existing or construct a new public use cabin or shelter.

### ***Beach Log Salvage***

Section 1315(f) allows the Secretary to permit or otherwise regulate the recovery and salvage of logs from the coastlines of National Forest wilderness and monuments.

### ***Temporary Hunting and Fishing Facilities***

Section 1316(a) provides that the Secretary shall permit, subject to reasonable regulation to ensure compatibility, the continuation of existing uses and future establishment and use of temporary campsites, tent platforms, shelters, and other temporary facilities and equipment directly and necessarily related to the taking of fish and game. Facilities and equipment shall be constructed, used, and maintained in a manner consistent with the protection of the area where they are located. New facilities shall be constructed of materials which blend with and are compatible with the surrounding landscape. Section 1316(b) allows the Secretary to deny new facilities and equipment upon making a determination, after public notice, that the establishment and use of new facilities or equipment would constitute a significant expansion of existing facilities or uses which would be detrimental to the purposes for which the unit was established, including "wilderness character."

### Other Wilderness Act Restrictions

In spite of its many exceptions to the Wilderness Act, ANILCA defines “wilderness” as having the same meaning as when it is used in the Wilderness Act (Sec. 102(13)). Further, Section 707 states that, except as expressly provided in ANILCA, Alaskan wilderness “shall be administered in accordance with applicable provisions of the Wilderness Act governing areas designated by that Act as Wilderness.” Some of the additional restrictions identified for Tongass wilderness by the Forest Plan include the following:

- ◆ New roads and airstrips are not permitted, except to access State and private inholdings and valid mining claims, subject to stipulations for protection of natural and other values of the land.
- ◆ Helicopter use is generally not permitted, except on a case-by-case basis.
- ◆ There is a party size limitation for outfitter/guide operations of no more than 12 persons for any one site or activity.
- ◆ No new permanent administrative facilities are allowed, except as consistent with ANILCA.

### Environmental Consequences

The action alternatives would result in recommending new areas for wilderness or LUD II designation. These areas would be allocated to Recommended Wilderness or Recommended LUD II (see Appendix D for management prescriptions for these new LUDs). Existing wildernesses would not be affected; however, in many alternatives, at least some LUD II areas would be converted to Recommended Wilderness. The areas recommended for wilderness are summarized for each alternative in Table 3.3-58. The effects of each alternative are described in the following paragraphs.

#### Alternative 1

Alternative 1 (No Action) would continue to apply the current Forest Plan LUDs to all existing areas, including existing wilderness, national monument, and LUD II areas. No new wilderness or LUD II areas would be recommended.

Approximately 19 percent of the Northern Pacific Coastal Forest and 37 percent of the Pacific Coastal Mountain Tundra and Ice Fields ecoregions would continue to be protected in reserves (DeVelice and Martin, 2001). The percentage of each biogeographic province covered by wilderness, national monument, or LUD II areas would range from 0 to 93 percent (Table 3.3-59). Seventeen of the 21 biogeographic provinces on the Tongass would continue to have 20 percent or more of their National Forest System land area in wilderness, national monument, or LUD II areas, and 18 of 21 would continue to have 15 percent or more. Three provinces would continue to have less than 12 percent. All 21 provinces would continue to have at least 32 percent of their areas in either wilderness or Natural Setting LUDs.

Forty-two of the 73 ecological subsections would continue to have 20 percent or more in wilderness, national monument, or LUD II areas, and 47 would continue to have 15 percent or more (Table 3.3-60). Twenty-six would continue to have less than 12 percent, and 17 would continue to not be represented in wilderness, national monument, or LUD II. All of these subsections would continue to have at least 7 percent in Natural Setting LUDs.

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**Table 3.3-58  
Approximate Sizes of Recommended Wilderness Additions and New Wildernesses  
on the Tongass National Forest by Alternative**

Wilderness Name	National Forest System Acres
<b>Alternative 1</b>	
None	
<b>Alternative 2</b>	
Addition to Russell Fiord Wilderness	137,246
New Berners Bay Wilderness	42,926
New Trap Bay Wilderness	6,408
New Kadashan Wilderness	34,324
Addition to West Chichagof-Yakobi Wilderness (two areas)	262,985
New Mt. Calder-Holbrook Wilderness	60,242
New Salmon Bay Wilderness	11,308
New Outside Islands Wilderness	74,205
Addition to South Prince of Wales Wilderness	21,455
New Anan Wilderness	38,592
New Naha Wilderness	31,490
<b>Total Recommended Wilderness</b>	<b>721,181</b>
<b>Alternative 3</b>	
Addition to West Chichagof-Yakobi Wilderness	43,665
Addition to and Connection Between Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wildernesses	500,035
Addition to Petersburg Creek-Duncan Salt Chuck Wilderness	105,662
New Rocky Pass Wilderness	101,058
Addition to Tebenkof Bay/Kuiu Wilderness (two areas)	132,739
New Cleveland Peninsula Wilderness	191,477
<b>Total Recommended Wilderness</b>	<b>1,074,636</b>
<b>Alternative 4</b>	
Addition to and Connection Between Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wildernesses	482,760
New Castle River Wilderness	18,530
New Rocky Pass Wilderness	70,219
Addition to Tebenkof Bay/Kuiu Wilderness (two areas)	83,990
New Cleveland Peninsula Wilderness	80,831
<b>Total Recommended Wilderness</b>	<b>736,330</b>
<b>Alternative 5</b>	
Addition to Russell Fiord Wilderness	219,524
New Sullivan Island Wilderness	3,976
New Berners Bay Wilderness	42,024
Addition to West Chichagof-Yakobi Wilderness (two areas)	468,122
New Trap Bay Wilderness	6,408
New Saook Bay Wilderness	23,839
Addition to Tracy Arm-Fords Terror/Chuck River Wilderness (two areas)	131,086
New Southeast Mitkof Wilderness	11,066
Addition to Petersburg Creek-Duncan Salt Chuck Wilderness	105,939
New Rocky Pass Wilderness	128,635
Addition to Tebenkof Bay/Kuiu Wilderness (two areas)	125,893
New Anan Creek Wilderness	37,915
New Cleveland Peninsula Wilderness	191,462
New Naha Wilderness	31,355
New Salmon Bay Wilderness	24,707
New Mt. Calder-Mt. Holbrook Wilderness	70,600
New Sarkar Wilderness	24,765
New Honker Divide Wilderness	66,208
New Outside Islands Wilderness	95,953
New Dall Island Wilderness	104,465
New Sukkwan Wilderness	16,228
Addition to South Prince of Wales Wilderness (two areas)	76,326
<b>Total Recommended Wilderness</b>	<b>2,005,497</b>

**Table 3.3-58 (continued)  
Recommended Wilderness on the Tongass National Forest by Alternative**

Wilderness Name	National Forest System Acres
<b>Alternative 6</b>	
Addition to Russell Fiord Wilderness	515,806
Addition to Endicott River Wilderness	260,110
New Berners Bay Wilderness	268,793
New Mansfield Peninsula Wilderness	64,169
New Kadashan Wilderness	33,003
Addition to West Chichagof-Yakobi Wilderness	43,665
New Trap Bay Wilderness	13,821
Addition to Tracy Arm-Fords Terror/Chuck River Wilderness (two areas)	634,280
Addition to and Connection Between Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wildernesses (two areas)	547,990
Addition to South Baranof Wilderness	100,616
Addition to Petersburg Creek-Duncan Salt Chuck Wilderness (two areas)	305,857
New Woewodski Island Wilderness	10,646
Addition to Tebenkof Bay/Kuiu Wilderness (two areas)	137,424
Addition to South Etolin Wilderness	85,416
Addition to South Prince of Wales Wilderness (two areas)	180,997
<b>Total Recommended Wilderness</b>	<b>3,202,591</b>
<b>Alternative 7</b>	
Addition to Russell Fiord Wilderness	735,513
New Sullivan Island Wilderness	3,976
Addition to Endicott River Wilderness	260,110
New Berners Bay Wilderness	268,793
New Mansfield Peninsula Wilderness	64,169
Addition to West Chichagof-Yakobi Wilderness (two areas)	469,293
New Trap Bay Wilderness	13,821
New Saook Bay Wilderness	23,839
Addition to Tracy Arm-Fords Terror (two areas)	634,165
Addition to and Connection Between Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wilderness	547,910
Addition to South Baranof Wilderness	100,616
New Southeast Mitkof Wilderness	11,066
Addition to Petersburg Creek-Duncan Salt Chuck Wilderness (two areas)	304,244
New Woewodski Island Wilderness	10,646
New Rocky Pass Wilderness	98,317
Addition to Tebenkof Bay/Kuiu Wilderness (two areas)	140,756
Addition to South Etolin Wilderness	85,287
New Anan Creek Wilderness	37,915
New Cleveland Peninsula Wilderness	191,462
New Naha Wilderness	31,355
New Salmon Bay Wilderness	24,706
New Mt. Calder-Mt. Holbrook Wilderness	70,600
New Sarkar Wilderness	24,765
New Honker Divide Wilderness	66,208
New Outside Islands Wilderness	95,953
New Dall Island Wilderness	104,358
New Sukkwan Wilderness	16,231
Addition to South Prince of Wales Wilderness (two areas)	202,287
<b>Total Recommended Wilderness</b>	<b>4,638,362</b>

### 3 Environment and Effects

**Table 3.3-58 (continued)  
Recommended Wilderness on the Tongass National Forest by Alternative**

Wilderness Name	National Forest System Acres
<b>Alternative 8</b>	
Addition to Russell Fiord Wilderness	856,383
Additions to and Connection Between Mainland Wilderness group (Tracy Arm-Fords Terror/Chuck River, Stikine-LeConte, Misty Fiords)	4,061,513
Addition to Endicott River Wilderness	264,252
Additions to Kootznoowoo Wilderness – Admiralty National Monument (Mansfield Peninsula, Greens Creek)	71,947
New Juneau/Douglas Islands Wilderness	27,636
Additions to Chichagof Island Wildernesses (connects with West Chichagof-Yakobi Wilderness)	869,038
Addition to Baranof Island Wildernesses (connects with South Baranof Wilderness – includes Kruzof and adjacent Islands)	754,507
Additions to Kuiu Island Wilderness (connects with Tebenkof Bay/Kuiu Wilderness)	266,655
Additions to Kupreanof Island Wilderness (connects with Petersburg Creek-Duncan Salt Chuck Wilderness – includes Woewodski Island)	499,849
New Mitkof Island Wildernesses	55,497
New Zarembo Island Wildernesses	66,718
New Wrangell Island Wilderness – includes Kadin-Greys Islands	75,278
Additions to Etoilin Island Wildernesses (connects with South Etoilin Wilderness – includes Woronkofski Island)	140,598
Additions to Revilla Island Wildernesses (connects with Misty Fiords Wilderness)	326,069
New Gravina Island Wilderness	38,978
New Duke Island Wilderness	46,863
New Kashevarof Islands Wilderness	5,743
Additions to Prince of Wales Wildernesses (connects with Karta and South Prince of Wales Wildernesses) – includes Heceta Island	888,517
New Outside Islands Wilderness	99,741
New Suemez Island Wilderness	24,478
New Dall Island Wilderness	111,545
New Sukkwan Wilderness	49,459
<b>Total Recommended Wilderness</b>	<b>9,601,263</b>

#### Alternative 2

Under Alternative 2, the 721,000 acres of existing LUD II lands would be converted to Recommended Wilderness. These areas would result in the recommended expansion of three existing wildernesses including the Russell Fiord Wilderness (to about 486,000 acres), the West Chichagof-Yakobi Wilderness (to about 527,000 acres), and the South Prince of Wales Wilderness (to about 112,000 acres). Expansion of the Russell Fiord Wilderness would produce a wilderness corridor connection between the Glacier Bay National Park and Preserve and the Wrangell-St. Elias National Park and Preserve, creating a wilderness over 12 million acres in size. Eight new wildernesses would be recommended, ranging in size from the 6,000-acre Trap Bay Wilderness to the 74,000-acre Outside Islands Wilderness.

The percentage of Tongass National Forest ecoregions, biogeographic provinces, and ecological subsections that would be represented in wilderness, national monument, or LUD II or one of the other Natural Setting LUDs, would remain essentially the same as under Alternative 1 (Tables 3.3-59 and 3.3-60). The exception would be that all LUD II areas would be converted to wilderness.

**Table 3.3-59**  
**Percent of Each Biogeographic Province in Wilderness, National Monument, LUD II, Recommended Wilderness, or Recommended LUD II Areas under Each Alternative**

Biogeographic Province	Alternative							
	1	2	3	4	5	6	7	8
1 Yakutat Forelands	45%	45%	45%	45%	51%	92%	55%	92%
2 Yakutat Uplands	38%	38%	38%	38%	45%	100%	99%	100%
3 East Chichagof Island	33%	33%	38%	33%	54%	86%	55%	86%
4 West Chichagof Island	88%	88%	88%	88%	88%	100%	88%	100%
5 East Baranof Island	23%	23%	23%	23%	29%	93%	29%	92%
6 West Baranof Island	30%	30%	30%	30%	30%	94%	43%	94%
7 Admiralty Island	93%	93%	93%	93%	93%	99%	99%	100%
8 Lynn Canal	22%	22%	22%	22%	22%	96%	81%	96%
9 North Coast Range	25%	25%	25%	25%	38%	99%	69%	99%
10 Kupreanof/Mitkof Island	6%	6%	27%	15%	32%	83%	57%	81%
11 Kuiu Island	27%	27%	64%	49%	61%	83%	64%	81%
12 Central Coast Range	38%	38%	55%	52%	38%	98%	66%	98%
13 Etolin Island	16%	16%	16%	16%	16%	72%	33%	75%
14 North Central Prince of Wales	9%	9%	9%	9%	20%	61%	20%	60%
15 Revilla Island/Cleveland Peninsula	27%	27%	43%	33%	43%	91%	43%	90%
16 Southern Outer Islands	52%	52%	52%	52%	63%	81%	63%	80%
17 Dall Island and Vicinity	0%	0%	0%	0%	89%	99%	89%	98%
18 South Prince of Wales	30%	30%	30%	30%	45%	98%	80%	97%
19 North Misty Fiords	82%	82%	82%	82%	82%	99%	82%	99%
20 South Misty Fiords	84%	84%	84%	84%	84%	84%	84%	100%
21 Ice Fields	33%	33%	46%	46%	33%	100%	55%	100%
<b>Total</b>	<b>39%</b>	<b>39%</b>	<b>45%</b>	<b>43%</b>	<b>46%</b>	<b>91%</b>	<b>62%</b>	<b>92%</b>

**Alternative 3**

Alternative 3 would recommend approximately 1,075,000 acres for wilderness designation. It recommends those areas that rated at least 25 in the Wilderness Attribute Rating System and were considered to have high public interest and/or would make a high relative contribution to the National Wilderness Preservation System. Alternative 3 would result in the recommended expansion of three wildernesses, including the West Chichagof-Yakobi (to about 308,000 acres), the Petersburg Creek-Duncan Salt Chuck (to about 153,000 acres), and the Tebenkof Bay-Kuiu Wildernesses (to about 260,000 acres). In addition, it would recommend expanding and connecting the Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wildernesses, helping to form a very large mainland wilderness about 1,602,000 acres in size. The creation of two new wildernesses would be recommended, including the 101,000-acre Rocky Pass Wilderness and the 191,000-acre Cleveland Peninsula Wilderness.

Under Alternative 3, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 23 percent for the Northern Pacific Coastal Forest and from 37 to 38 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated, the percentage of wilderness would increase in 6 of the 21 biogeographic provinces under Alternative 3 (Table 3.3-59). The number of provinces with less than 12 percent in wilderness, national monument, or LUD II would decline to two.

Forty-nine of the 73 ecological subsections would have 20 percent or more in wilderness, national monument, or LUD II areas, and 55 would have 15 percent or more (Table 3.3-60). Seventeen would have less than 12 percent and 12 would not be represented in wilderness, national monument, or LUD II. All of these subsections would have at least 7 percent in Natural Setting LUDs.

### 3 Environment and Effects

**Table 3.3-60  
Percent of Each Ecological Subsection in Wilderness, National Monument, LUD II,  
Recommended Wilderness, or Recommended LUD II Areas under Each Alternative**

Ecological Subsection	Alternative							
	1	2	3	4	5	6	7	8
M244Ca St. Elias-Fairweather Icefields	28%	28%	28%	28%	35%	100%	100%	100%
M244Cb Puget Peninsula Metasediments	100%	100%	100%	100%	100%	100%	100%	100%
M245Bc Yakutat-Lituya Forelands	42%	42%	42%	42%	48%	85%	54%	85%
M246Aa Chilkat Complex	0%	0%	0%	0%	0%	68%	0%	68%
M246Ba Boundary Ranges Icefields	33%	33%	43%	43%	33%	98%	56%	98%
M246Bb Stikine-Taku River Valleys	43%	43%	43%	43%	43%	97%	43%	97%
M247Ac Wachusett-Adams Hills	100%	100%	100%	100%	100%	100%	100%	100%
M247Ag Berg Bay Complex	99%	99%	99%	99%	99%	99%	99%	99%
M247Ak Chilkat Peninsula Carbonates	26%	26%	26%	26%	26%	91%	91%	91%
M247Bb North Chichagof Granitics	57%	57%	57%	57%	75%	96%	75%	95%
M247Bc Outer Coast Wave-cut Terraces	75%	75%	75%	75%	75%	95%	83%	95%
M247Bd West Chichagof Complex	99%	99%	100%	99%	99%	100%	100%	100%
M247Be Ushk-Patterson Bay Granitics	62%	62%	99%	62%	100%	99%	100%	99%
M247Bf Peril Strait Granitics	25%	25%	25%	25%	57%	87%	57%	84%
M247Bg North Baranof Complex	0%	0%	0%	0%	17%	81%	17%	78%
M247Bh Sitka Sound Complex	0%	0%	0%	0%	0%	79%	0%	77%
M247Bi Mount Edgecumbe Volcanics	0%	0%	0%	0%	0%	208%	3%	84%
M247Bj Central Baranof Metasediments	20%	20%	20%	20%	20%	94%	45%	94%
M247Bk Necker Bay Granitics	83%	83%	83%	83%	83%	100%	83%	100%
M247Bl South Baranof Sediments	32%	32%	32%	32%	32%	46%	32%	100%
M247Ca Point Adolphus Carbonates	16%	16%	16%	16%	34%	68%	34%	68%
M247Cb Freshwater Bay Carbonates	0%	0%	0%	0%	0%	56%	0%	56%
M247Cc Kook Lake Carbonates	15%	15%	15%	15%	15%	56%	23%	56%
M247Da Stephens Passage Glaciomarine Terraces	41%	41%	41%	41%	42%	80%	64%	80%
M247Db North Admiralty Complex	82%	82%	82%	82%	82%	91%	91%	91%
M247Dc Stephens Passage Volcanics	58%	58%	58%	58%	58%	83%	58%	83%
M247Dd Thayer Lake Granitics	100%	100%	100%	100%	100%	100%	100%	100%
M247De Mitchell-Hasselborg Till Lowlands	100%	100%	100%	100%	100%	100%	100%	100%
M247Df Hood-Gambier Bay Carbonates	98%	98%	98%	98%	98%	98%	98%	98%
M247Dg South Admiralty Volcanics	100%	100%	100%	100%	100%	100%	100%	100%
M247Ea Holkham Bay Complex	32%	32%	45%	43%	55%	93%	93%	93%
M247Eb Cape Fanshaw Complex	0%	0%	16%	7%	21%	95%	95%	95%
M247Ec Thomas Bay Outwash Plains	0%	0%	23%	13%	0%	60%	60%	60%
M247Ed Wrangell Narrows Metasediments	11%	11%	11%	11%	14%	56%	18%	53%
M247Ee Eastern Passage Complex	26%	26%	27%	27%	26%	95%	38%	95%
M247Ef Stikine River Delta	77%	77%	77%	77%	77%	82%	77%	82%
M247Eg Bell Island Granitics	24%	24%	24%	24%	24%	95%	24%	95%
M247Eh Stikine Strait Complex	0%	0%	0%	0%	0%	77%	30%	77%
M247Ei Etolin Granitics	37%	37%	37%	37%	37%	91%	74%	91%
M247Ej Zimovia Strait Complex	5%	5%	14%	5%	14%	65%	23%	71%
M247Ek Clarence Strait Volcanics	15%	15%	38%	38%	38%	60%	43%	60%
M247El Ketchikan Mafics/Ultramafics	0%	0%	27%	7%	27%	71%	27%	71%
M247Em Vixen Inlet Till Lowlands	0%	0%	97%	1%	97%	97%	97%	97%
M247En Traitors Cove Metasediments	10%	10%	30%	15%	30%	67%	30%	66%
M247Eo Behm Canal Complex	65%	65%	65%	65%	65%	94%	65%	94%

**Table 3.3-60 (continued)**  
**Percent of Each Ecological Subsection in Wilderness, National Monument, LUD II, Recommended Wilderness, or Recommended LUD II Areas under Each Alternative**

Ecological Subsection	Alternative								
	1	2	3	4	5	6	7	8	
M247Fa	Kuiu-POW Granitics	42%	42%	64%	57%	61%	93%	66%	93%
M247Fb	Rowan Sediments	27%	27%	38%	38%	37%	59%	43%	54%
M247Fc	North POW-Kuiu Carbonates	2%	2%	2%	2%	4%	20%	4%	18%
M247Fd	Alvin Bay Sediments	53%	53%	100%	71%	100%	100%	100%	100%
M247Fe	Affleck Canal Till Lowlands	40%	40%	100%	97%	100%	100%	100%	100%
M247Ff	North POW Complex	28%	28%	28%	28%	51%	70%	51%	70%
M247Fg	Elevenmile Till Lowlands	0%	0%	0%	0%	0%	86%	0%	86%
M247Fh	Gulf of Esquibel Till Lowlands	52%	52%	52%	52%	98%	99%	98%	99%
M247Fi	Klawock Inlet Till Lowlands	0%	0%	0%	0%	0%	2%	0%	2%
M247Fj	Soda Bay Till Lowlands	0%	0%	0%	0%	11%	68%	11%	64%
M247Ga	Kake Volcanics	0%	0%	16%	13%	14%	42%	19%	42%
M247Gb	Duncan Canal Till Lowlands	6%	6%	36%	13%	35%	83%	55%	82%
M247Gc	Sumner Strait Volcanics	1%	1%	35%	15%	43%	89%	74%	88%
M247Gd	Central POW Till Lowlands	3%	3%	3%	3%	28%	50%	28%	46%
M247Ge	Kasaan Peninsula Volcanics	0%	0%	0%	0%	0%	28%	0%	21%
M247Gf	Skowl Arm Till Lowlands	0%	0%	0%	0%	0%	68%	0%	68%
M247Ha	Outer Islands Complex	100%	100%	100%	100%	100%	100%	100%	100%
M247Hb	Dall-Outside Complex	19%	19%	19%	19%	55%	67%	55%	66%
M247Ia	Central POW Volcanics	8%	8%	8%	8%	15%	47%	15%	48%
M247Ib	Hetta Inlet Metasediments	11%	11%	11%	11%	20%	49%	20%	48%
M247Ic	Moirra Sound Complex	24%	24%	24%	24%	51%	98%	86%	98%
M247Ja	South POW Granitics	39%	39%	39%	39%	39%	99%	99%	99%
M247Jb	Duke Island Till Lowlands	0%	0%	0%	0%	0%	73%	0%	73%
M247Jc	Thorne Arm Granitics	19%	19%	19%	19%	19%	87%	19%	86%
M247Jd	Princess Bay Volcanics	62%	62%	62%	62%	62%	77%	62%	75%
M247Je	Foggy Bay Till Lowlands	100%	100%	100%	100%	100%	100%	100%	100%
M247Jf	Boca De Quadra Complex	100%	100%	100%	100%	100%	100%	100%	100%
M247Ka	Misty Fjords Granitics	96%	96%	96%	96%	96%	99%	96%	99%
	<b>Total</b>	<b>37%</b>	<b>37%</b>	<b>43%</b>	<b>41%</b>	<b>45%</b>	<b>86%</b>	<b>59%</b>	<b>86%</b>

**Alternative 4**

Alternative 4 would recommend for wilderness designation approximately 736,000 acres; these acres are a subset of Alternative 3. They represent those portions of Alternative 3 that are in non-development LUDs. Alternative 4 recommends additions to two existing wildernesses—the Tebenkof Bay-Kuiu Wilderness (to about 211,000 acres) and the addition/connection between the Tracy Arm-Fords Terror/Chuck River and Stikine-LeConte Wildernesses. This latter addition/connection would create a very large mainland wilderness about 1,585,000 acres in size. The creation of three new wildernesses would be recommended, including the 19,000-acre Castle River Wilderness, the 70,000-acre Rocky Pass Wilderness, and the 81,000-acre Cleveland Peninsula Wilderness.

Under Alternative 4, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 21 percent for the Northern Pacific Coastal Forest and from 37 to 38 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated, the percentage of wilderness, national monument, or LUD II would increase in five provinces (Table 3.3-59). The number of provinces with less than 12 percent in wilderness, national monument, or LUD II would decline to two.

Forty-three of the 73 ecological subsections would have 20 percent or more in wilderness, national monument, or LUD II areas, and 49 would have 15 percent or more (Table 3.3-60). Twenty-one would have less than 12 percent, and 12 would not be represented in wilderness, national monument, or LUD II. All of these subsections would have at least 7 percent in Natural Setting LUDs.

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#### Alternative 5

Under Alternative 5, approximately 2,005,000 acres would be recommended for wilderness designation. It would recommend all portions of the 23 areas proposed for wilderness by HR 987 (not already in wilderness) along with any additional areas included in the 18 Areas of Special Interest identified in the 1999 ROD. It recommends additions to six existing wildernesses, including the Russell Fiord (to about 569,000 acres), West Chichagof-Yakobi (to about 732,000 acres), Tracy Arms-Fords Terror (to about 784,000 acres), Petersburg Creek-Duncan Salt Chuck (to about 152,000 acres), Tebenkof Bay-Kuiu (to about 253,000 acres), and South Prince of Wales Wildernesses (to about 167,000 acres). Expansion of the Russell Fiord Wilderness would produce a wilderness corridor connection between the Glacier Bay National Park and Preserve and the Wrangell-St. Elias National Park and Preserve, creating a wilderness more than 12 million acres in size. In addition, Alternative 5 recommends 14 new wildernesses, ranging from the 4,000-acre Sullivan Island Wilderness to the 191,000-acre Cleveland Peninsula Wilderness.

Under Alternative 5, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 26 percent for the Northern Pacific Coastal Forest and from 37 to 38 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated as wilderness, the percentage of wilderness would increase in 14 of the 21 biogeographic provinces under Alternative 5, and the percentage covered by wilderness, national monument, or LUD II would increase in 12 of those provinces (Table 3.3-59). None of the provinces would have less than 12 percent in wilderness, national monument, or LUD II areas. The lowest percent coverage would be 16 percent.

Fifty-three of the 73 ecological subsections would have 20 percent or more in wilderness, national monument, or LUD II areas, and 57 would have 15 percent or more (Table 3.3-60). Thirteen would have less than 12 percent, and 11 would not be represented in wilderness or LUD II. All of these subsections would have at least 7 percent in Natural Setting LUDs.

#### Alternative 6

Alternative 6 would recommend for wilderness designation all areas proposed for wilderness by HR 2908, which includes approximately 3,203,000 acres. In addition, it would recommend that 5,680,000 acres (almost all other roadless areas on the Tongass) be converted to LUD II areas. If designated, the recommended areas would expand 10 existing wildernesses and create 5 new wildernesses. The expanded wildernesses would include: Russell Fiord, Endicott River, West Chichagof-Yakobi, Tracy Arm-Fords Terror, Stikine-LeConte, South Baranof, Petersburg Creek-Duncan Salt Chuck, Tebenkof Bay-Kuiu, South Etolin, and South Prince of Wales Wildernesses. Expansion of the Russell Fiord and the Endicott River Wildernesses would connect these mainland National Forest System lands with the Glacier Bay National Park and Preserve and the Wrangell-St. Elias National Park and Preserve, creating a wilderness almost 13 million acres in size. The additions to Tracy Arm-Fords Terror and the Stikine-LeConte Wildernesses would connect them and form a mainland wilderness that is almost 2.3 million acres in size. The five new wildernesses would range in size from the 11,000-acre Woewodski Island Wilderness to the 269,000-acre Berners Bay Wilderness.

Under Alternative 6, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 50 percent for the Northern Pacific Coastal Forest and from 37 to 49 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated, the percentage of wilderness would increase in 13 of the 21 biogeographic provinces under Alternative 6, and the percentage covered by wilderness, national monument, or LUD II would increase in 20 of the 21 provinces (Table 3.3-59). None of the provinces would have less than 12 percent in wilderness, national monument, or LUD II areas. The lowest percent coverage would be 61 percent.

Seventy-two of the 73 ecological subsections would have 20 percent or more in wilderness or LUD II areas, and 72 would have 15 percent or more (Table 3.3-60). One would have less than 12 percent and all ecological subsections would be represented in wilderness, national monument, or LUD II.

### Alternative 7

Under Alternative 7, approximately 4,638,000 acres would be recommended for wilderness designation. If designated, these recommendations would result in the conversion of all areas recommended for wilderness in Alternatives 4, 5, or 6 to Recommended Wilderness. As such, it would result in expansion of 10 existing wildernesses and the creation of 17 new wildernesses. The expanded wildernesses would include: Russell Fiord, Endicott River, West Chichagof-Yakobi, Tracy Arm-Fords Terror, Stikine-LeConte, South Baranof, Petersburg Creek-Duncan Salt Chuck, Tebenkof Bay-Kuiu, South Etolin, and South Prince of Wales Wildernesses. Expansion of the Russell Fiord and the Endicott River Wildernesses would connect these mainland National Forest System lands with the Glacier Bay National Park and Preserve and the Wrangell-St. Elias National Park and Preserve, creating a wilderness almost 13 million acres in size. The additions to Tracy Arm-Fords Terror and the Stikine-LeConte Wildernesses would connect them and form a mainland wilderness that is almost 2.3 million acres in size. The new wildernesses would range in size from the 11,000-acre Southeast Mitkof Wilderness to the 269,000-acre Berners Bay Wilderness.

Under Alternative 7, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 33 percent for the Northern Pacific Coastal Forest and from 37 to 43 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated, the percentage of wilderness would increase in 19 of the 21 biogeographic provinces under Alternative 7, and the percentage covered by wilderness, national monument, or LUD II would also increase in those 19 provinces (Table 3.3-59). None of the provinces would have less than 12 percent in wilderness, national monument, or LUD II areas. The lowest percent coverage would be 20 percent.

Fifty-eight of the 73 ecological subsections would have 20 percent or more in wilderness, national monument, or LUD II areas, and 62 would have 15 percent or more (Table 3.3-60). Eleven would have less than 12 percent and eight would not be represented in wilderness, national monument, or LUD II. All of these subsections would have at least 7 percent in Natural Setting LUDs.

### Alternative 8

Under Alternative 8, approximately 9,601,000 acres would be recommended for wilderness designation. If the recommendations were designated, it would result in the conversion of all inventoried roadless areas in the current roadless inventory to Recommended Wilderness. As such, it would result in expansion of essentially all existing wildernesses and would create extensive areas of wilderness on all islands and the mainland. On the mainland, it would create a very large wilderness connecting Misty Fiords, Stikine-LeConte, and Tracy Arms-Fords Terror Wildernesses and extending all the way to Skagway. This large wilderness would exceed 7 million acres in size. Also, the additions to the Russell Fiord and the Endicott River Wildernesses would connect these mainland National Forest System lands with the Glacier Bay National Park and Preserve and the Wrangell-St. Elias National Park and Preserve, creating a wilderness almost 13 million acres in size.

Under Alternative 8, the percentage of the two Tongass ecoregions in protected reserves would increase from 19 to 50 percent for the Northern Pacific Coastal Forest and from 37 to 49 percent for the Pacific Coastal Mountain Tundra and Ice Fields. If the areas were designated, the percentage covered by wilderness would increase in each of the 21 biogeographic provinces under Alternative 8 (Table 3.3-59). None of the provinces would have less than 12 percent in wilderness, national monument, or LUD II areas. The lowest percent coverage would be 60 percent.

### **3 Environment and Effects**

Seventy-one of the 73 ecological subsections would have 20 percent or more in wilderness, national monument, or LUD II areas, and 72 would have 15 percent or more (Table 3.3-60). One would have less than 12 percent and all ecological subsections would be represented in wilderness, national monument, or LUD II.

## Other Special Land Use Designations

A number of specific areas on the Tongass National Forest that are not in wilderness or LUD II areas are given special LUDs because they possess outstanding resources, research opportunities, or other factors of special interest. These areas include: experimental forests, research natural areas, special interest areas, and wild and scenic rivers. Each of these special areas is described, as are the effects of the alternatives, in this section.

### Experimental Forests

#### Affected Environment

##### *Current Situation*

Experimental forests provide areas for conducting manipulative research that serves as a basis for forest management. Natural resources in experimental forests are used or altered under controlled scientific studies. The Tongass currently has two experimental forests: Maybeso and Young Bay. If experimental forests are designated as wilderness, manipulative research, particularly timber harvest, would be discontinued.

##### *Maybeso*

Established in the early 1950s as a part of an intensive research program to document the effects of large-scale clearcutting on hydrology, fisheries, and timber productivity, the Maybeso Experimental Forest (10,600 acres) is located on a large steep-sided alluvial valley with a south to southeast-facing aspect near the central-eastern coast of Prince of Wales Island in southern Southeast Alaska. By the early 1960s, most of the suitable forest land on the experimental area had been harvested. Permanent research plots were established and monitored to study hillslope erosion, movement of large woody debris in and through streams, forest regeneration, and silvicultural responses to precommercial thinning. Most of these plots are still monitored. The upper slopes of the Maybeso watershed are included in Karta Roadless Area 510.

##### *Young Bay*

The Young Bay Experimental Forest (6,660 acres) is located just south of Juneau on northern Admiralty Island. Originally selected for long-term hydrologic and fisheries monitoring with a paired comparison between streams, this site was used extensively for fisheries and hydrology research in the 1960s and 1970s.

The Young Bay Experimental Forest has an extensive terrace, or bench, underlain by poorly drained marine silt (the Gastineau Formation), that extends across its lower slopes between sea level and an elevation of 100 feet. As a result of this formation, part of the experimental forest is open and relatively unproductive, which is atypical of those normally managed for timber production in Southeast Alaska. Young Bay exhibits little forest vegetation-type diversity, making its use for studies not related to timber production difficult. High winds often limit winter access. There are no roads, and, to date, no experimental vegetation treatments have occurred. The Young Bay Experimental Forest is located entirely within Greens Creek Roadless Area 307.

The Tongass Timber Reform Act designated lands to the east of the Young Bay Experimental Forest as the "Young Lake Addition" to be managed as part of the Admiralty National Monument and Kootznoowoo Wilderness.

## 3 Environment and Effects

### Environmental Consequences

No new experimental forests are proposed for the Tongass under the SEIS alternatives. The 1997 Forest Plan provides standards and guidelines to maintain research opportunities within the two existing experimental forests. The effects of the alternatives on each experimental forest are described below.

#### ***Maybeso Experimental Forest***

The Maybeso Experimental Forest offers limited opportunities in the near term to design new experiments (except relative to thinning regimes and second-growth management) because most of the suitable forest land has been harvested. Because Recommended Wilderness or Recommended LUD II areas need to be essentially roadless, the roaded areas of the Maybeso Experimental Forest (which represent a substantial portion of the area) would not be directly affected under any of the alternatives. Under Alternative 6, however, the unroaded portion of the experimental forest would be converted to Recommended LUD II, and under Alternative 8, they would be converted to Recommended Wilderness. These changes would not be compatible with continued use of the converted portion (primarily the upper slopes of the watershed) as an experimental forest.

#### ***Young Bay Experimental Forest***

The Young Bay Experimental Forest has been considered for de-listing as an experimental forest. The primary reason to maintain Young Bay as an experimental forest is to maintain options in light of the Alaska Region's Ecosystem Management Strategy. Potential research could include alternative silvicultural systems and/or manipulating vegetation to create desired wildlife habitat conditions.

If or when such research activities are undertaken, any silvicultural activity would likely use a helicopter yarding method with no road construction, and would likely focus on alternatives to clearcutting. Vegetative manipulation for desired wildlife habitat conditions would likely result in small openings or single tree selection harvesting, also using a helicopter with no roads.

Under Alternatives 1, 2, 3, 4, and 5, use of this area as an experimental forest would not be affected. Under Alternatives 6, 7, and 8, however, this area would be converted to Recommended Wilderness, and silvicultural activities or any type of vegetative manipulation would not be allowed.

### Research Natural Areas

#### **Affected Environment**

Research Natural Areas (RNAs) are part of a national network of field ecological areas designated for research and education and/or to maintain biological diversity on National Forest System lands. RNAs are used for non-manipulative research, observation, and study. They also may serve to carry out provisions of special acts, such as the Endangered Species Act and the monitoring provisions of the National Forest Management Act.

Six RNAs were established within the Tongass National Forest prior to 1996. One of the six, Pack Creek, was recently declassified in the 1997 Tongass Forest Plan Revision Record of Decision due to a long history of human presence related to viewing brown bears. At the same time, Pack Creek was re-designated as a zoological area to be managed under the Special Interest Area LUD. Seven additional areas were classified as RNAs by the 1997 Tongass Forest Plan Revision ROD. Brief descriptions of each follow below.

### ***Cape Fanshaw RNA***

Established in 1965, this RNA is 614 acres and is located at the junction of Frederick Sound and Stephens Passage in Roadless Area 201. This area was established to represent undisturbed old-growth Alaska yellow-cedar and western hemlock forests. It represents a good example of cedar decline on the mainland, and has been used for long-term monitoring of changes in species composition and stand dynamics.

### ***Dog Island RNA***

Established in 1976, this RNA is 705 acres and is located on Dog Island in Roadless Area 521. The area represents a small island ecosystem containing the northern limit of Pacific yew (*Taxus brevifolia*), associated scrub timber, and low volume mixed-conifer sites of southern Southeast Alaska.

### ***Kadin Island RNA***

Established in 1997, this RNA is 1,623 acres and is located just north of Wrangell in Roadless Area 225. Kadin Island experiences high winds blowing down through the Stikine River canyon. The high winds pick up silt from the unvegetated glacial river floodplain and cause the deposition of loess on the island at the river's mouth. The continuing rain of loess onto the upper soil layers provides a supply of unleached, nutrient-rich soil material to the forests of the island. The loess deposition overcomes the process of acid bog formation (paludification) that overtakes most stable sites of moderate topographic relief on the Tongass National Forest. Few areas in the world have a combination of high rainfall and recent loess deposition, so the properties of the soils here are of special interest. The fringe of the island is subject to tidal influence and changes in water level because of shifts of the river. Wetland marsh communities are included in this area. The bald eagle nest concentration on Kadin Island is second only to parts of Admiralty Island, according to the U.S. Fish and Wildlife Service.

### ***Marten River RNA***

Established in 1997, this RNA is 6,213 acres and is located within the Misty Fiords National Monument Wilderness adjacent to the Red River RNA. The Marten River RNA contains riparian spruce stands and has excellent habitat for brown bears along its major mainland streams.

### ***Limestone Inlet RNA***

Established in 1951 and expanded in 1971, this RNA is 9,102 acres and is located in Stephens Passage in Roadless Area 302. The area represents typical vegetation types common to the Juneau mainland, including many avalanche chutes and a mainland stream with a good fish population. In 1951, Limestone Inlet was considered the most pristine drainage in the northern mainland coast, making it an excellent area for documenting baseline conditions on the mainland. Alaska Department of Fish and Game has altered the native salmon runs since 1980 by operating a hatchery in nearby Snettisham Lake; however, upland areas remain intact.

### ***Old Tom Creek RNA***

Established in 1951, this RNA is 4,544 acres and is located on central Prince of Wales Island in Roadless Area 519. Situated in a low-site, cedar-dominated watershed, this RNA was established as an example of cedar-hemlock old-growth forest. It also includes some examples of riparian spruce forest, extensive tidal meadows, and dense bald eagle and black bear populations.

## 3 Environment and Effects

### ***Red River RNA***

Established in 1980, this RNA is 8,031 acres and is located in Misty Fjords National Monument Wilderness. This RNA represents the northern range of silver fir (*Abies amabilis*).

### ***Rio Roberts RNA***

Established in 1997, this RNA is 1,560 acres and is located on central Prince of Wales Island in Roadless Area 511. This area contains riparian flood plain spruce stands, upland old-growth and natural second-growth stands, and upland hemlock on drumlin fields. A significant amount of recreation use associated with the hiking, camping, boating, and fishing of the Thorne River is near this RNA.

### ***Robinson Lake RNA***

Established in 1997, this RNA is 4,297 acres and is located in the Misty Fjords National Monument Wilderness. This RNA focuses on a natural slump lake, forest types typical of the southern portion of mainland Southeast Alaska, and some uncommon plants of restricted distribution in Alaska. Robinson Lake formed in recent years when a natural earthslide dammed Robinson Creek. The area extends to the shore of Behm Canal in order to include habitat diversity associated with the shoreline and proximity to deep water.

### ***Tonalite Creek RNA***

Established in 1997, this RNA is 9,515 acres and is located south of Tenakee Springs across Tenakee Inlet in Roadless Area 311. This RNA includes pristine examples of Sitka spruce, western and mountain hemlock, and yellow cedar forest types. The Tonalite drainage is a narrow glacial valley that supports runs of pink, chum, and coho salmon. The drainage is prime brown bear, Sitka black-tailed deer, and beaver habitat.

### ***Warm Pass Valley RNA***

Established in 1997, this RNA is 8,306 acres and is located along the U.S.-Canada border between the Taku River and Chilkat Pass in Roadless Area 301; the valley includes the northernmost example of subalpine fir in Alaska. The valley is also an important migration corridor for interior vegetation species that mix with the coastal forest and tundra. The Warm Pass Valley RNA has a very different climate caused by a pronounced rain shadow effect. The valley supports a good population of moose that use both the alpine shrub belt and riparian shrubs at lower elevation.

### ***West Gambier Bay RNA***

Established in 1997, this RNA is 11,549 acres and is located at the head of the west arm of Gambier Bay in Admiralty Island National Monument-Kootznoowoo Wilderness. The area includes productive wildlife habitat; an anadromous fish stream; and a variety of geological features, including karst. West Gambier Bay contains forest and nonforest vegetation types typically found on the islands of northern Southeast Alaska. The area includes long, narrow Pybus Lake and several smaller lakes. West Gambier Bay replaced the Pack Creek RNA.

## **Environmental Consequences**

This section focuses on the effects that each alternative would have on current RNAs. For the RNAs already designated within Wilderness and/or National Monument Wilderness, including West Gambier Bay, Marten River, Red River, and

Robinson Lake, there would be no effect because of the overriding wilderness designations and because no LUD changes are included under any alternative.

Table 3.3-61 shows how surrounding LUDs would change subsequent to each alternative. Alternative 1 maintains current management practices having little to no effect on any of the 12 RNAs. Alternative 2 would convert all existing LUD II areas to Recommended Wilderness. The Tonalite Creek RNA located in the Kadashan LUD II Area, would be converted to the new Kadashan Wilderness. This may restrict access and research opportunities within the RNA.

The reclassification of lands to Recommended Wilderness would have little to no effect on any of the 12 RNAs under Alternatives 3 and 4.

Under Alternative 5, the Tonalite Creek RNA would be included in the recommended Kadashan Wilderness. Additionally, Alternative 5 would affect the Rio Roberts RNA by including it in the recommended Honker Divide Wilderness. These LUD changes could restrict access and research opportunities within the RNAs.

Alternative 6 would convert the Tonalite Creek, Cape Fanshaw, and Limestone Inlet RNAs to Recommended Wilderness. This may restrict access to and the type of research that could be conducted within these RNAs. Under this alternative Dog Island, Kadin Island, Old Tom Creek, Rio Roberts, and the Warm Pass Valley RNAs would be recommended for LUD II. This change would not significantly affect these RNAs.

Alternative 7 would result in the conversion of all areas recommended for Wilderness under Alternatives 4, 5, and 6. The Tonalite Creek, Rio Roberts, Cape Fanshaw, and Limestone Inlet RNAs would, therefore, be affected by wilderness recommendations, and access and research opportunities could be restricted.

Except for the West Gambier Bay, Marten River, Red River, and Robinson Lake RNAs, which are already part of designated wildernesses, Alternative 8 would affect all the remaining RNAs by including them in areas of Recommended Wilderness. These LUD changes could adversely affect access and research opportunities within the RNAs.

**Table 3.3-61**  
**Summary of LUDs around Research Natural Areas that Will be Affected under Each Alternative**

	Roadless Area	Alternative							
		1	2	3	4	5	6	7	8
Cape Fanshaw	201	N	N	N	N	N	RW	RW	RW
Dog Island	521	-	-	-	-	-	II	-	RW
Kadin Island	225	-	-	-	-	-	II	-	RW
West Gambier Bay	--	W	W	W	W	W	W	W	W
Marten River	--	W	W	W	W	W	W	W	W
Limestone Inlet	302	M/I/N	M/I/N	M/I/N	M/I/N	M/I/N	RW	RW	RW
Old Tom Creek	519	N/I	N/I	N/I	N/I	N/I	II	N/I	RW
Red River	--	W	W	W	W	W	W	W	W
Rio Roberts	511	N/M	N/M	N/M	N/M	RW	II	RW	RW
Robinson Lake	--	W	W	W	W	W	W	W	W
Tonalite Creek	311	N/I	RW/I	N/I	N/I	RW/I	RW	RW/I	RW
Warm Pass Valley	301	N	N	N	N	N	II	N	RW

Note: Letter symbols represent the following: RW = Recommended Wilderness; II = Recommended LUD II; N = Natural Setting LUD group; W = Wilderness LUD group; M = Moderate Development LUD group; I = Intensive Development LUD group.

### 3 Environment and Effects

#### Special Interest Areas

#### Affected Environment

##### ***Current Situation***

Special Interest Areas are areas possessing unique or unusual scenic, historic, prehistoric, scientific, natural, or other characteristics. The objective of designating and managing such areas is to protect their unique values and, where appropriate, to foster public use and enjoyment of these areas. Special Interest Areas may be designated as scenic, recreation, historic, archaeological, geological, botanical, zoological, or paleontological areas. Special Interest Areas differ from Research Natural Areas in that management may promote public use as well as scientific study.

Special Interest Area designations are intended to maintain natural to near-natural conditions in most cases; the Recreation Area designation may include developed facilities within a natural or near-natural setting. The resources contained within these areas are not available for development, except for public facilities designed to allow recreation use while protecting the values of the area, or for interpretation and scientific study. Each area may require unique management direction, determined through individualized study and planning. Special Interest Areas may be withdrawn from mineral entry. The LUD for Special Interest Areas applies to all the designated areas.

Twenty-three Special Interest Areas have been designated within the Tongass National Forest. Seven of the 23 acres were identified and described in the 1991 Forest Plan Revision SDEIS as:

- ◆ Mendenhall Glacier Recreation Area (5,791 acres)
- ◆ Ward Lake Recreation Area (440 acres)
- ◆ Walker Cove-Rudyard Bay Scenic Area (93,540 acres)
- ◆ Admiralty Lakes Recreation Area (8,710 acres)
- ◆ New Eddystone Rock Geological Area (1 acre)
- ◆ Hubbard Glacier Geological Area (46,000 acres)
- ◆ Tracy Arm-Fords Terror Scenic Area (283,000 acres)

The remaining 16 Special Interest Areas, plus 1 expansion, were identified and described in the 1997 Forest Plan Revision Final EIS.

- ◆ Arena Cove/Cape Felix Geological Area (9,465 acres)
- ◆ Bailey Bay Hot Spring Recreation Area (3,510 acres)
- ◆ Blind Slough Recreation Area (8,150 acres)
- ◆ Blue River Lava Flow Geological Area (13,520 acres )
- ◆ Clear River Zoological Area (11,530 acres )
- ◆ Duke Island Zoological Area (44,650 acres)
- ◆ Falls Creek Windthrow Botanical Area (820 acres)
- ◆ Fish Creek Hotsprings Recreation Area (100 acres)
- ◆ Karst Areas Geological Areas (13,635 acres)
- ◆ Keku Islet Geological and Scenic Area (2,300 acres)
- ◆ Mt. Edgecumbe Geological Area (49,050 acres)
- ◆ North Hamilton River Red Cedar Cultural and Botanical Area (80 acres)

- ◆ Pack Creek Zoological Special Interest Area (5,837 acres)
- ◆ Patterson Glacier Geological and Botanical Area (13,900 acres)
- ◆ Pike Lakes Recreation Area (2,340 acres)
- ◆ Soda Springs Geological Area (3,515 acres)
- ◆ Ward Lake Recreation Area Expansion (7,535 acres)

Seven of the Special Interest Areas have been designated within Wildernesses and/or national monuments. These areas are already managed in a way that accounts for the Wilderness or national monument surrounding them. They are:

- ◆ Admiralty Lakes (Admiralty Island National Monument and Kootznoowoo Wilderness)
- ◆ Blue River Lava Flow (Misty Fiords National Monument and Wilderness)
- ◆ Hubbard Glacier (Russell Fiord Wilderness)
- ◆ New Eddystone Rock Geological Area (Misty Fiords National Monument and Wilderness)
- ◆ Pack Creek Zoological Special Interest Area (Admiralty Island National Monument and Kootznoowoo Wilderness)
- ◆ Tracy Arm-Fords Terror (Tracy Arm-Fords Terror Wilderness)
- ◆ Walker Cove-Rudyerd Bay (Misty Fiords National Monument and Wilderness)

Three of the Special Interest Areas are not included in roadless areas due to their proximity to development. They are:

- ◆ Falls Creek Windthrow on Mirkot Island
- ◆ Fish Creek Hot Springs on Baranof Island
- ◆ North Hamilton River Cedar on Kupreauof Island

Special Interest Areas are not available for timber harvest, and roads would be allowed only if they are compatible with the interpretive goals of a particular area. Other restrictions may be imposed on a case-by-case basis to protect an area's unique values. These could include closures to off-highway, or off-road vehicle use, and withdrawals from mineral entry.

### Environmental Consequences

This section focuses on the effects that each alternative would have on existing Special Interest Areas. Table 3.3-62 identifies whether surrounding LUDs would change subsequent to each alternative. Alternatives 1, 2, and 5 would have no effect on the current management of any of the 23 Special Interest Areas. Alternatives 3 and 4 would restrict the potential for facilities and recreation development around the Patterson Glacier Geological and Botanical Area. However, the change could restrict development in adjacent areas, potentially providing further protection for the values of the Special Interest Area. If Alternative 3 or 4 is selected, the Patterson Glacier Special Interest Area would become part of a very large mainland wilderness that connects the Tracy Arm-Fords Terror and Stikine-LeConte Wildernesses.

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**Table 3.3-62  
Summary of LUDs around Research Natural Areas that would be Affected under Each Alternative**

Special Interest Area	Roadless Area	Alternative							
		1	2	3	4	5	6	7	8
Admiralty Lakes	--	W	W	W	W	W	W	W	W
Arena Cove/Cape Felix	502	I/N/M	I/N/M	I/N/M	I/N/M	I/N/M	II	I/N/M	W
Bailey Bay Hot Springs	529	N	N	N	N	N	II	N	W
Blind Slough	224	I/N/M	I/N/M	I/N/M	I/N/M	I/N/M	II	I/N/M	W
Blue River Lava Flow	--	W	W	W	W	W	W	W	W
Clear River	330	N	N	N	N	N	II	N	W
Duke Island	521	-	-	-	-	-	II	-	W
Falls Creek Windthrow	--	I/N/M	I/N/M	I/M/N	I/N/M	I/N/M	I/N/M	I/N/M	I/N/M
Fish Creek Hot Springs	--	M	M	M	M	M	M	M	M
Hubbard Glacier	--	W	W	W	W	W	W	W	W
Karst Areas	501/517	I/N/M	I/N/M	I/N/M	I/N/M	I/N/M	II	I/N/M	W
Keku Islets	239	I	I	I	I	I	II	I	W
Mendenhall Glacier	305	I/N	I/N	I/N	I/N	I/N	II	I/N	W
Mt. Edgecumbe	329	N/M	N/M	N/M	N/M	N/M	II	N/M	W
New Eddystone Rock	--	W	W	W	W	W	W	W	W
N. Hamilton River Cedar	--	I/N	I/N	I/N	I/N	I/N	I/N	I/N	I/N
Pack Creek	--	W	W	W	W	W	W	W	W
Patterson Glacier	202	N/M	N/M	W	W	N/M	W	W	W
Pike Lakes	341	I	I	I	I	I	W	W	W
Soda Springs	505	I/N	I/N	I/N	I/N	I/N	II	I/N	W
Tracy Arm-Fords Terror	--	W	W	W	W	W	W	W	W
Walker Cove-Rudyerd Bay	--	W	W	W	W	W	W	W	W
Ward Lake Expansion	524/526	I	I	I	I	I	II	I	W

Note: Letter symbols represent the following: RW = Recommended Wilderness; II = Recommended LUD II; N = Natural Setting LUD group; W = Wilderness LUD group; M = Moderate Development LUD group; I = Intensive Development LUD group.

Alternatives 6 and 7 would affect both the Patterson Glacier and Pike Lakes Special Interest Areas. The Pike Lakes Special Interest Area would become part of an addition to the Russell Fiord Wilderness. These alternatives could affect the two areas by limiting their potential recreational and scientific uses; however, the LUD change would restrict adjacent developments, potentially helping to protect their values. Alternative 6 would also affect the remaining Special Interest Areas by converting them to LUD II. This change would not significantly affect these areas except that it would limit the type of development that could occur around their boundary.

Alternative 8 would affect all Special Interest Areas not already in wilderness by including them in areas recommended for new wilderness. This would protect their values, but could limit the number of areas available to the public for some types of recreation and scientific study.

#### Wild and Scenic Rivers

#### Affected Environment

This section describes the rivers on the Tongass National Forest that are managed as wild and scenic rivers and the issues and concerns about their inclusion in roadless areas considered for wilderness or LUD II designation.

### **Background**

The Wild and Scenic Rivers Act of 1968, as amended, provides a means for recognizing and protecting the “outstandingly remarkable” scenic, recreation, geologic, fish and wildlife, historic, cultural, ecological, and other values of selected rivers. The intent of including a river in the National Wild and Scenic Rivers System is to preserve the free-flowing condition of the river itself, as well as the characteristics of the river’s immediate environment for the enjoyment and benefit of present and future generations. The U.S. Congress is responsible for final designation of rivers to be included in the National Wild and Scenic Rivers System.

The Alaska National Interest Lands Conservation Act of 1980 designated 26 rivers in central and northern Alaska as components of the National Wild and Scenic Rivers System under the Wild and Scenic Rivers Act of 1968. None of these rivers is in Southeast Alaska or the Tongass National Forest. An additional 12 rivers were designated as “study rivers” by ANILCA, of which only one, the Situk River near the community of Yakutat, is in Southeast Alaska and in the Tongass National Forest.

The Situk River, including the West Fork and Old Situk Creek, was studied in 1983 and was found to possess outstandingly remarkable fish, wildlife, and recreational values of national significance, but was not recommended for designation. The community of Yakutat, the local and regional Native Corporations, the Citizens Advisory Council of Federal Areas, and the Alaska Land Use Council supported development of a management plan for the Situk River, rather than designation as a Wild and Scenic River (USDA Forest Service, 1993).

The National Park Service (NPS) initiated an evaluation to determine the eligibility of the rivers within the National Parks and Preserves in Alaska. The Alsek River near Yakutat is included in that evaluation. The Tongass National Forest includes the surface and west bank of an 18-mile segment that was found to be eligible and meeting a “Scenic” classification.

The analysis and planning that led to the 1997 Tongass Forest Plan Revision included a process for identifying rivers that could be eligible for inclusion in the National Wild and Scenic Rivers System. The process started with an inventory and evaluation to determine the eligibility, potential classification, and suitability for inclusion in the National System.

Rivers are eligible to be considered for inclusion in the National Wild and Scenic River System if they are essentially free-flowing (without major dams, diversions, or channel modifications) and if they possess at least one “outstandingly remarkable” scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar value. These values should be a unique or exceptional representation for the area studied, and must be related to the river or its immediate environment.

The potential classification for each eligible stream segment was done according to the criteria in the Wild and Scenic Rivers Act into either Wild, Scenic, or Recreational Rivers defined as follows:

- ◆ Wild River areas are defined as those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive in character and waters unpolluted. These represent vestiges of primitive America.
- ◆ Scenic River areas are defined as those rivers or sections of rivers that are free of impoundments with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- ◆ Recreational River areas are defined as those rivers or sections of rivers that are readily accessible by road or railroad, that may have undergone some

### 3 Environment and Effects

development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Eligible rivers are further evaluated for “suitability.” Generally this analysis considers the appropriateness of Congressional designation as a Wild, Scenic, or Recreational River in light of social and economic values, or the resource opportunities enhanced, curtailed, or foregone, and the effect on private lands and other uses of the area. Suitable rivers may be recommended to Congress by the administration for designation. If designation occurs, a final boundary is established and a management plan developed.

There are nearly 900 watersheds on the Tongass National Forest containing some 42,500 miles of perennial stream. All of the rivers and streams on the Forest were examined and evaluated for eligibility for the National System. More detail about the process that was used and about the individual rivers studied is available in the 1997 Tongass Forest Plan Revision Final EIS.

The Regional Forester recommended 32 of the eligible rivers for inclusion in the National System as either Wild, Scenic, or Recreational (Table 3.3-63). Appendix E of the 1997 Forest Plan Revision Final EIS provides descriptions of each river. The 1997 Forest Plan Revision ROD contains the rationale for the decision made for each river. The recommendation was a preliminary administrative recommendation that would be forwarded to the Chief of the Forest Service. It could receive further review and possible modification by the Secretary of Agriculture and the President of the United States. Congressional action is necessary to designate rivers as part of the National System.

Because this was a preliminary administrative recommendation, the 1997 Forest Plan directs that the rivers be managed, within the existing authorities of the Forest Service, to retain their free-flowing character and outstandingly remarkable values. Three LUDs were created for these rivers, one for each classification: Wild River, Scenic River, and Recreational River. The 1997 Forest Plan includes goals, objectives, desired conditions, and specific management prescriptions for each LUD. The Wild and Scenic Rivers Act provides that the study boundary includes, at a minimum, the area within 0.25 mile of the ordinary high water mark on each side of the river (USDA Forest Service, 1993). Final boundaries can and do vary from this minimum, but generally follow the 0.25-mile guideline. The area of the designated rivers managed under the Wild, Scenic, and Recreational River LUDs were determined so as to maintain the eligibility of the total miles of river for each classification.

Subsequent to the Regional Forester’s 1997 Wild and Scenic River recommendations, the Acting Forest Supervisor determined that the recommendation for Niblack Lakes and Streams was based on incorrect information related to the anadromous fish productivity of the system. In November 1998, a non-significant amendment of the 1997 Forest Plan rescinded the Wild and Scenic River recommendation and associated LUDs for Niblack Lakes and Streams (USDA Forest Service, 1999); therefore, Niblack Lakes and Streams is not included in this analysis.

#### ***Current Situation***

Congress has not yet designated any rivers on the Tongass National Forest to be included in the National Wild and Scenic System. As part of the 1997 Forest Plan Revision ROD, as amended, the Regional Forester made a preliminary recommendation to the Chief of the Forest Service for inclusion of 31 rivers or portions of rivers to the National System.

**Table 3.3-63  
Rivers (Segments) Recommended for Inclusion in National Wild and Scenic  
River Program (in miles)**

River Name	Wild	Scenic	Rec.	Outstandingly Remarkable Values						
				Fish	Wild-life	Recreation	Scenic	Hist./Cult.	Geology	Ecology
Aaron, Oerns, Berg Creeks	-	21	16	X	X	X	X	-	-	-
Anan Creek	17.5	.5	-	X	X	X	-	-	-	-
Blind River	-	-	5	X	X	X	-	-	-	X
Blue River	26	-	-	-	X	-	X	-	X	X
Chickamin River	94	2	-	X	X	X	X	X	X	-
Essowah Lake and streams	13	-	-	X	X	-	X	-	-	-
Fall Dog Creek (local)	4	-	-	X	X	-	X	X	-	-
Farragut River	29	1	-	X	X	-	X	-	-	-
Gilkey River	9	-	-	-	-	-	X	-	X	-
Glacial River	10	-	-	-	-	-	X	-	X	X
Gokachin-Mirror-Low-Fish Creeks	30	-	-	X	X	X	X	X	-	-
Harding River	-	16	-	X	X	X	-	-	-	-
Hasselborg River and Lakes	24	-	-	X	X	X	-	X	-	-
Kadake Creek	-	-	23	X	X	X	X	X	-	-
Kadashan River	-	8	-	X	X	-	-	-	-	X
Kah Sheets Creek and Lake	5	4	-	X	X	X	-	X	-	-
Katzehin River	10	-	-	X	-	-	X	-	X	-
Kegan Lake and streams	9	-	-	X	-	X	X	-	-	-
King Salmon River	8	-	-	X	X	-	-	-	-	-
Kutlaku Creek and Lake	2	-	-	X	-	-	-	-	-	-
LeConte Glacier	6	-	-	-	-	-	X	-	X	-
Lisianski River	5	-	-	-	X	-	-	-	-	X
Naha River	17	2	-	X	X	X	-	X	-	-
Niblack Lakes and streams <sup>1</sup>	5	-	-	X	-	-	-	-	-	-
Orchard Creek and Lake	10	-	16	X	X	X	X	-	-	X
Petersburg Creek	7	-	-	X	-	X	X	X	-	-
Salmon Bay Lake and stream	4	2	-	X	X	-	X	-	-	-
Santa Anna Creek –L. Helen	-	4	-	X	-	X	-	-	-	X
Sarkar Lakes	14	3	2	X	X	-	X	X	-	-
Thorne River-Hatchery Creek	-	24	18	X	X	X	X	-	-	-
Virginia Lake and Creek	-	-	9	X	-	X	-	-	-	-
Wolverine Creek-McDonald Lake	6	-	-	X	X	X	-	-	-	-
<b>Total Miles</b>	<b>359.5</b>	<b>87.5</b>	<b>89.0</b>							

<sup>1</sup> Niblack was later removed from the list.

The goal for management of the rivers that were recommended for Wild and Scenic designations is to maintain their outstandingly remarkable values and their free-flowing conditions. The objective is to manage the 31 rivers (or segments), pending designation by Congress as Wild, Scenic, or Recreational Rivers, to maintain the eligibility of the total miles of river for the Wild, Scenic, or Recreational classification.

The goal is to be achieved through the management of the rivers (or segments) under the LUD of Wild River, Scenic River, or Recreational River and implementation of the standards and guidelines specified for the LUD. These are summarized below and described in more detail in the 1997 Forest Plan.

**Wild River LUD.** This is the most restrictive of the three LUDs. Scheduled timber harvest and construction of major recreation facilities, roads, and hydroelectric power projects are not allowed. Although mining may be allowed, the area would be

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withdrawn from mineral entry with Congressional designation as a Wild River. Some fish and wildlife habitat enhancement are permitted. This is a Transportation and Utility Systems “Avoidance Area” and corridors will be allowed in accordance with ANILCA, Title XI. Twenty-three river segments, or 359.5 river miles, are managed under this LUD.

**Scenic River LUD.** Hydroelectric power projects are not allowed but timber harvest is allowed if the adjacent LUD allows timber harvest. Major recreational developments may be compatible with this LUD and minor developments are allowed. The construction of National Forest System roads is allowed and bridges may occasionally span the river. Mining and some fish and wildlife habitat enhancement are permitted. This is a Transportation and Utility Systems “Avoidance Area” and corridors will be allowed in accordance with ANILCA, Title XI. Twelve river segments, or 87.5 river miles, are managed under this LUD.

**Recreational River LUD.** Although hydroelectric power projects are not allowed, many other management activities are permitted. Timber harvest is allowed if the adjacent LUD allows timber harvest. Major and minor recreational developments and National Forest System roads that make the river easily accessible are allowed. Mining and some fish and wildlife habitat enhancement are permitted. This is a Transportation and Utility Systems “Avoidance Area” and corridors will be allowed in accordance with ANILCA, Title XI. Seven river segments, or 89.0 river miles, are managed under this LUD.

The LUD(s) for adjacent land can have significant influence on the management of resources inside a Wild River, Scenic River, or Recreational River LUD. Many of the corridors designated to the Wild River, Scenic River, or Recreational River LUD are narrow and include the width of the river plus 0.25 mile on each side. The most obvious example of the adjacent LUD influence is that the ability to harvest timber in Scenic or Recreational River LUDs is dependent on the management prescription for timber in the LUD(s) of the adjacent land. In a more indirect way, it may influence other resources, such as scenery, recreation, or road building. For example, if the surrounding land is designated Remote Recreation where no new roads are allowed, it is less likely that a road will be proposed for a Scenic or Recreational River area.

Of the 536 miles of Wild, Scenic, or Recreational Rivers, 221 miles of seven rivers, or 41 percent of the river miles in Wild, Scenic or Recreational River LUDs, are already in areas allocated to Wilderness or National Monument Wilderness. These are not considered in the analysis. An additional 30 miles is not in the roadless areas considered under these alternatives.

Table 3.3-64 shows the Wild, Scenic, and Recreational river miles and their adjacent LUD management for the rivers in the roadless areas that are being considered for Recommended Wilderness.

Ninety-five percent of the Wild, Scenic, or Recreational river miles in the roadless areas considered for wilderness are surrounded by land in non-development LUD designations. Although there are differences in specific management prescriptions for each of the LUDs, there are some common directions. In general, timber harvest is not suitable in the non-development LUDs, and new roads are not allowed or are restricted to specific uses. Minor recreational development is consistent with most non-development LUDs and major recreational development is consistent only with Semi-remote Recreation. Generally, the non-development status and resulting management prescriptions in these adjacent lands may reduce the likelihood of development in the Scenic or Recreational River LUD.

Only 12 miles (4 percent) of the rivers in the roadless areas considered for Recommended Wilderness or Recommended LUD II areas are adjacent to

**Table 3.3-64  
Land Use Designations (LUDs) adjacent to Wild, Scenic, or Recreational Rivers in Roadless Areas Outside of Wilderness**

Adjacent Land LUD	Rivers (segments) Recommended			Total Miles
	Wild River	Scenic River	Recreational River	
LUD II	43.5	12.5	-	56
Remote Recreation	55	3	1	59
Semi-remote Recreation	66	36	34	136
Old-growth Habitat	3	22	-	25
Special Interest Area	-	-	5	5
<b>Subtotal Non-development LUDs</b>	<b>167.5</b>	<b>73.5</b>	<b>40</b>	<b>281</b>
Scenic Viewshed	-	-	6	6
Modified Landscape	-	1	3	4
Timber Production	-	2	-	2
Minerals <sup>1</sup>	-	(2)	(2)	(4)
<b>Subtotal Development LUDs</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>12</b>
<b>Total</b>	<b>167.5</b>	<b>76.5</b>	<b>50</b>	<b>293</b>

<sup>1</sup> Minerals is an overlay LUD. Aspects of these 4 miles are managed under Semi-remote Recreation.

development LUDs. An additional 4 miles are adjacent to a Minerals LUD that is an overlay on a Semi-remote Recreation managed area. There may be a greater likelihood that development is proposed in these adjacent LUDs and that could directly or indirectly include the scenic or recreational river.

**Wild and Scenic River and Wilderness Management**

According to the Wild and Scenic Rivers Act, any portion of a component of the Wild and Scenic Rivers System that is within a wilderness, shall be subject to the provisions of both the Wilderness Act and the Wild and Scenic Rivers Act. In the case of conflict between the provisions of these Acts, the more restrictive provisions shall apply (USDA Forest Service, 1993). Thus, there are the dual, but overlapping goals of the preservation of the wilderness resources while at the same time preserving the river and its immediate environment. Because the two laws differ somewhat, legislative action should address specific issues in a particular river corridor.

A variety of recreation types are allowed by managing the rivers as Wild, Scenic, or Recreational. Wild river designation is compatible with wilderness as they both provide primitive and semi-primitive recreation opportunities. Scenic and recreational designations provide other, more developed opportunities. Designation of these areas as wilderness would reduce the variety of recreational opportunities in wild and scenic rivers.

**Environmental Consequences**

The kinds and amounts of activities and changes acceptable within a river corridor depend on whether it was recommended as a wild, scenic or recreational river and, to some extent, the adjacent LUD. If the river is in a roadless area that is designated by Congress as wilderness, the kinds and amounts of activities and changes acceptable would be reduced. While it is not known precisely how an individual river could be affected by potential future projects, it is possible to describe the new limitations that would be imposed. These potential limitations are described below in general terms.

Table 3.3-65 displays the Wild, Scenic, or Recreational Rivers (segments) that are included in the roadless areas. It also shows the adjacent LUD designation that can influence management in the river corridor.

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**Table 3.3-65  
Wild, Scenic, and Recreational River Miles Considered in Roadless Alternatives**

River Name	Adjacent LUD Designation <sup>1</sup>	Roadless Area	Miles in Roadless Areas			
			Wild	Scenic	Rec.	Total
Aaron, Oerns, Berg Creeks	SRR, M(4)	205	-	21	16	37
Anan Creek	LUD II	209	17.5	.5	-	18
Blind River	SIA, OG <sup>2</sup>	224 <sup>2</sup>	-	-	5	5 <sup>2</sup>
Essowah Lake and streams	SRR	501	13	-	-	13
Fall Dog Creek (local)	SRR	240	4	-	-	4
Farragut River	SRR	202	29	-	-	29
Gilkey River	RR	301	9	-	-	9
Glacial River	RR	330	10	-	-	10
Gokachin-Mirror-Low-Fish Creeks	OG	523	3	-	-	3
Harding River	SRR(15), ML(1)	207	-	16	-	16
Kadake Creek	SRR	242	-	-	2	2
Kadashan River	LUD II	311	-	8	-	8
Kah Sheets Creek and Lake	SRR(5), TP(2)	215	5	2	-	7
Katzehin River	RR(9), RR(1)	301	10	-	-	10
Kegan Lake and streams	SRR	507	9	-	-	9
Kutlaku Creek and Lake	RR	244	2	-	-	2
Lisianski River	LUD II	311	5	-	-	5
Naha River	LUD II	526	17	2	-	19
Orchard Creek and Lake	SRR(16), RR(10)	526	10	-	16	26
Salmon Bay Lake and stream	LUD II	518	4	2	-	6
Santa Anna Creek –L. Helen	OG	210	-	4	-	4
Sarkar Lakes	RR	514	14	3	1	18
Thorne River-Hatchery Creek	OG	511, 514	-	18	-	18
Virginia Lake and Creek	SV(6), ML(3)	204	-	-	9	9
Wolverine Creek-McDonald Lake	SRR	529	6	-	-	6

<sup>1</sup> Mileage numbers are provided in parentheses ( ) if it is split.; RR – Remote Recreation; SRR – Semi-remote Recreation; OG – Old Growth; SIA – Special Interest Area; SV – Scenic Viewshed; ML – Modified Landscape; TP – Timber Production; M – Mineral (this is an overlay and the underlying LUD governs many activities).

<sup>2</sup> The Blind River has a Special Interest Area adjacent to the south side and an Old-growth Habitat LUD adjacent to the north. It is on the northern edge of Roadless Area 224.

#### **Effects of Designation**

A river managed under Wild, Scenic, or Recreational River LUDs would continue to be managed for its outstandingly remarkable values after inclusion in Recommended Wilderness or Recommended LUD II because it has been recommended to be classified as a Wild and Scenic River. If the Recommended Wilderness or Recommended LUD II designation has more restrictive guidelines, those would then be followed. Specific kinds of forest activities and uses can change if the area is allocated to Recommended Wilderness or Recommended LUD II. These are described in the next few paragraphs.

**Recreation.** The recreational objectives for management of Wild, Scenic, and Recreational River LUDs are substantially different. Table 3.3-66 lists the differences in Recreational Opportunity Spectrum (ROS) classes that guide management decisions, and some key differences in standards and guidelines for each LUD (USDA Forest Service, 1997b). While the Wild River LUD ROS class is the same as Wilderness, there are small differences in specific implementation guidelines. Wilderness management has much more restrictive management than Scenic and Recreational River LUDs. LUD II management is less restrictive than Wild River or Wilderness, but more restrictive than Scenic or Recreational River.

**Table 3.3-66  
Comparison of Recreational Objectives and Guidelines**

	<b>Wild River</b>	<b>Scenic River</b>	<b>Recreational River</b>	<b>Wilderness</b>	<b>LUD II</b>
ROS Class	Primitive or Semi-primitive	Generally Semi-primitive	Generally Roaded Natural	Primitive or Semi-primitive	Semi-primitive
Major Development	No	Case by case	Compatible	No	No
Minor Development	Case by case	Compatible	Compatible	No	Case by case
New Permanent Overnight Facilities (no. of users/night)	10	100	150	No	24
Day Use Facilities (no. of users/day)	24	300	1,000	no	50
Campgrounds (no. sites/campground)	no	40	75	no	10

ROS = Recreational Opportunity Spectrum.

The rivers considered were allocated to the three different river categories at least partly to preserve the opportunity to provide a variety of recreational opportunities. Managing these areas as wilderness would restrict them to primitive and semi-primitive recreation and forgo the opportunity for other types of recreational development.

An expanded system of Wild and Scenic Rivers could create new tourism marketing opportunities, as is often the result of the attention focused on Congressionally designated areas. Different types of activities from primitive to more developed could be offered to people with different interests. Designation as wilderness is also an opportunity to promote tourism, but it would be limited to primitive and semi-primitive experiences and thus may have less potential to increase tourism and stimulate economies.

**Timber Harvesting.** Timber harvesting and associated roads and log transfer facilities are presently only allowed in the Scenic and Recreational Rivers when they are adjacent to LUDs that allow timber harvest. There are only 13 miles of rivers in this situation. Costs of harvest in the Scenic and Recreational River LUDs may be higher than other LUDs as a result of standards to maintain identified values. Management of these areas under Recommended Wilderness or Recommended LUD II would not allow timber harvest.

**Water Project Development.** New diversions, water supply dams, and hydroelectric power development are not allowed under the Wild, Scenic, and Recreational River LUDs. These are also not allowed in areas designated as wilderness. They are permitted in LUD II managed areas if they retain the primitive characteristics of the area, but the restrictions in the Wild, Scenic, and Recreational River LUDs would prevent them.

**Transportation and Utility Corridors.** All three river designations are in Transportation and Utility System "Avoidance Areas." Thus, transportation and utility sites or corridors may be located within these LUDs only after an analysis of potential sites shows that there is no feasible alternative outside these LUDs. The same restriction on transportation and utility corridors exists for wilderness and LUD II lands in Alaska as specifically described in ANILCA (USDA Forest Service, 1993).

**Mining.** Mineral entry is not denied in Wild, Scenic, or Recreational River LUDs, it does but need to be consistent with the purposes of the LUD so the eligibility for

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Congressional designation is maintained. Costs of mining in these areas may be higher than in other LUDs as a result of standards to maintain identified river values. Mineral entry is also allowed in all the adjacent LUDs for the rivers (segments) being considered for wilderness. Congressional designation of a river as Wild under the national program would then deny mineral entry, subject to valid claims, but would not affect Scenic or Recreational Rivers. Management of rivers and adjacent land as wildernesses would deny mineral entry, subject to valid existing rights, to Wild, Scenic, and Recreational Rivers. Management of land under LUD II does not deny mineral entry.

**Roads.** New road construction is not allowed in the Wild River LUD. Roads are allowed in the Scenic and Recreational River LUDs and bridges can span the river. If road construction is not allowed in the adjacent area, it is less likely that roads would be planned in the river area. Only 13 miles of the river corridors in roadless areas are within LUDs that allow road construction for forest development. Management of these rivers as wildernesses denies new road construction. Management of these rivers as LUD II allows new road construction only for access to authorized uses or for vital linkages.

**Fish Improvement Projects.** Fish habitat improvements are generally more restricted under Wild, Scenic, and Recreational River designations than under Wilderness or LUD II. In the three Wild and Scenic River LUDs, the free-flowing characteristic and outstandingly remarkable values must be maintained, which limits the projects that can be implemented. Weirs and other stream obstructions are either prohibited or discouraged. Under wilderness, permanent improvements would be permitted by the Secretary of Agriculture to achieve the goal of restoring and maintaining fish production as long as it blends in with the natural character of the area. If the rivers remain under Wild, Scenic, and Recreational River LUDs, wilderness or LUD II designation would not have a significant impact on fish improvement projects.

**Wildlife Habitat Improvements.** In Wild, Scenic, and Recreational River designations, the wildlife habitat improvements are limited to those with the objective of protecting or restoring the river resource and enhancing the outstandingly remarkable value. Manipulation of vegetation or improvements, such as fencing or artificial nest structures, would likely be incompatible with Wild classification. Other improvements might be compatible with a Scenic designation, as long as the undeveloped character was maintained. Most improvements would be acceptable in a Recreational classification, consistent with the outstandingly remarkable values. Under Wilderness, habitat improvement projects are restricted to those that protect the wilderness resource or recovery of a federally listed threatened or endangered species. In general, this is more limiting than Scenic or Recreational River prescriptions. Habitat improvement is permitted in LUD II areas, which are less restrictive than Wild or Scenic designations.

In addition to the general issues for the forest activities described above, there are specific issues for individual rivers (segments).

Aaron, Oerns, Berg Creeks (Roadless Area 205) – Approximately 4 miles of the Aaron and Berg creeks is within and adjacent to a corridor with known mineral potential for zinc, copper, silver, and lead. The Bureau of Land Management (BLM) lists this area's potential for mineral development at its highest level (USDA Forest Service, 1997a). It has a Mineral LUD overlay that encourages mineral development and may allow road building for mining purposes. There are no existing mineral claims on the river corridor but the claims in adjacent land may require roads through the river corridor. This corridor has been recommended as Scenic or Recreational River, and designation by Congress as such would not deny mineral rights. Designation of this area as wilderness would withdraw it from mineral entry, subject

to valid claims. Because this is managed through the Mineral LUD overlay, it is further discussed in the *Mineral* section of this chapter.

Glacial River (Roadless Area 330) – This is not an area of identified high mineral potential for known resources, but the upper half of the river is in a Class 3 tract of undiscovered mineral resources, as mapped by the USGS. This area was recommended to be included in the national system as Wild. Congressional designation as a Wild River would close the corridor to mineral entry, subject to valid existing claims. Designating it as wilderness would also deny mineral entry to this area, subject to valid existing claims.

Gokachin–Mirror–Low–Fish Creeks (Roadless Area 523) – The area within and adjacent to the corridor near Gokachin Creek has been identified by the BLM as having high priority for minerals development. There are several unpatented mine claims within the corridor. The 3-mile Gokachin Creek segment that is in Roadless Area 523 has no existing claims and is included in this mineral potential area (USDA Forest Service, 1997a). This area was recommended to be included in the national system as Wild, which, with Congressional action, would withdraw it from mineral entry. Designation of the area as wilderness would withdraw it from mineral entry, subject to valid existing claims.

Kadake Creek (Roadless Area 242) – The timber sale schedule identifies numerous entries in and adjacent to this corridor. The river was recommended as a recreational river, thus preserving the ability to harvest timber on most of the corridor's 23 miles (USDA Forest Service, 1997a). The portion (2 miles) of this corridor that is in Roadless Area 242 is adjacent to a Semi-remote Recreation LUD that is considered unsuitable for timber production. Designation of this corridor segment as wilderness would not alter its timber production prescription.

Kah Sheets Creek and Lake (Roadless Area 215) – Approximately 5 of the 8 miles in Roadless Area 215 are in the Wild River LUD where timber production is not allowed. Approximately 2 miles are in a Scenic River LUD and are adjacent to a Timber Production LUD. Timber production is allowed in those 2 miles and designation as wilderness would withdraw the area from potential harvest.

Orchard Creek and Lake (Roadless Area 526) – The lower portion of the river was recommended as Recreational River to allow the construction of the Swan Lake–Lake Tyee transmission line (USDA Forest Service, 1997a). The transmission line has been located outside this area and, therefore, would not be affected by wilderness recommendation.

Sarkar Lakes (Roadless Area 514) – This area is extremely popular for recreation, with an emphasis on fishing (USDA Forest Service, 1997a). Portions of it were recommended as Scenic and Recreational Rivers. Designation of this area as wilderness would reduce the types of recreational development available.

The area on the south side of Sarkar Cove is known to have potential mineral development. The BLM has not identified the area as having high potential for mineral development and no mining claims exist (USDA Forest Service, 1997a). Designation of the area as Wilderness would withdraw the area from mineral entry, subject to valid existing claims.

Virginia Lake (Roadless Area 204) – The USGS estimates the undiscovered mineral resource to have a moderate value. The BLM lists this area as having potential for mineral development. There are no existing claims in the river corridor in the Recreational River LUD (USDA Forest Service, 1997a).

The timber sale schedule identifies two sales for this management area that could occur within and adjacent to this corridor, consistent with the Recreational River

### 3 Environment and Effects

prescription (USDA Forest Service, 1997a). Designation of this area as wilderness would deny both timber harvesting and mineral entry, subject to valid existing mineral claims.

#### Alternatives

Each alternative recommends a different assortment of roadless areas for Recommended Wilderness or Recommended LUD II allocation. Table 3.3-67 displays the Wild, Scenic, or Recreational River segments that are included under each alternative.

**Alternative 1.** This is the No-Action Alternative. The rivers (segments) would continue to be managed as Wild, Scenic, and Recreational Rivers with the adjacent LUD designation remaining unchanged. Under this alternative, there would continue to be approximately 167 miles of Wild River, 76 miles of Scenic River and 49 miles of Recreational River (65,000 acres of Wild River, 27,000 acres of Scenic River, and 27,000 acres of Recreational River, and 22,711 acres within existing LUD II areas).

**Alternative 2.** This alternative proposes to convert all existing LUD II areas to the Recommended Wilderness LUD. This includes five rivers (segments) that have

**Table 3.3-67  
Wild, Scenic and Recreational Rivers Recommended for Wilderness (W) or LUD II (L) by Alternative**

River Name	Roadless Area	Designation and Miles <sup>1</sup>	Alternative								
			1	2	3	4	5	6	7	8	
Aaron, Oerns, Berg Creeks	205	S21/R16							L		W
Anan Creek	209	W17.5/S0.5		W				W		W	W
Blind River	224	R5							L		W
Essowah Lake and streams	501	W13						W	L	W	W
Fall Dog Creek (local)	240	W4							L		W
Farragut River	202	W29			W	W			W	W	W
Gilkey River	301	W9							W	W	W
Glacial River	330	W10							L		W
Gokachin-Mirror-Low-Fish Creek	523	W3							L		W
Harding River	207	S16							L		W
Kadake Creek	242	R2							L		W
Kadashan River	311	S8		W				W	W	W	W
Kah Sheets Creek and Lake	215	W5/S2							W	W	W
Katzehin River	301	W10							L		W
Kegan Lake and streams	507	W9						W	W	W	W
Kutlaku Creek and Lake	244	W2			W	W		W	W	W	W
Lisianski River	311	W5		W				W		W	W
Naha River	526	W17/S2		W				W		W	W
Orchard Creek and Lake	526	W10/R16							L		W
Salmon Bay Lake and stream	518	W4/S2		W				W		W	W
Santa Anna Creek –Lake Helen	210	S4							L		W
Sarkar Lakes	514	W14/S3/R1						W	L	W	W
Thorne River-Hatchery Creek <sup>2</sup>	511/ 514	S15/S3						W	L	W	W
Virginia Lake and Creek	204	R9							L		W
Wolverine Creek-McDonald Lake	529	W6							L		W

<sup>1</sup> W=Wild, S=Scenic, R=Recreational River management designation. The number following the letter designation is the approximate number of river miles in that designation within the roadless area.

<sup>2</sup> Thorne River-Hatchery Creek is in both Roadless Area 511 (approximately 15 miles) and 514 (approximately 3 miles). Under Alternatives 6 and 8, both sections are being recommended. Under Alternatives 5 and 7, only the central portion in Roadless Area 511 is being recommended.

been recommended to be Wild or Scenic Rivers, approximately 44 and 12 river miles, respectively (23,000 acres). These five segments are presently surrounded by the LUD II land use designation that is managed to retain its wildland characteristics, and there would be few changes in their land management. The river corridor would continue to be managed as Wild or Scenic River LUDs, but surrounded by Wilderness rather than LUD II. The primary effect would be the more limited recreational development in the 12 miles of Scenic River.

**Alternatives 3 and 4.** Two river segments managed under the Wild River LUD, approximately 31 miles and 14,000 acres, are included in Recommended Wilderness under these alternatives. Because the affected miles are managed as Wild River and they are within non-development LUDs, there is no significant effect to the rivers included under this alternative. The surrounding LUDs are currently Remote Recreation and Semi-remote Recreation.

**Alternative 5.** Ten river segments managed under the Wild, Scenic, and Recreational River LUDs are included in Recommended Wilderness under this alternative. They account for approximately 82 river miles of Wild River, 31 river miles of Scenic, and 1 river mile of Recreational River for a total of 55,000 acres. The surrounding land use designations are all non-development (56 miles in LUD II, 15 miles in Old-growth Habitat, 20 miles in Remote Recreation, and 22 in Semi-remote Recreation). The primary effect would be more limited recreational development in the 31 miles of Scenic River and the 1 mile of Recreational River.

**Alternative 6.** Under this alternative, 6 of the 25 of the rivers (segments) in roadless areas are recommended for wilderness and 15 are recommended for LUD II. The 6 segments proposed for wilderness include 54 miles of river managed under Wild River and 10 miles under Scenic River. The segments proposed for LUD II designation include 70 miles of Wild, 68 miles of Scenic, and 50 miles of Recreational River. LUD II designation has recreational guidelines that are less restrictive than for wilderness and more similar to Scenic River guidelines. The effects of this alternative would be more limited recreational opportunities in the 11 miles of Scenic River that would be included in wilderness and in the 50 miles of Recreational River that would be included in LUD II areas.

**Alternative 7.** This alternative includes 13 rivers (segments) that are recommended for wilderness. They account for 124 river miles in Wild River and 42 miles in Scenic River management (42,000 and 12,000 acres, respectively). The primary effect would be the increased limits in the 42 miles of Scenic River land.

**Alternative 8.** Under this alternative, all 25 of the rivers (segments) are recommended for wilderness, including approximately 167 river miles in Wild, 76 miles in Scenic, and 49 miles in Recreational River management (65,000 acres of Wild River, 27,000 acres of Scenic River, 27,000 acres of Recreational River and 22,711 acres within existing LUD II areas). All of the effects discussed earlier would occur, the most significant being the limitation in opportunities for a variety of recreational developments. Only primitive or semi-primitive recreation would be available in these 25 rivers (segments) and no development or facilities would be allowed.

# ***Economic and Social Environment***

## **Preface – Southeast Alaska in Transition**

The economy of Southeast Alaska is currently undergoing a broad-based transition from a commodity resource-based economy to a more general service-oriented economy, with a particular emphasis on recreation and tourism-related service activities. This transition is in part a reflection of national trends, which have exhibited rapid employment growth in the services, retail trade, and government sectors over the past decade. It is also the result of economic changes that are more unique to Southeast Alaska, most notably the decline in the wood products sector, along with a substantial growth in the number of visitors to the region.

These trends and the current economic and social environment of Southeast Alaska are discussed in detail in the following sections. The purpose of this section is to provide a brief overview of the trends that are important for the decision-makers and the public to consider in the context of the proposed alternatives.

The population of Southeast Alaska increased by 6 percent between 1990 and 2000. This growth was mainly the result of natural increase, births exceeding deaths, with the region as a whole experiencing net out-migration over this period. Population growth was distributed unevenly throughout the region, with 55 percent of the net increase occurring in Juneau, which experienced net in-migration, as well as natural increase. Population was higher in 2000 than in 1990 in 17 of Southeast Alaska's 32 communities, with the remaining, often smaller communities, experiencing declines in population over this period.

Average annual employment in Southeast Alaska increased by approximately 4,891 jobs or 10 percent between 1990 and 2000, despite large reductions in wood products employment. Growth in employment opportunities between 1990 and 2000 was, however, lower than the national average, as was growth in the local population. Much of the job creation that occurred in the region was in the lower paid retail and service sectors, resulting in a steady erosion in average wages and the contribution of job-related earnings to per capita income. Decreases in job-related earnings as a share of income is, however, a more widespread phenomenon that has been observed throughout the United States.

Although per capita income in Southeast Alaska remained fairly constant over this period, it experienced a relative decline compared to the national average, decreasing from 28 percent higher than the national average in 1990 to just 7 percent higher in 2000. Declining per capita income is a statewide phenomenon that likely owes much to the growth and diversification of the state economy and lower inflation. In the past Alaska could be generally characterized as a place where younger people came to work in high wage resource industries. More recently, the state has begun to resemble the lower 48 states, with more retirees and children, which brings down the per capita income. Per capita income in 2000 ranged from \$20,914 in Prince of Wales-Outer Ketchikan Census Area to \$34,230 in the City and Borough of Juneau. Earnings as a share of personal income decreased in Southeast boroughs/census areas between 1990 and 2000, with decreases ranging from 4.4 percent in Juneau to 13 percent in Northern Complex and Prince of Wales-Outer Ketchikan.

Comparison with national employment levels indicates that Southeast Alaska's economy is relatively specialized in the government, transportation and utilities, and

agricultural, forestry, and fishing sectors. The concentration of employment in the government sector, which is approximately twice the national average, reflects the location of the state capital in Juneau, but the relatively high proportion of government employment in other communities in Southeast Alaska also plays a part.

Growth in employment and income has not been distributed evenly throughout the region. Approximately 43 percent of employment in Southeast Alaska was concentrated in Juneau in 2000. The 2000 Census identified 17 of the region's 32 communities with unemployment rates of 10 percent or greater, compared to regional and national rates of 6.6 and 4 percent, respectively. The percentage of households below the poverty line in 2000 was 10 percent or higher in 10 communities.

### Introduction

The Tongass National Forest, which stretches roughly 500 miles from Ketchikan in the southeast to Yakutat in the northwest, includes approximately 80 percent of the land area in Southeast Alaska. The region is sparsely settled. Approximately 73,000 people live in 32 towns and villages located in and around the Forest. The communities of Southeast Alaska depend on the Tongass National Forest in various ways, including employment in the wood products, commercial fishing and fish processing, recreation, tourism, and mining and mineral development sectors. Many residents also depend heavily on subsistence hunting and fishing to meet their basic needs. In addition, natural amenities, subsistence resources, and recreation activities associated with the Tongass National Forest form an important part of the quality of life for many residents of Southeast Alaska. There is very little private land in the region to provide these resources. Appropriate management of the Tongass' natural resources is, therefore, extremely important for local communities and the overall regional economy.

The Tongass National Forest is also an important national and international resource, with an estimated 1,010,000 people visiting Southeast Alaska in the summer of 2001 (Northern Economics, 2002b). Many of these visitors travel by cruise ship. Approximately 632,000 cruise ship passengers visited Juneau in 2000. For many, a visit to the Tongass may be a once-in-a-lifetime experience and visitor expenditures drive the recreation and tourism sector, which is the largest natural resource-based sector of the economy. The Tongass National Forest contains large areas of essentially undisturbed forest lands, which represent increasingly scarce (and therefore increasingly valuable) ecosystems. These lands have value for many people who may never visit Southeast Alaska, but benefit from knowing that the Tongass National Forest is there. This type of value, often referred to as non-use value, includes existence, option, and bequest values. These values represent the value that individuals obtain from knowing that the wilderness exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it would be left for future generations to inherit. While few question the validity of this concept, the precise dollar range of non-use values is subject to debate.

This section addresses the potential effects of the alternatives on the economic and social environment. The analyses presented in this section address these potential effects at the community, subregional, regional, and national level. The section is divided into two main sections: 1) Regional and National Economy, and 2) Subregional Overview and Communities.

### 3 Environment and Effects

**Regional and National Economy:** The Affected Environment portion of the regional economy section provides an overview of social and economic conditions in Southeast Alaska and includes a general overview of the regional economy, as well as detailed descriptions of the potentially affected industries.

The Environmental Consequences portion is divided into three main sections: 1) economic impact analysis, 2) economic efficiency analysis, and 3) the Tongass National Forest budget and payments to the state. The economic impact analysis assesses the effects of the alternatives on the regional economy, primarily in terms of employment and income, where possible. Southeast Alaska is the overall region of influence for the regional analysis because residents throughout the region have strong economic, social, and cultural ties to the Tongass National Forest and could be potentially affected by the proposed alternatives. The economic efficiency analysis takes a national accounting approach and seeks to measure all of the costs and benefits associated with a given alternative.

**Subregional Overview and Communities:** The subregional overview and communities section is divided into two parts. The subregional overview portion addresses the economic and social composition of the Boroughs and Census Areas that comprise Southeast Alaska, as well as providing summary data at the community group level. The Communities section addresses the potential effects of the proposed alternatives on each of Southeast Alaska's 32 communities.

## Regional and National Economy

### Affected Environment

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Forest Visitors
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Mining and Mineral Development
Natural Amenities and Quality of Life
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Southeast Alaska is divided into five boroughs and three census areas. The five boroughs correspond with the county governments found elsewhere in the United States. Three of these boroughs, Juneau, Sitka, and Yakutat, are city/boroughs. The other two, Ketchikan Gateway and Haines, have independent incorporated communities within their boundaries. The remaining unorganized area is allocated to three census areas (CAs). While CAs are only statistical units, they are widely recognized from a data reporting standpoint by federal agencies and most state agencies as county equivalents.

Approximately 73,000 people live in the towns, communities, and villages of Alaska's southeastern panhandle, most of which are located on islands or along the narrow coastal strip. Only four of Southeast Alaska's 32 communities met the U.S. Census Bureau's definition of urban (population greater than 2,500) in 2000. Juneau, which is the state capital and a regional trade center, accounted for 47 percent of Southeast Alaska's total population in 2000 (Alaska Department of Labor [DOL], 2001a). Ketchikan Gateway Borough, the second largest borough in Southeast Alaska, accounted for about 19 percent of the region's population in 2000. Ketchikan is a smaller regional trade center that serves Prince of Wales Island and the surrounding area. Population is discussed in more detail in the *Subregional Overview* section of this SEIS.

The remote nature of the region is reflected in a population density of approximately two persons per square mile, which is significantly lower than the United States' average of 80 persons per square mile. Population densities by borough/census

### 3 Environment and Effects

area ranged from 0.4 in the Skagway-Hoonah-Angoon CA to 11.4 in the Ketchikan Gateway Borough (U.S. Census Bureau, 2001a). Many locations are accessible only by boat or plane, and landing strips or seaplane facilities are located in virtually all communities. The Alaska State ferry system transports people and vehicles between several ports in Southeast Alaska, and Prince Rupert, British Columbia, and Bellingham, Washington. Haines and Skagway, at the northern end of the Forest, and Hyder at the southern end, offer access to the interior and Southcentral Alaska via the Alaska Highway, and Canada via the Cassiar Highway.

The following sections provide an overview of the social and economic conditions in Southeast Alaska and provide a baseline against which the potential effects of the proposed alternatives are measured.

#### Regional Economic Overview

The Tongass National Forest plays an important role in the formal and informal economies of Southeast Alaska. The formal economy includes those economic activities that are recorded in official statistics. The informal economy includes activities that are not typically recorded in official statistics. Elements of the informal economy include subsistence activities, in-kind contributions, non-cash income, unpaid labor and labor exchanges, and care giving to the young and old (Ratner, 2000).

Summary economic data are presented for Southeast Alaska for 1980, 1990, and 2000 in Table 3.4-1. Annual rates of growth are presented for the 1980 to 1990 and 1990 to 2000 timeframes. These data indicate that the Southeast Alaska and statewide economies grew at rates above the national average in the 1980s. Total personal income, population, average annual employment, and non-job related earnings per capita in Southeast Alaska and statewide all increased at faster rates than the national average. The region's unemployment rate (7 percent) was slightly higher than the state average (6.6 percent) and almost twice the national average (4 percent) in 2000. This pattern of growth was reversed in the 1990s, with rates of growth in the Southeast generally slower than statewide and national averages. Southeast Alaska's lower rate of job growth, 1.1 percent compared to 1.8 and 2.1 percent for the state and the nation, respectively, was matched by a slower growth in population. Total personal income also grew at a slower rate than the state and national averages over this period, 0.3 percent compared to 1.7 and 2.9 percent, respectively. While average earnings per job for the nation as a whole increased in the 1990s, they declined in Southeast Alaska and statewide, decreasing annually by 2.7 and 1.1 percent, respectively. Per capita income in Southeast Alaska declined between 1990 and 2000, but was still slight higher than the Alaska and U.S. averages in 2000.

Employment in Southeast Alaska increased in the services (46%), retail trade (16%), and construction (51%) sectors between 1990 and 2000, with a notable increase also occurring in the number of self-employed workers (26%). These trends were likely influenced by the growth in the number of visitors to the region.

Non-job related earnings per capita increased in Southeast Alaska and Alaska during the 1980s and 1990s. Non-job related earnings in Southeast Alaska increased from 28 percent of total earnings in 1990 to 35 percent in 2000. Non-job related earnings include dividends, interest, and rent, and transfer payments. Transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, veterans benefit payments, and other payments. The "other payments" category includes Alaska Permanent Fund benefits, which are derived from oil revenues and paid to all Alaska residents. Other payments accounted for approximately 41 percent of per capita transfer payments in Southeast Alaska in 2000, compared to less than 1 percent nationwide.

**Table 3.4-1  
Southeast Alaska Economic Overview**

	1980		1990		2000		1980 to 1990				1990 to 2000								
							Percent Growth Change Rate (%)		Alaska Growth Rate (%)		U.S. Growth Rate (%)		Percent Growth Change Rate (%)		Alaska Growth Rate (%)		U.S. Growth Rate (%)		
Total Personal Income (Million 2000\$)	1,546	2,218	2,218	2,278			43	4.1	4.7			3.2			3	0.3	1.7		2.9
Population	54,385	69,506	73,082				28	2.8	3.5			1.1			5	0.6	1.4		1.4
Average Annual Employment	34,087	46,731	51,622				37	3.6	3.8			2.2			10	1.1	1.8		2.1
Per Capita Personal Income (2000\$)	28,422	31,911	31,243				12	1.3	1.1			2.2			-2	-0.2	0.3		1.5
As % of Alaska Average	109	111	105				-	-	-			-			-	-	-		-
As % of U.S. Average	134	124	106				-	-	-			-			-	-	-		-
Average Earnings per Job (2000\$/year)	36,954	34,949	27,395				-5	-0.6	-0.5			0.5			-22	-2.7	-1.1		1.0
As % of Alaska Average	91	90	78				-	-	-			-			-	-	-		-
As % of U.S. Average	117	105	75				-	-	-			-			-	-	-		-
Non-Job Related Earnings Per Capita (2000\$)	4,825	9,052	10,974				88	7.2	7.3			3.6			21	2.2	3.0		1.0
As % of Total Per Capita Income	17	28	35				-	-	-			-			-	-	-		-
SE Alaska Unemployment Rate	na	6.8	7				-	-	-			-			-	-	-		-
Alaska Unemployment Rate	9.7	7	6.6				-	-	-			-			-	-	-		-
U.S. Unemployment Rate	7.1	5.6	4				-	-	-			-			-	-	-		-

na = not readily available

1 Income and earnings figures for 1980 and 1990 are adjusted for inflation and presented as the amount they would be worth in 2000.

2 Full- and part-time employment includes self-employed. Employment data are by place of work, not place of residence, and therefore include people who work in Southeast Alaska but do not live there. The nonresident share of total employment in Southeast Alaska was estimated to be approximately 22 percent in 2001 (Alaska DOL, 2003).

Employment is measured as the average annual number of jobs, full-time plus part-time, with each job that a person holds counted at full weight.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2002; Alaska DOL, 2001a; U.S. Census Bureau, 2001a.

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It is important to note that these annual rates of growth assume a linear trend between the selected years. Selecting different years for comparison may result in different trends. Similar data compiled for the 1985 to 1994 period for the 1997 Tongass Forest Plan Revision Final EIS (USDA Forest Service, 1997a; Table 3-128) showed a 2.1 percent annual growth in jobs that exceeded the national average by approximately 40 percent and was matched by strong population growth. The slower than national average growth rates shown for the 1990s in Table 3.4-1 at least partially reflect changes in the region's timber industry. This is discussed further in the *Wood Products* subsection of this section, as well as the *Subregional Overview* section of this SEIS.

Southeast Alaska employment is summarized by sector in Table 3.4-2. Services, other (state and local) government, and retail trade were the largest sectors by employment in 2000, accounting for 26, 20, and 14 percent of total employment, respectively. Employment in services grew rapidly during the 1990s, increasing by 4,243 jobs or 46 percent between 1990 and 2000. Employment in the retail trade sector also saw relatively large growth, increasing by 1,026 jobs or 16 percent over this period. The manufacturing sector saw a relatively large decline, with 39 percent or 2,252 fewer jobs in 2000 than in 1990, which, for the most part, reflects the decrease in timber-related jobs over this period. Other relatively large changes in employment over this period occurred in construction (51 percent increase) and agricultural services, forestry, and fishing (62 percent decrease).

The location quotients, which allow comparison of regional employment distribution with the national average (see Table 3.4-2, footnote 3), indicate that Southeast Alaska's economy is specialized in the government, transportation and public utilities, and agricultural, forestry, and fishing sectors (Table 3.4-2). The relative concentration in the government sector largely reflects the location of the state capital in Juneau, but the relatively high proportion of government employment in the other communities of Southeast Alaska also plays a part. The relatively high share of employment in the transportation sector arises, for the most part, from the importance of air and water traffic in a region where no developed road system exists.

Recreation and tourism are also heavily represented in the economy of Southeast Alaska. This is not readily apparent from Table 3.4-2 because recreation and tourism-related activities are distributed over a number of standard economic sectors, mainly retail trade and services. The percent of the total workforce that is self-employed in Southeast Alaska is higher than the national average, 26 percent compared to 17 percent (location quotient of 1.6). Much of the self-employment in Southeast Alaska is likely associated with the retail and services sectors and sensitive to recreation and tourism activity.

Wholesale trade and the finance, insurance, and real estate sector are relatively underrepresented (location quotients less than 1.0) reflecting the region's propensity to import these goods and services from the lower 48 states. Manufacturing is also underrepresented despite certain basic industries, primarily wood products and seafood processing, partially offsetting the lack of a more developed local manufacturing base.

Taken together, the data presented in Tables 3.4-1 and 3.4-2 provide a general overview of the economy of Southeast Alaska. Growth in employment opportunities between 1990 and 2000 was lower than the national average, as was growth in the local population. Much of the job creation that occurred in the region was in the lower paid retail and service sectors, resulting in a steady erosion in average wages and the contribution of job-related earnings to per capita income. Although per capita income in Southeast Alaska remained fairly constant over this period, it

**Table 3.4-2  
Southeast Alaska Employment by Sector**

	Employment		Share of Total (Percent)		Percent Change	2000 Location Quotient <sup>3</sup>
	1990	2000	1990	2000	1990-2000	
Total full-time and part-time employment <sup>1</sup>	46,731	51,622	100	100	10	-
<b>Type of Employment</b>						
Wage and salary employment	35,945	37,979	77	74	6	0.9
Proprietors' employment	10,786	13,643	23	26	26	1.6
<b>Wage and Salary Employment by Industry</b>						
Farm employment	0	33	0	0	N/A	-
Nonfarm employment <sup>2</sup>	46,723	51,589	100	100	10	-
Ag. services, forestry, fishing, & other	3,357	1,283	7	2	-62	1.9
Mining	131	36	0	0	-73	0.1
Construction	1,914	2,883	4	6	51	1.0
Manufacturing	5,711	3,459	12	7	-39	0.6
Transportation and public utilities	2,911	3,182	6	6	9	1.3
Wholesale trade	683	750	1	1	10	0.3
Retail trade	6,357	7,383	14	14	16	0.9
Finance, insurance, and real estate	2,303	2,216	5	4	-4	0.5
Services	9,267	13,510	20	26	46	0.8
Federal Government	3,417	2,963	7	6	-13	1.9
Other Government	9,890	10,221	21	20	3	1.9

1 Full- and part-time employment includes self-employed individuals. Employment data are by place of work, not place of residence, and therefore include people who work in Southeast Alaska but do not live there. Employment is measured as the average annual number of jobs, full-time plus part-time, with each job that a person holds counted at full weight.

2 Totals by industry sector do not sum to the nonfarm employment total. These data were compiled by summing employment totals in the five boroughs and three CAs that comprise the region. Actual numbers of employees were not disclosed in some sectors in some boroughs and CAs but they are included in the nonfarm employment total. Actual numbers of jobs are not disclosed at the sector level because there are less than ten employees in that sector or to avoid disclosure of confidential information when there is one major employer.

3 The location quotient is a relative measure of industry specialization that compares the percentage of employment concentrated in each sector in the study region with a benchmark region, in this case the United States. A location quotient of 1.0 indicates that the study region has the same percentage of employment in this sector as the benchmark region does. Location quotients above or below 1.0 indicate that the study region is over or under represented in this sector, respectively.

Source: U.S. Department of Commerce, Bureau of Economic Affairs, 2002.

experienced a relative decline compared to the national average, decreasing from 28 percent higher than the national average in 1990 to just 6 percent higher in 2000.

The effect of this relative decline in Southeast Alaska was partially offset by a relatively low inflation rate that led to a reduction in the relative price of goods. Later sections of this analysis discuss economic growth at the subregional and community scale.

The following section discusses the relative contribution of natural resource-based industries to the regional economy, and more specifically those industries that could be potentially affected by the proposed alternatives.

**Natural  
Resource-Based  
Industries**

**Overview**

Wood products, recreation and tourism, and mining are the primary natural resource-based industries that could be affected by the alternatives. The following discussion focuses on these industries, but also provides summary information on commercial fishing and seafood processing to provide a more complete overview of the

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contribution of natural resource-based industry to the regional economy of Southeast Alaska.

In most cases, the employment, income, and revenue figures derived for these industries required a series of steps, each involving assumptions and potential sources of error. Where possible, these assumptions are stated and the nature of associated problems discussed.

#### ***Direct Employment***

The distribution of direct employment in Southeast Alaska is shown by major economic sector in Figure 3.4-1. These numbers and all subsequent employment figures are expressed in average annual employment (equivalent to one year of full-time or part-time employment). Direct employment in natural resource-based industries accounted for approximately 21 percent of total employment. The distribution of resource-dependent employment is shown by industry in Figure 3.4-2. Recreation and tourism accounted for just over half (51 percent) of direct resource-dependent employment in 2001, with wood products accounting for just 9 percent. In 1995, recreation and tourism and wood products accounted for 34 percent and 24 percent of direct resource-dependent employment, respectively (USDA Forest Service, 1997a; Figure 3-15). Total direct resource-dependent employment remained fairly constant between 1995 and 2001, decreasing slightly from 8,702 to 8,412 employees. Wood products employment declined significantly over this period, decreasing from 2,070 to 782 jobs. Employment in recreation and tourism increased over this period, but the large relative gain between 1995 and 2001 is also partly a result of a change in measurement. The 1995 estimate was based on estimates of visitation to the Tongass and does not include the economic

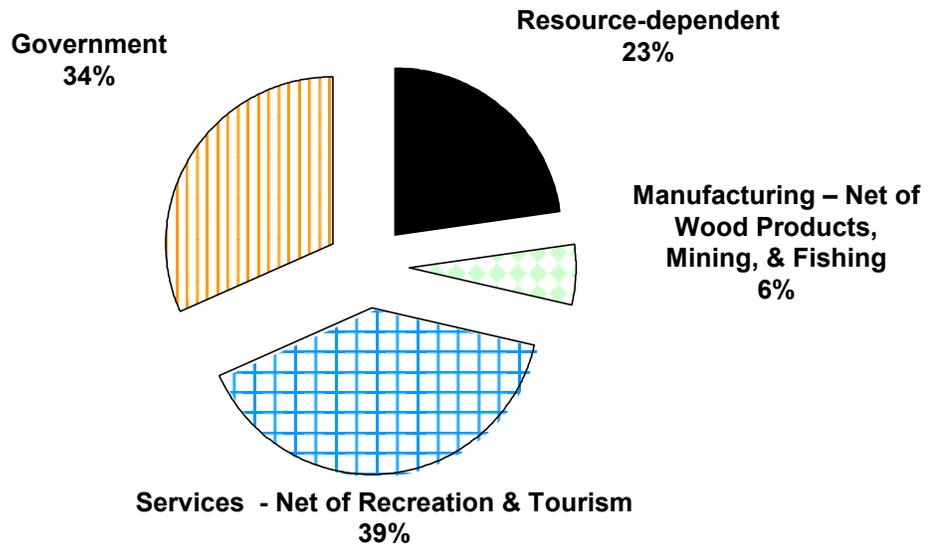
contribution of tourist activities that cannot be measured in visitor days. The estimate presented here for 2001 is based on the shares of employment in particular economic sectors and more fully accounts for the role of recreation and tourism in the regional economy. Table 3.4-3 identifies the change in natural resource-based employment and earnings from 1990 to 2001 by sector.

#### ***Total Employment and Earnings***

Economic activity in one sector generates activity in others as firms purchase services and materials as inputs (termed “indirect” effects) and employees spend their earnings within the local economy (“induced” effects). In what is known as the multiplier effect, each industry possesses a multiplier that represents its impact on the regional economy given its particular distribution of local purchases and payments. The total effects (i.e., direct, indirect, and induced) generated by an industry are calculated by multiplying employment within that industry (“direct” effects) by the appropriate multiplier.

The analysis presented in this SEIS uses industry-specific multipliers to assess the total employment and income effects of the alternatives. These multipliers are also used to estimate total natural resource-based employment and income in 2001 (Table 3.4-3). The multipliers used in this analysis are presented in Table 3.4-4. These multipliers were estimated using IMPLAN, an input-output model commonly used in this sort of application. Total employment and income estimates derived using these multipliers include both indirect and induced effects.

**Figure 3.4-1  
Southeast Alaska Employment by Sector, 2001**



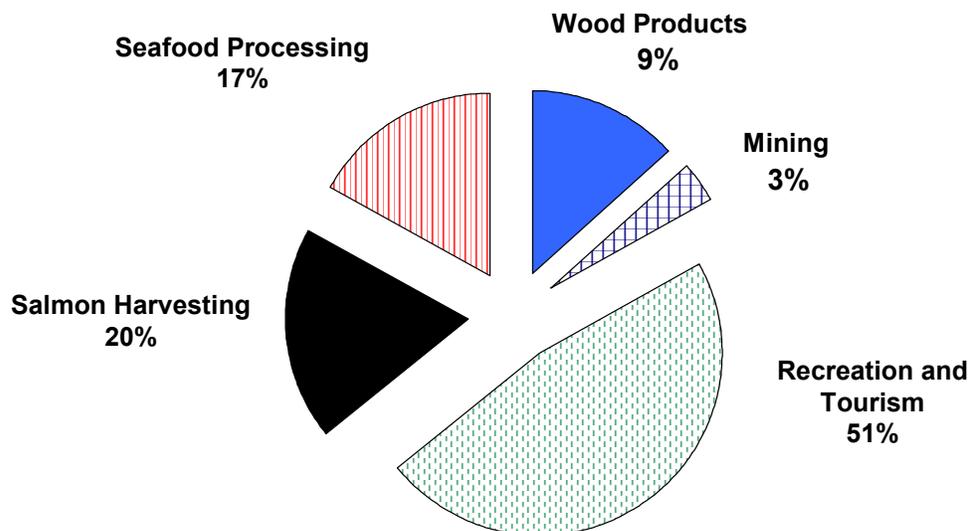
Total = 39,195 Employees (Average Annual Employees)

Notes:

1. The resource dependent category (23% of total employment) includes estimated wood products, mining, recreation and tourism, salmon harvesting, and seafood processing employment. These sectors are excluded from the other general categories to avoid doublecounting.
2. "Services - Net of Recreation and Tourism" as presented here includes the services, retail trade, wholesale trade, finance, insurance, and real estate, and transportation and public utilities sectors.
3. It may be noted that a portion of the Government sector employment is also resource dependent. This employment is not included in the resource dependent total.

Source: See Table 3.4-3.

**Figure 3.4-2  
Direct Resource-dependent Employment by Sector, 2001**



Total = 8,412 Employees (Average Annual Employment)

Source: See Table 3.4-3.

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**Table 3.4-3  
Natural Resource-Based Industry Employment and Earnings, 2001**

Industry	2001 Direct Employment <sup>1</sup>	Change 1990-2001	% of SEAK Total	2001 Total Employment	2001 Direct Earnings (mill. \$)	% of SEAK Total	2001 Average Annual Earnings	2001 Total Earnings (mill. \$)
Wood Products	782	-78%	2%	1,549	\$35.7	3%	\$44,330	\$51.1
Mining <sup>2</sup>	272	-32%	1%	403	\$18.6	2%	\$68,288	\$23.2
Recreation <sup>3</sup>	4,278	na	11%	5,176	\$88.8	8%	\$20,757	\$117.2
Salmon Harvesting <sup>4</sup>	1,680	-11%	4%	2,066	\$33.8	3%	\$20,119	\$80.1
Seafood Processing <sup>5</sup>	1,400	-1%	4%	2,296	\$40.9	4%	\$29,203	\$54.0
Resource-dependent Total <sup>6</sup>	8,412	na	21%	-	\$217.8	20%	\$25,887	-
SE Alaska Total	39,195	17%	100%	39,195	\$1,081.2	100%	\$30,995	\$1,081.2

<sup>1</sup> Data for the wood products, mining, and salmon processing sectors are non-agricultural wage and salary (NAWS) data from the Alaska DOL. These totals do not include self-employed workers. Data for the recreation and salmon harvesting sectors include estimates of self-employed workers.

<sup>2</sup> Mining earnings are based on a 1995 average annual salary of \$60,971 adjusted for inflation to 2001 dollars (USDA Forest Service, 1997a; Table 3-131).

<sup>3</sup> Recreation and tourism estimates are for visitor use only. They do not include resident recreation. The estimates presented here employ the methodology, ratios of visitor to resident use, and ratios of self-employed to wage and salary workers from the 1998 estimates presented in McDowell Group (1999). This method of estimating the contribution is different from the approach used in the 1997 Forest Plan Revision Final EIS analysis and the numbers are not directly comparable. Data is not readily available in this form for 1990. Longitudinal data is, however, presented for the recreation sector in the recreation section of this analysis.

<sup>4</sup> Salmon harvesting employment and earnings were calculated using data from the Alaska Commercial Fisheries Entry Commission and the methodology employed in the 1997 Forest Plan Revision Final EIS analysis.

<sup>5</sup> Seafood processing earnings are based on a 1995 average annual salary of \$26,074 adjusted for inflation to 2001 dollars (USDA Forest Service, 1997a; Table 3-131).

<sup>6</sup> The Southeast Alaska total consists of wage and salary employment from the Alaska DOL adjusted to include the self-employed workers in the recreation and salmon harvesting sectors. This differs from the data presented in Tables 3.4-1 and 3.4-2, which are from the U.S. Department of Commerce, Bureau of Economic Affairs and include all self-employment workers.

na – not available

Sources: USDA Forest Service, 1997a (Table 3-131); Alaska DOL, 2001b,c,d,e; 2002a; Alaska Commercial Fisheries Entry Commission, 2002; McDowell Group, 1999.

**Table 3.4-4  
Employment and Income Multipliers**

	Employment	Income
Sawmills	2.09	1.51
Logging	1.92	1.39
Mining	1.48	1.25
Recreation	1.21	1.32
Salmon Harvesting	1.23	2.37
Seafood Processing	1.64	1.32

Note: These multipliers were estimated using the 1998 IMPLAN model.

The software and databases necessary to run IMPLAN are available commercially from the Minnesota IMPLAN Group. The IMPLAN system adjusts national level data to fit the economic composition and estimated trade balance of a chosen region and can be used to construct county or multi-county models for any region in the United States. The model used for this analysis consists of the boroughs and census areas that comprise Southeast Alaska. The data used to estimate the multipliers in Table 3.4-4 were obtained from standard data sets produced and maintained by the Minnesota IMPLAN Group. Concerns have been raised with respect to the ability of IMPLAN and similar input-output models to accurately predict indirect and induced effects. Alternate techniques for estimating these effects are, however, subject to the same, or similar, criticisms and more accurate estimates are not readily available for this analysis. While the multipliers presented here should be viewed with caution,

the resulting estimates of indirect and induced employment provide a basis for comparison between alternatives.

The estimates of resource-dependent employment shown in Figure 3.4-2 are only for direct employment and, as a result, do not fully capture the role that resource-dependent industries play in the regional economy. Adding indirect and induced employment effects alters the relative contribution of the various sectors because employment multipliers vary by industry, but provides a more complete picture of the economic importance of resource dependent industries. The relative contribution is also different when measured in terms of income because wage rates vary by sector, with higher average wages paid in the mining and wood products sectors.

Total employment estimates are presented in Table 3.4-3 to provide perspective on the overall contribution of natural resource-based industries to the region's economy, as well as the relative significance of each sector. Table 3.4-3 also provides estimates of average annual earnings that roughly correspond to the wage rate by sector (note: these estimates are the amount a person would earn by working in the given industry for a full year). These data suggest that there is considerable variation in income across these sectors, with average annual income in 2001 ranging from \$20,119 for salmon harvesting through \$68,288 for mining (note: recreation and tourism-related employment is often part-time, while mining employment is typically full-time). These data indicate that overall regional effects vary by sector based on their respective multipliers and average annual wages.

Data for the wood products, mining, and seafood processing sectors are from the Alaska DOL. These totals do not include self-employed workers. Data for the recreation and salmon harvesting sectors were estimated from a number of sources and include estimates of self-employed workers (see footnotes to Table 3.4-3). These estimates, as discussed in later sections, are subject to the limitations of the adopted approaches and available data. This should be kept in mind when comparing these figures with the data presented for the wood products, mining, and seafood processing sectors, which are specifically compiled by sector. Total employment and earnings were estimated using employment and income multipliers from the 1998 IMPLAN model.

Nonresident workers accounted for 44 percent of resource dependent employment in 1994, almost twice the regional average. Seafood processing and recreation and tourism have the largest nonresident shares.

### ***Nonresident and Seasonal Employment***

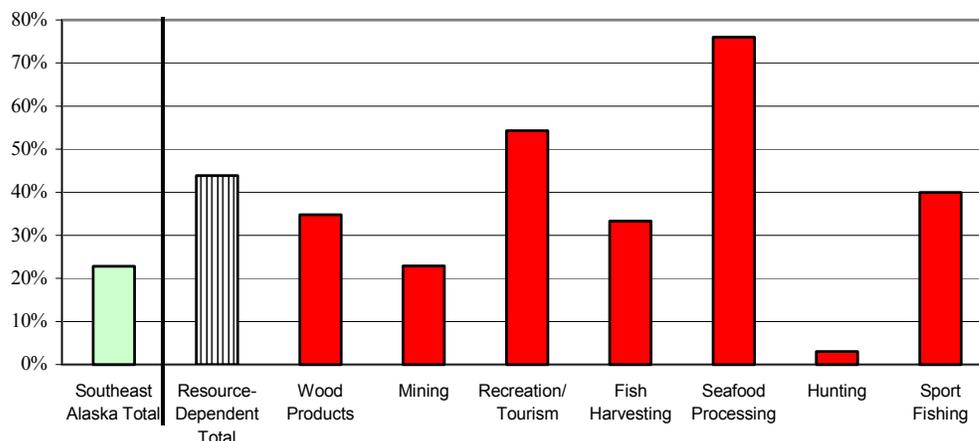
Nonresident and seasonal employment are two important and related aspects of resource-dependent employment in Southeast Alaska. Nonresident employment shares are shown for each resource-dependent industry and the region as a whole in Figure 3.4-3. Nonresident workers account for 44 percent of employment in the resource-dependent sector as a whole, approximately twice the regional average. Seafood processing and recreation and tourism have the largest nonresident shares, but all of the resource-dependent industries, with the exception of guided hunting have nonresident shares above the regional average. Jobs held by nonresidents are, of course, no less important to the individuals concerned, but their overall contribution to the regional economy is less because they spend less of their earnings in the region.

Seasonal variations in employment in Southeast Alaska, the difference between peak levels of employment in the summer and dips in the winter, are quite pronounced. Figure 3.4-4 shows one measure designed to capture seasonal variation. Unfortunately, monthly statistics were not available for many of the resource-dependent industries discussed here. Nevertheless, a pattern similar to that in nonresident share is apparent, with seafood processing showing an extremely high degree of seasonal variation (salmon harvesting can be assumed to display comparable but somewhat smaller figures due to increased preparation time). Although not reported here, it is safe to assume, based on the distribution of visitors

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throughout the year among other things, that tourism and recreation show a similarly high degree of seasonal variation. The mining and lumber and wood products industries showed a seasonal variation that was higher than the regional non-agricultural wage and salary average, but significantly lower than the seafood processing industry.

**Figure 3.4-3**  
**1994 Nonresident Share of Direct Employment in Southeast Alaska.**  
**Total and Resource-Dependent Industries**

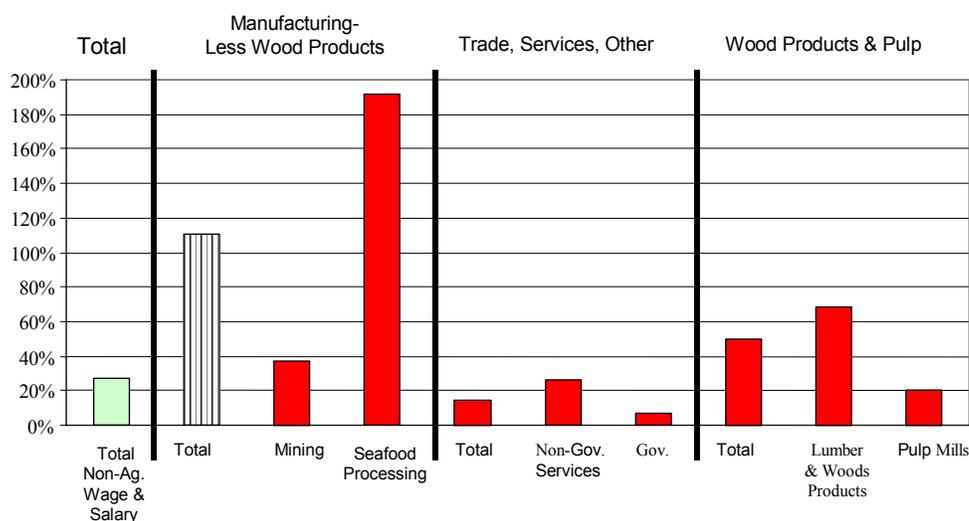


Note: All employment figures are standardized to annual average employment.  
Source: USDA Forest Service, 1997a (Figure 3-16).

#### **Summary**

While total employment in Southeast Alaska increased by 4,891 jobs (10 percent) between 1990 and 2000 (Table 3.4-2), employment declined in most resource-dependent industries. Employment declined most drastically in the wood products sector with a loss of 2,550 jobs or 72 percent of total wood products employment between 1990 and 2000. Growth in the recreation and tourism sector partially offset the jobs lost in other resource-dependent industries. The recreation and tourism sector offers diverse employment opportunities, ranging from low wage, seasonal employment in the hospitality and retail sectors, to more highly paid positions, such as helicopter pilots and lodge operators. Overall, this sector tends to have a relatively low overall effect on regional employment (a low multiplier effect), relatively low wages (approximately two-thirds of the regional average), and employ a relatively high proportion of nonresident workers. This shift in resource-dependent employment from the wood products and mining sectors to recreation and tourism is likely partially reflected in the region's annual average earnings per job, which declined by 12 percent over this period (Table 3.4-1). Despite this decline in average earnings, per capita income stayed relatively constant, primarily due to a significant increase in non-job related earnings per capita.

**Figure 3.4-4**  
**Average Seasonal Variation in Employment 1990-1994**



Note: The 1990-1994 average is a weighted average of the variation in each year. Average seasonal variation is the difference between summer maximum and winter minimum divided by the annual average.

Source: USDA Forest Service, 1997a (Figure 3-17).

### Industry-Specific Descriptions

The following subsections contain a more detailed description of each resource-dependent industry. These subsections discuss how the statistics discussed in the preceding section were derived, as well as providing time series data illustrating historic trends in each sector. Linkages between the Tongass National Forest and each industry are also discussed.

#### Wood Products

The following section is divided into four main parts. The first section provides an overview of recent changes in Southeast Alaska’s wood products industry. The other three sections provide more detailed discussions of harvest, production and employment, and current conditions, respectively.

**Overview.** Employment in the wood products industry declined dramatically from its peak of 3,543 jobs in 1990 to just 782 jobs in 2001, accounting for approximately 3 percent of total regional employment in 2001. Much of this job loss was associated with the closure of the large pulp mills in Sitka (1993) and Ketchikan (1997), which together accounted for 899 jobs in 1990. These pulp mills accounted for about half of the Federal timber harvest from 1970 up until their closure and chip by-products (manufacturing residues) from the region’s sawmills were historically used in pulp production. Closure of these mills has had a significant effect on the regional demand for timber and also the market for wood chips, which has directly affected the region’s remaining sawmills.

A larger absolute decline in wood products employment over this period occurred in the logging sector with a net decline of 1,640 jobs over the same period, a decrease from 2,144 jobs in 1990 to 504 jobs in 2001. This decline in logging employment

### 3 Environment and Effects

partly occurred due to a reduction in harvest from the Tongass National Forest, with annual harvest declining from 471 MMBF in 1990 to 120 MMBF in 2001, but a larger reduction in annual harvest occurred on private lands, with annual private harvests declining from 506 MMBF to 48 MMBF over the same period. Native Corporation harvests are generally projected to decline as a result of declining timber inventories.

More recently there have also been changes in the market for Southeast Alaskan lumber and other processed wood products. Japan, traditionally the major destination market for Southeast Alaskan lumber, accounted for just 24 percent of demand in 2000, with the bulk of sales (62 percent) going to the continental U.S. Japan still dominates the log export market, but the value of this trade has declined by more than half over the last five years. These changes in demand and prices have had significant effects on the Southeast Alaskan timber industry and the profitability of the remaining facilities.

The majority of the region's timber harvest comes from two ownerships: the Tongass National Forest and Native Corporation (private) lands, which accounted for 54 and 22 percent of total regional harvest in 2001, respectively. Harvest from state lands made up the remaining 24 percent.

**Harvest.** Harvests within Southeast Alaska are the main source of raw materials for the region's wood products industry. Raw material imports averaged just two percent of Southeast Alaska's total roundwood consumption from 1983 through 1994 and there have been no notable sawlog or utility log imports into the region in recent years (USDA Forest Service, 2002a). Annual Southeast Alaska timber harvest is shown by owner for 1983 through 2001 in Figure 3.4-5. Harvest levels ranged from peak levels of just under 1,000 MMBF in 1989 and 1990 to a low of 221 MMBF in 2001. The overall pattern of harvest levels shown in Figure 3.4-5 generally reflects broader trends in the wood products market. These include the global recession in the woods products industry that depressed output in the early to mid 1980s, the following boom, and subsequent decline. In Southeast Alaska, harvest levels have shown an overall pattern of decline since 1990 (Figure 3.4-5).

The majority of the region's harvest comes from two ownerships: the Tongass National Forest and Native Corporation (private) lands. Harvest from these ownerships ranged from approximately 96 percent of total Southeast Alaska harvest in 1983 to 99 percent in 1993. The combined Tongass and Native Corporation share dropped to 83 and 76 percent in 2000 and 2001, respectively, with the inclusion of the Alaska Mental Health Trust and University of Alaska harvests in the state total (Figure 3.4-5). Harvest from the Tongass National Forest, which ranged from a high of 49 percent of the total in 1988 to a low of 22 percent in 1997, accounted for 54 percent of the total in 2001. Native Corporation harvests ranged from 49 percent of the regional total in 1988 to 77 percent in 1997, dropping to 22 percent in 2001. Native Corporation harvests, which have shown an overall pattern of decline since 1990, despite increases in 1996 and 1997 (see Figure 3.4-5), are generally projected to continue to decline as a result of declining timber inventories (Knapp, 1992; Brooks and Haynes, 1997).

The majority of Native Corporation harvests are sold as raw log exports. Export of Tongass logs is restricted. Tongass logs accounted for 92 percent of the wood sawn in Southeast Alaska sawmills in 2000.

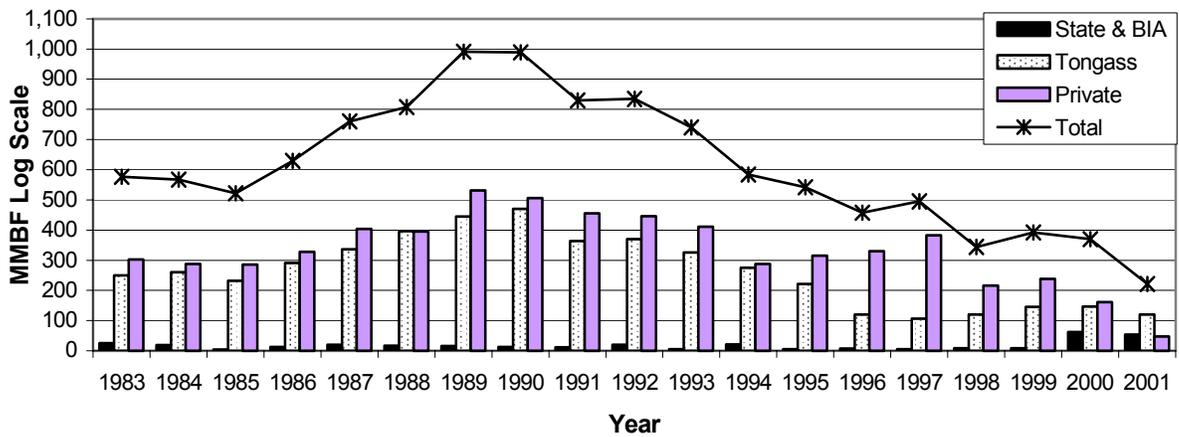
Timber from the Tongass National Forest and Native Corporation lands essentially flow into different markets. Restrictions on exports of raw material from the Tongass currently limit log exports to Alaska yellow cedar and a portion of the western redcedar harvest. Sitka spruce and western hemlock (the region's main species) must be processed locally to support wood products jobs in Alaska. This is not the case with timber harvested from Native Corporation land and almost all of the timber harvested on Native Corporation land is sold in the form of raw log exports. As a result, continued declines in Native Corporation harvest would primarily result in changes in log exports and associated employment. The preliminary results of the 2000 mill capacity study conducted by the Forest Service indicated that 92 percent of the wood sawn in Southeast Alaska sawmills in 2000 came from the Tongass National Forest.

**Production and Employment**

Native Corporation harvests, which have shown an overall pattern of decline since 1990, are generally projected to continue to decline as a result of declining timber inventories.

The 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a) noted that log exports comprised 43 percent of total Southeast Alaska production on a volume basis from 1981 to 1995. At 36 percent of the total, pulp was the second largest production component over this period and far more stable than log exports. Lumber was noted as the smallest component of total production, averaging 19 percent of the total from 1981 to 1995. Closure of the KPC Pulp Mill in 1997 brought pulp production in the region to an end. The results of the 2000 mill survey indicate that about 87 MMBF of lumber (approximately 69 MMBF, roundwood equivalent) was processed in Southeast Alaska in 2000.

**Figure 3.4-5  
Southeast Alaska Total Timber Harvests by Ownership, 1983-2001**



**Notes:**

1 Harvests from Alaska Mental Health Trust and University of Alaska lands omitted prior to 2000.

2 Data for 2001 are preliminary.

BIA = Bureau of Indian Affairs

Source: USDA Forest Service, 1997a (Figure 3-18, 1983-1987 data); 2002a (1988-2000 data); 2003 (2001 data).

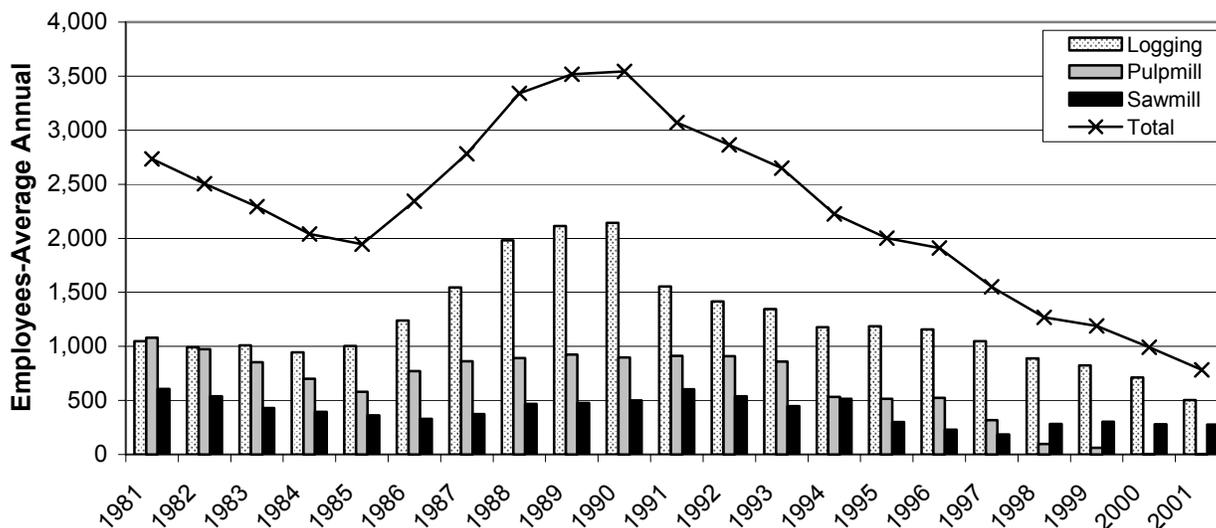
Employment in the Southeast Alaska wood products sector decreased by 2,761 jobs, or 78 percent, between 1990 and 2001. This total includes the entire pulp mill labor force, but a larger absolute loss occurred in the logging sector.

Employment in the Southeast Alaska wood products sector has declined significantly since the peak of 1990 (see Figure 3.4-6), decreasing by 2,761 jobs, or 78 percent, between 1990 and 2001. While this total includes the entire pulpmill labor force, which accounted for 899 jobs in 1990, a larger absolute loss occurred in the logging sector, where 1,640 jobs were lost. A total of 782 people were employed in the wood products sector in 2001, with logging and sawmills accounting for 64 percent and 36 percent of the total, respectively. Preliminary monthly data compiled by the Alaska DOL suggests that this number has declined further in 2002, peaking at 650 jobs in May (Alaska DOL, 2002a).

Employment decreases tend to lag behind decreases in production, and further declines in employment levels can be expected even if there are no further changes in harvest levels.

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**Figure 3.4-6**  
**Southeast Alaska Timber Sector Direct Employment by Type, 1981-2001**



Note: These data, originally compiled by the Alaska DOL, are by place of work and do not include self-employed workers or proprietors. As a result, self-employed loggers are not included in these employment totals. In addition, employment totals include nonresident workers (i.e., workers who do not permanently reside in Southeast Alaska). Nonresident workers comprised 35 percent of total employment in the Southeast Alaska wood products sector in 1994 (see Figure 3.4-3).

Source: USDA Forest Service, 2002a; Alaska DOL, 2002a

**Current Conditions.** This section is divided into two parts that discuss the current status of the industry and projected future demand, respectively.

**Current Status of the Industry.** It is clear from the preceding sections that the wood products industry in Southeast Alaska has undergone significant change over the past decade. The closure of the APC and KPC Pulp Mills in 1993 and 1997, respectively, has had a large effect on the overall regional demand for timber. Wood consumption by these pulp mills accounted for about half of Alaska National Forest timber harvest since 1970 and chip by-products (manufacturing residues) from the region's sawmills were historically used in pulp production (Brooks and Haynes, 1997). The KPC Pulp Mill, for example, required 190 MMBF of pulpwood and/or chips to operate at its reported full annual capacity of 210,000 tons of pulp (USDA Forest Service, 1997a; 3-450). The analysis prepared for the 1997 Forest Plan Revision Final EIS noted that, on average, 19 percent of Native Corporation harvests were reportedly used in pulp production. The 1997 Forest Plan Revision Final EIS also noted that an average of 17 percent of Tongass National Forest logs were classified as utility grade, meaning that they were more likely to be used for pulp or chips. This figure does not, however, necessarily indicate the amount of timber that was dedicated to pulp production, as lower grade sawlogs were also chipped for pulp and some utility logs may be sawn depending on market conditions.

Recent harvest data show a decline in the percent of annual harvest on the Tongass National Forest comprised of utility logs, with the utility log share declining from 19 percent in 1996 to around 9 percent in 1999 and 2000 (USDA Forest Service, 2002a). The preliminary results of a mill survey conducted by the Forest Service in 2000 indicate that 46.1 MMBF of utility and low grade saw logs were chipped in 2000 (26.9 and 19.2 MMBF, respectively). The majority of these chips were exported to pulp mills in the continental U.S. (61.6 percent) and Canada (31.3 percent), with just 7.1 percent consumed in Alaska. While these data indicate that a market existed for

chips in 2000, this is no longer the case. Utility logs originate from whole trees that do not meet sawlog specifications, or when part of a tree is defective but the rest meets sawlog specifications. Utility logs and sawlogs are mixed in the same tree stands and the loss of the market for wood chips has important implications for the economic viability of timber sales on the Tongass. As a result, timber sales on the Tongass now include an Optional Removal clause (Forest Service Handbook (FSH): 2409.22 Chapter 630) that allows sale purchasers to leave behind utility logs. These logs still have to be purchased as part of the timber sale but the purchaser no longer has to remove them, saving on logging and haul costs. The lack of a market for chips has also resulted in an increase in applications to export low grade round Sitka spruce and hemlock logs harvested on the Tongass.

More recently there have also been changes in the market for Southeast Alaskan lumber and other processed wood products. Japan has traditionally been the major destination market for Southeast Alaskan lumber and other processed wood products. In recent years, however, this situation has changed dramatically. In calendar year 2000, exports to Asian destinations (primarily Japan) accounted for 24 percent of the disposition of Southeast Alaskan sawnwood on a volume basis. The bulk of sales (62 percent) went to the continental U.S. for remanufacture and shipment to various markets, domestic and foreign, with the remainder going to Alaskan (9 percent) and Canadian markets (4 percent). Japan still dominates the log export market, but the value of this trade has declined by more than half over the last five years (USDA Forest Service, 2002a).

There are a number of reasons for this shift including Japan's lagging economic performance, the relatively robust U.S. housing construction market, and the structural changes that have occurred in the Japanese wood products and construction sectors. Solid-wood products from the west coast of North America, traditional mainstays of the wood housing construction materials market in Japan, have increasingly given way to composite and engineered wood products—products that are not currently produced in Southeast Alaska. New competitors have also entered the Japanese market, most notably the Europeans, who have dramatically increased their market share over the last decade. In the past Japan provided a lucrative market for Tongass National Forest products, especially those at the higher end of the quality spectrum. The U.S. market places less of a premium on particular species and grades, and, as a result, generally offers lower prices for Tongass products. Prices for all of the species harvested on the Tongass have declined considerably over the last five years (USDA Forest Service, 2002a).

Reductions in demand and prices for Southeast Alaskan lumber products have affected the profitability of the region's remaining sawmills, which operated at 23 percent of available capacity in 2000.

These changes in demand and prices have had significant effects on the Southeast Alaskan wood products industry and the profitability of the remaining facilities. This is at least partially reflected in the results of the mill survey conducted by the Forest Service in 2000, which indicated that mills only used approximately 23 percent (68 MMBF) of available capacity (293 MMBF) (see Table 3.4-5). Available capacity was consistently defined for the purposes of the mill survey as two shifts per day with full production 250 days per year. The 1997 Forest Plan Revision Final EIS reported an average utilization rate of 66 percent during the 1985 to 1994 time period using variable standards to calculate capacity based on mill owners' estimates (USDA Forest Service, 1997a; Table 3-133). This difference in utilization rates may be partially explained by differences in methodologies, but the current low utilization rates may also indicate that changes in capacity are likely as the region's wood products sector adjusts to current supply and end-market realities. Under current market conditions, if a mill were to close, it is highly unlikely that it would be reopened or replaced by other processing capacity. It may, however, be noted that part-time operation of some of the smaller mills may fit into a seasonal schedule that involves other economic activities, such as commercial fishing or recreation-related activities.

### 3 Environment and Effects

**Table 3.4-5  
Timber Processors in Southeast Alaska in Calendar Year 2000**

	Estimated Mill Capacity (MMBF) <sup>1</sup>	Actual Mill Production (MMBF) <sup>2</sup>	% Capacity Utilized
<b>Major Operators</b>			
Annette Island Sawmill (KPC) <sup>3</sup>	0	0	0
Silver Bay, Inc.	65	14	21
Viking Lumber Co.	60	13	22
Gateway Forest Products (lumber) <sup>3</sup>	0	0	0
Gateway Forest Products (veneer)	30	0	0
Pacific Log & Lumber	34	9	28
<b>Smaller Operators</b>			
Metlakatla Forest Products <sup>3</sup>	0	0	0
Icy Straits Lumber Co.	20	5	25
The Mill	20	7	36
Kasaan Mountain Lumber & Log	15	7	47
Porter Lumber Co.	14	4	30
Herring Bay Lumber	10	0	0
Other Small Mills <sup>4</sup>	26	9	34
<b>Total</b>	<b>293</b>	<b>68</b>	<b>23</b>

<sup>1</sup> Estimated mill capacity is an estimate of the processing capability of the mill based on the amount of net sawlog volume (Scribner log scale) that could be utilized by the mill, as currently configured, during a standard 250-day per year, two shifts per day, annual operating schedule, not limited by labor force, raw material, or market constraints. These data were compiled as part of the Forest Service's mill survey for calendar year 2000.

<sup>2</sup> Actual mill production is the net sawlog volume (Scribner log scale) that was used during the year to manufacture sawn products.

<sup>3</sup> The estimated mill capacity was adjusted between the Draft and Final SEIS to account for the permanent closure of the Annette Island Sawmill, Metlakatla Forest Products, and Gateway Forest Products (lumber) facilities. This involved adjusting the actual mill production and percent capacity utilized columns to exclude production at the Gateway (lumber) facility in 2000. There was no production at the Annette Island Sawmill or Metlakatla Forest Products facilities in 2000. These adjustments resulted in a revised estimated mill capacity of 293 MMBF, actual mill production of 68 MMBF, and a 23 percent utilization rate.

<sup>4</sup> Includes mills with estimated capacities less than 10 MMBF.

Source: USDA Forest Service, 2001a.

The estimated mill capacity data presented in Table 3.4-5 was adjusted between the Draft and Final SEIS to account for the permanent closure of the Annette Island Sawmill, Metlakatla Forest Products, and Gateway Forest Products (lumber) facilities. There was no production at the Annette Island Sawmill or Metlakatla Forest Products facilities in 2000 and these mills are assumed to be permanently closed. Gateway Forest Products (Gateway) filed for bankruptcy in 2001 and announced in April 2002 that the sawmill and veneer mill they owned in Ketchikan would be auctioned off to resolve the bankruptcy. The sawmill was auctioned off, but the city of Ketchikan purchased the veneer plant with the expectation of finding an operator to take it over (it is currently shutdown). The estimated mill capacity data in Table 3.4-5 was revised to reflect the loss of this sawmill capacity and the actual mill production and percent capacity utilized columns were adjusted to exclude the lumber production that occurred at the Gateway sawmill in 2000. Although it is currently shutdown, the veneer mill formerly owned by Gateway is included as part of the regional mill capacity. The above adjustments resulted in a revised estimated mill capacity of 293 MMBF, actual mill production of 68 MMBF, and a 23 percent utilization rate. (Table 3.4-5).

Silver Bay Logging announced in February 2003 that it has filed for Chapter 11 reorganization with the U.S. Bankruptcy Court, citing depressed lumber prices and increased costs to harvest Federal timber sales as the principle reasons for the filing. The company also announced that they plan to continue operating and plan to harvest approximately 25 MMBF of timber in 2003.

Several individuals and organizations commenting on the Draft SEIS noted that uncertainty surrounding Federal land use policy on the Tongass National Forest has had a negative effect on investment in the wood products industry. While it is possible that uncertainty regarding the stability of future supplies of Federal timber in the region may have helped discourage investment, a number of other changes, primarily market-related, have also had significant effects on the region's timber industry. These changes are discussed in the preceding paragraphs.

The adjusted installed production capacity for 2000 (293 MMBF), which excludes the Annette Island Sawmill, Gateway Forest Products (lumber), and Metlakatla Forest Products facilities, is used as one benchmark to evaluate the alternatives in the long-term wood products effects portion of this section.

**Projected Demand.** Demand for Southeast Alaskan wood products depends upon changing technology, developments within consumer markets, including economic growth in key markets and changes in consumer tastes and preferences, and developments in other producing regions whose products compete with those of Alaska. The capacity and efficiency of Southeast Alaska mills coupled with the availability and cost of raw material inputs determines the ability of local producers to compete in export markets.

Brooks and Haynes' (1997) medium projection for 2005 is used as one benchmark to evaluate the alternatives. This projection estimates that 152 MMBF of Tongass timber would be harvested in 2005.

Brooks and Haynes developed projections of Alaska National Forest timber harvests in 1990. These projections were subsequently revised in 1994 and again in 1997 to reflect changes in the Alaska forest products sector, specifically closure of the pulp mills in Sitka and Ketchikan. Brooks and Haynes 1997 report used three alternative scenarios—low, medium, and high—to display a range of possible future “demand.” All three scenarios assume that Southeast Alaskan lumber exports (particularly to Japan) will be limited. North America's share of Japanese lumber imports is assumed to range from 70 percent (low scenario) to 76 percent (high scenario) in 2010. Alaska's share of North American shipments to Japan is assumed to increase from less than 1 percent in 1996 to nearly 3 percent by 2010 under the medium scenario. In addition, U.S. domestic markets are assumed to be the destination of 25 percent of Alaska's production. Under this scenario, lumber production was predicted to increase to 158 MMBF in 2010. Brooks and Haynes (1997) note that even this projected gain in market share would be a reversal of trends observed over the preceding two decades. Low grade logs or residues from lumber manufacturing formerly used in pulp production are assumed to be exported. A final assumption employed by Brooks and Haynes is that harvests on private lands would stabilize at around 75 MMBF by 2005, with private and State harvests accounting for a combined total harvest of 91 MMBF through 2010.

Brooks and Haynes' (1997) medium projection for 2005 is used as a benchmark to evaluate the alternatives in the long-term wood products effects portion of this section. This projection, summarized in Table 3.4-6, estimates that 152 MMBF of Tongass timber would be harvested in 2005. This estimate is consistent with the 2002 demand analysis that was developed to comply with Section 101 of TTRA and ensure that annual timber sale offerings are consistent with market demand (USDA Forest Service, 2000). Comparing Brooks and Haynes' medium scenario for 2005 with actual data for 2000 suggests that there would be a net loss of approximately 76 jobs between 2000 and 2005. There would, however, be a shift from logging to sawmill employment as a result of projected increases in lumber production coupled with projected decreases in private and state harvest totals (Table 3.4-6).

The scenario presented in the previous paragraphs is not intended to indicate the range of potential outputs and industrial activity possible from timber harvests on the Tongass National Forest. It merely describes possible levels of activity given certain assumptions and provides one benchmark for evaluation in the effects analysis (see Figure 3.4-15). The results of the 2000 mill survey and data from the annual Timber

### 3 Environment and Effects

Supply and Demand reports suggest a number of differences between Brooks and Haynes' (1997) assumptions and actual conditions in 2000. This is discussed further in the environmental consequences section.

**Table 3.4-6  
Southeast Alaska Timber Production and Employment, 1995 to 2005**

	Actual 2000 <sup>1</sup>	Brooks and Haynes 2005 <sup>2</sup>
<b>Volumes Produced</b>		
Tongass Harvest (MMBF log scale)	147	152
Private & State Harvest (MMBF log scale)	191	91
Total Harvest (MMBF log scale)	338	243
Log Exports (MMBF log scale)	270	87
Lumber Production (MMBF lumber tally)	87	133
Pulp Production (million tons)	0	0
Chip Exports (million tons)	179	187
<b>Employment (Average Annual)</b>		
Logging	711	474
Sawmills	280	443
Pulp	2	0
Wood Products Total	993	917
<b>Total (Direct, Indirect, and Induced)<sup>3</sup></b>	<b>1,955</b>	<b>1,836</b>
<b>Employee Earnings (Million 2000\$)</b>		
Direct Earnings	44.0	40.7
<b>Total (Direct, Indirect, and Induced)<sup>3</sup></b>	<b>62.7</b>	<b>58.9</b>

<sup>1</sup> These data are actual statistics for 2000. Earnings were estimated using 1999 data adjusted to account for the decrease in employment between 1999 and 2000.

<sup>2</sup> The data on volumes produced are from Brooks and Haynes, 1997. Logging and sawmill employment estimates were calculated using the logging jobs/total harvest and sawmill/lumber production ratios used in the effects analysis. These ratios, which are based on average annual employment ratios from 1990 to 1994, are 1.95 for logging and 3.33 for sawmills. The corresponding averages based on the 2000 data in this table are 2.10 for logging and 3.21 for sawmills.

<sup>3</sup> Total employment and income effects were calculated using Type II Employment and Income multipliers for the logging and sawmill sectors (see Table 3.4-4).

Sources: USDA Forest Service, 1997a (Table 3-134); Brooks and Haynes, 1997; USDA Forest Service, 2002a; Alaska DOL, 2001e.

Recreation and tourism in Southeast Alaska has increased significantly over the past decade and was the largest resource dependent sector in terms of employment and earnings in 2001.

#### **Recreation and Tourism**

Recreation and tourism within Southeast Alaska has increased significantly over the past decade. Nonresident recreation and tourism accounted for an estimated 4,278 jobs in Southeast Alaska in 2001 (direct employment only). This figure comprised approximately 11 percent of total employment in Southeast Alaska in 2001 and was the largest resource-dependent sector in terms of total direct employment and earnings (Table 3.4-3).

A distinction is made between resident recreationists and nonresident visitors for the purposes of this analysis because significant differences exist between these groups. Surveys indicate that visitors are generally older, often purchase package tours, use many expensive services, and spend relatively little time in remote settings while in Southeast Alaska. This is typically the case with cruise ship passengers, who presently comprise a majority of the visitors to the region. The distinction between resident recreationists and nonresident visitors is also important from an economic impact assessment perspective. Jobs generated by nonresident expenditures on goods and services are considered comparable to an export industry that brings new money into the region, creating new wealth and development opportunities. Multipliers are used to analyze the impact of "new" money coming into the regional economy. Expenditures by local residents represent a recirculation of money that is already present in the regional economy and are, therefore, not typically identified as "new" money. That is not to say, however, that

resident recreation-related economic activity does not contribute to the regional economy. If residents are substituting local recreation for non-local recreation then their money can be considered to be money that would otherwise not be present in the local economy. The extent to which this is the case can only be identified by surveying local residents and asking detailed questions about their substitution decisions with respect to Tongass-based recreation (Rudzitis and Johnson, 2000). This is discussed further in the *Environmental Consequences* portion of this section.

The following discussion is divided into two sections. The first section addresses nonresident visitors to Southeast Alaska as a whole. The second section specifically addresses resident and nonresident visitation to the Tongass National Forest.

There were approximately 1,010,000 summer visitors to Southeast Alaska in 2001, approximately twice the number identified in 1994.

**Southeast Alaska.** Visitor data compiled for Alaska in 2000/2001 as part of the fourth Alaska Visitors Statistics Program (AVSP) indicated that there were 1,010,352 summer visitors to Southeast Alaska, approximately twice the number of visitors that were identified during the third AVSP in 1993/1994 (McDowell Group, 1999; Northern Economics, 2002a; 2002b). Statewide, increases in cruise ship passengers accounted for 77 percent of the growth in visitors over this period, with the number of cruise ship passengers to Juneau increasing from 306,600 in 1993 to 632,000 in 2000 (see Table 3.3-24). Trends in visitation are discussed in more detail in the *Recreation and Tourism* section of this document.

Nonresident pleasure visitors or tourists can be divided into package and independent visitors. Data from the 1988 Southeast Alaska Pleasure Visitor Research Program Report (Data Decisions Group, Inc., 1989) indicated that approximately 73 percent of Southeast Alaska pleasure visitors were package visitors, while 27 percent were independent visitors. The average visitor age was 53. The Summer 1993 AVSP (McDowell Group, 1993) found that package visitors accounted for 67 percent of visitors to Southeast Alaska, with independent visitors accounting for 33 percent. This study found that the vast majority of visitors to the region travel by cruise ship, with domestic air the second most frequent mode of travel, highway third, and ferry fourth. The findings of these studies, which are summarized in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; p. 3-116 to 3-117), indicated that the average age of visitors to Alaska and the region was decreasing. The relative percentage of independent visitors versus package visitors appeared to be increasing and visitors were more likely to repeat a visit than in the past. Younger visitors were identified as more likely to be employed, and thus spend less time in the state than their older counterparts. They were also likely to demand more action and activity oriented products, such as wildlife viewing and independent travel options. The 1997 Forest Plan Revision Final EIS analysis noted that increased use of the Tongass National Forest is likely to result if these trends continue.

The 2001 AVSP found that 44 percent of summer visitors to Alaska were package visitors. Independent visitors accounted for 30 percent of total statewide visitation, with "inde-package" visitors comprising the remaining 27 percent. Visitors were classified as Independent if they did not plan to purchase any type of commercially available tour. Inde-package visitors were those visitors who were traveling independently but indicated that they planned on purchasing a tour of some kind. The percentage of package visitors to the state as a whole remained almost constant between the 1993 and 2001 AVSP, decreasing slightly from 44 percent of the total in 1993 to 43 percent in 2001. The main change between the surveys was a growth in the inde-package component, which increased from 13 percent of the total in 1993 to 27 percent in 2001, and was matched by a corresponding decline in the percentage of independent visitors, which decreased from 44 to 30 percent of visitors (Northern Economics, 2002a). The percentage of visitors who were employed increased from 56 percent in 1993 to 62 percent in 2001. Comparable age data were not available for 1993 and 2001 so it is not possible to identify any

### 3 Environment and Effects

trend in the age of visitors over this period. Approximately 35 percent of visitors to Alaska in 2001 were repeat visitors and 59 percent visited for seven days or less.

These data were not disaggregated to the regional level, but it is likely that package visitors accounted for a larger share of total visitation to Southeast Alaska. Annual cruise ship data for 2000 suggest that package visitors accounted for at least 60 percent of total visitation to the Tongass in 2001. This is consistent with the 1993 AVSP, which found that package visitors accounted for 67 percent of summer visitors to Southeast Alaska.

Many tourists experience the Tongass passively, from the deck of a cruise ship, for example, but direct use of the Forest is increasing. A survey conducted in 2000 found that 41 percent of clients of commercial recreation businesses using public lands and waters in Southeast Alaska were cruise ship passengers.

Recreation and tourism-related economic activity related to recreational use is difficult to accurately quantify. Since tourists spend their money throughout the local economy, there is no single “tourism industry,” and no direct measures of tourist-related income or employment. Components of travel and tourism activities are instead partially captured in other industrial sectors, such as retail trade (e.g., grocery stores, gas stations, gift shops), transportation, hotels and other lodging places, and amusement and recreation services. The 2001 estimate presented above and in Table 3.4-3 (4,278 jobs) was developed based on Alaska DOL data collected for all businesses in selected categories of the transportation, retail, and services sectors, with these data adjusted to also include self-employed workers, using ratios from the McDowell Group (1999). This estimate represents one approach to identifying nonresident recreation and tourism employment and is subject to the limitations of this approach. This should be kept in mind when comparing this figure with data collected for other sectors, such as wood products and mining.

While it is reasonable to assume that the vast majority of visitor recreation and tourism activity in the region is related to the natural environment, not all of the activity generating this employment can be directly linked to the Tongass National Forest. Many visitors experience the Tongass passively, from the deck of a cruise ship, for example, without directly using the forest for recreation purposes. However, cruise ships have heavily marketed Forest-related activities in recent years and many passengers do take at least one trip to the Forest during their visit, with icefield helicopter tours and visits to the Mendenhall Glacier by cruise ship passengers increasing significantly (see Table 3.3-25 in the *Recreation and Tourism* section). A 2000 survey of commercial recreation businesses that use the public lands and waters of Southeast Alaska found that cruise ship passengers accounted for 41 percent of total clients, ranging from 22 percent of clients for businesses with fewer than 200 clients a year to 91 percent of clients for businesses with more than 10,000 clients a year (Alaska Division of Community and Business Development [DCBD], 2001). This survey also found that 86 percent of outfitter/guide businesses had annual revenues of less than \$100,000 in 1999. Six firms reported revenues over \$1 million, including one firm with revenues exceeding \$10 million. A similar distribution is evident in terms of clients served, with the majority of firms serving less than 100 clients, a smaller number of firms serving considerably larger numbers, and one firm serving more than 100,000 clients in 1999.

Although direct linkages between the cruise ship business and National Forest policy are assumed to exist, they have not been quantified. The Tongass National Forest, and public perceptions of its undisturbed character, are, however, generally recognized as playing an important role in bringing out-of-state visitors to Southeast Alaska, who, in turn, generate jobs and income through activities not directly related to the Tongass. In the absence of quantified linkages between the cruise ship industry and National Forest policy, it is not possible to quantify the effects that the proposed alternatives would have on future cruise ship trends, if any. As a result, the quantitative part of the following analysis focuses on recreation and tourism activities that directly occur on the Tongass.

A Recreation Visitor Day (RVD) is 12 hours of recreation use by one individual.

**Forest Visitors.** Forest-wide recreation use statistics were last compiled for the Tongass National Forest in 1996. The basic measurement of recreational activity was the Recreation Visitor Day (RVD), which is usually obtained through the counting of use permits, visitor surveys, or observation. An RVD is 12 hours of recreation use by one individual. Various problems were associated with this method of collecting recreation data. In order to address some of these issues, the Alaska Region of the Forest Service (Region 10) began participating in the Forest Service's National Visitor Use Monitoring (NVUM) project in 2000. Visitor use data were collected from 649 people surveyed on the northern third of the Tongass National Forest (Juneau Ranger District, Sitka Ranger District, and Admiralty National Monument – Kootznoowoo Wilderness). Surveys are planned as part of this project for the remainder of the Forest in 2002 and 2003. A draft report summarizing the preliminary findings of this study extrapolated the findings of the first round of sampling to the entire forest and estimated that there were between 6 million to 10.5 million visits (an estimated 8.2 million visits with an error rate of plus or minus 27.5 percent) to the Tongass National Forest in 2000 (USDA Forest Service, 2001b). A National Forest visit was defined by the draft NVUM study as the entry of one person to participate in recreation activities for an unspecified period of time. This measure is not comparable with the RVD estimates developed through 1996.

The preliminary results of the NVUM study indicate that at least 61 percent of visitors surveyed were Southeast Alaska residents, primarily from Juneau and Sitka. As the large error rate associated with these preliminary estimates suggests, extrapolating the findings from this initial survey of the north third of the Tongass to the entire forest is problematic, not least because it assumes some level of uniformity of use across the forest, which may not actually exist. It is, for example, unlikely that residents from Juneau and Sitka made up the majority of recreation visitors to the central or south parts of the forest, even though Juneau is the largest community in the region, accounting for about 41 percent of regional population in 2000. The finding that 39 percent of visitors were nonresidents is not, however, inconsistent with the findings of earlier studies. The economic analysis in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; p.3-460), for example, assumed for the purposes of analysis that 44 percent of forest visitors were nonresidents.

The NVUM study also specifically addressed the use of designated wilderness, with surveys conducted on 31 days and 31 interviews obtained. The results of this limited survey indicated that a higher proportion of wilderness visitors (71 percent) were Southeast Alaska residents, with two thirds of the surveyed visitors residing in Juneau and the immediate vicinity.

RVD data are presented for three groups based on the Recreation Opportunity Spectrum (ROS) system.

**ROS 1:**  
Primitive  
Semi-Primitive Non-Motorized

**ROS 2:**  
Semi-Primitive  
Motorized

**ROS 3:**  
Roaded Natural,  
Roaded Modified,  
Rural and Urban

**Existing and Projected Use (RVDs).** In the absence of more recent detailed information, the following analysis uses RVD data compiled for identified recreation places from 1984 through 1995 to assess existing and future conditions. These data are divided into three groups based on the Recreation Opportunity Spectrum (ROS) system that is used to inventory and classify different recreation settings on the Forest (see Table 3.3-17 in the *Recreation and Tourism* section). These three groups consist of Primitive and Semi-Primitive Non-Motorized settings (here termed ROS 1); Semi-Primitive Motorized settings (ROS 2); and Roaded Natural, Roaded Modified, Rural, and Urban settings (ROS 3) (see Table 3.3-17). Semi-Primitive Motorized settings (here termed ROS 2) accounted for a majority of recreation use on the Tongass in 1994, with 62 percent of recorded RVDs occurring in ROS 2 settings. ROS 1 settings, as defined here, accounted for 20 percent of use, with the remaining 18 percent of RVDs taking place in ROS 3 settings.

Historic and projected recreation use is presented in Figure 3.4-7. Future use projections are based on actual use estimates from 1984 to 1995, with a trend line (based on these data) used to project future levels of demand. Annual estimated use is presented by ROS class for 1984 through 1995 and for 2000, 2005, and 2010

### 3 Environment and Effects

in Table 3.4-7. Total RVDs are divided into ROS classes based on the shares identified for 1994, which are assumed to remain constant throughout this analysis. These shares are presented graphically in Figure 3.4-8, which also identifies the projected supply of these settings based on the Forest-wide Geographic Information System (GIS) database that was updated for this analysis (see the *Recreation and Tourism* section of this document).

A comparison of projected demand with supply by ROS class and recreation place indicates that ROS 2 (Semi-Primitive Motorized) is the only class in which demand is expected to exceed supply over the next decade.

Recreational use on public lands is not a market good, and, where supply is binding, use restrictions rather than price increases are the most likely result. This analysis assumes that RVD use within a certain ROS class will not exceed supply within that class (for this analysis, supply is equated to the current level available; alternative supply levels are treated in the Effects Analysis). ROS 2 is the only class in which supply is constrained over the next decade, with the projected number of RVDs having exceeded estimated supply back in 1998. The second part of Table 3.4-7 and the dashed line shown in Figure 3.4-7 show the effect that constraining ROS 2 in this manner would have upon projected use. This modified projection, which serves as the baseline for the effects analysis, assumes that recreation use in ROS 1 and ROS 3 settings would not be substituted for the projected unmet ROS 2 demand.

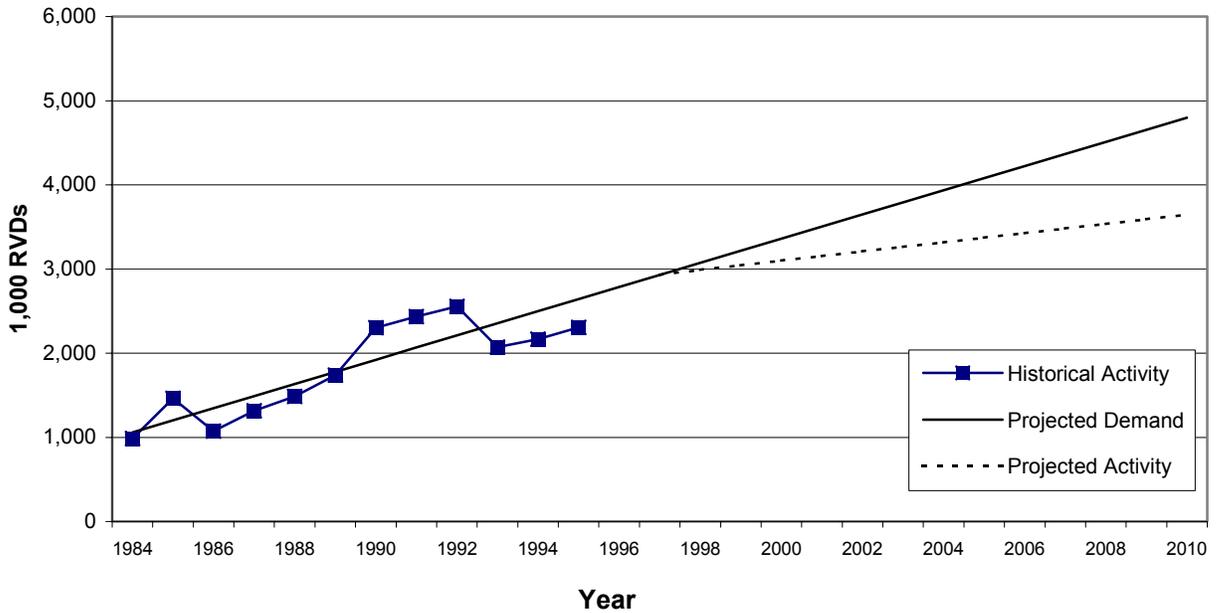
The supply of ROS settings used in this analysis is limited to identified recreation places, with most of the demand also assumed to occur in these places. There are an estimated 831,000 ROS 2 acres in identified recreation places (Table 3.3-19), compared to approximately 1.4 million ROS 2 acres Forest-wide (Table 3.3-18). The recreation economic analysis assumes that demand would continue to focus on ROS 2 areas in recreation places and, therefore, exceed supply in these areas. Viewed on a Forest-wide basis, ROS 2 demand would not exceed Forest-wide supply until sometime after 2010.

This analysis also assumes that there would be no change in the current availability of recreational settings. This is not necessarily the case for identified recreation places or the Forest as a whole. Shoreline areas or other areas accessible by floatplane or helicopter that are presently allocated to P or SPNM settings could be reallocated to the SPM setting in the future if patterns of use or other factors change. While these assumptions represent a simplification of underlying realities, they were necessary to produce a quantified estimate of the relation between recreation supply and demand and allow a comparison of alternatives.

**Employment and Earnings.** The direct employment estimates presented in Table 3.4-7 are based on a job/RVD ratio of 0.00074. This ratio was developed for the 1997 Forest Plan Revision Final EIS analysis based on visitor survey data and data from a regional economic model (IMPLAN) (USDA Forest Service, 1997a; p. 3-460). This approach assumes that the average amount of employment generated by a single RVD is constant over time and that this number is the same for both Tongass-related recreation and the region as a whole, as well as for different types of recreation on the Tongass. While these assumptions may not accurately reflect underlying realities, they were necessary to produce a quantified estimate of the relation between recreation activity and employment.

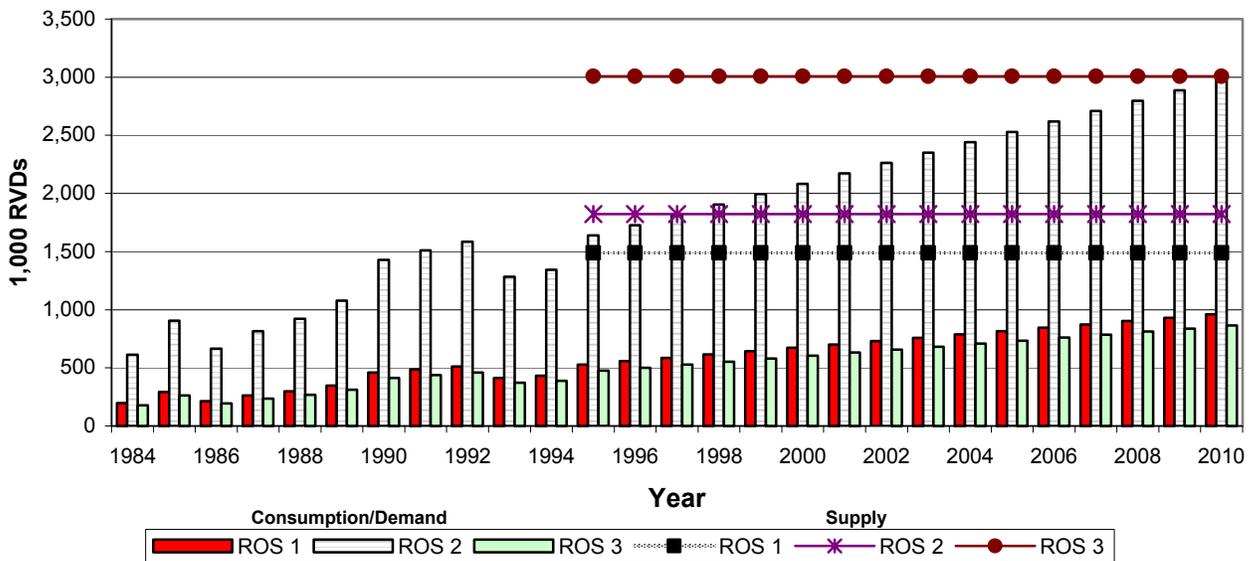
Nonresidents were assumed to account for 44 percent of historic and projected RVDs and a commensurate share of employment for the purposes of this analysis. Total employment (direct, indirect, and induced) generated by nonresidents is presented in the last row of Table 3.4-7, entitled "Total from Nonresident." A reduction in out-of-state recreational activity due to decreased recreational opportunities (ROS settings) is assumed to result in a net economic loss to the region. Local residents, on the other hand, are assumed to spend their money elsewhere in Southeast Alaska, and no net loss in economic activity is incurred. This is not to say that this type of effect would be neutral if it were to occur. This is discussed further in the *Environmental Consequences* section.

**Figure 3.4-7**  
**Historical and Projected Recreational Activity on the Tongass National Forest in RVDs**



Note: The dashed line represents future recreational activity constrained by the supply of ROS 2 settings.  
 Source: USDA Forest Service, 1997a (Figure 3-23; updated using 2002 ROS supply data).

**Figure 3.4-8**  
**Historical Consumption, Projected Demand, and 2002 Supply for Recreation Activity on the Tongass National Forest by ROS Group**



Source: USDA Forest Service, 1997a (Figure 3-24; updated using 2002 ROS supply data.)

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**Table 3.4-7  
Tongass Related Recreation and Tourism: Historic and Predicted Consumption in Recreation Visitor Days (RVDs)**

	Consumption to 1995 and Projected Demand for Tongass Related Recreation (1,000 RVDs) <sup>1</sup>														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
ROS 1	197	293	215	263	297	348	461	487	511	414	433	528	672	816	960
ROS 2	612	907	665	815	922	1,077	1,428	1,509	1,584	1,284	1,342	1,638	2,084	2,530	2,976
ROS 3	178	263	193	237	268	313	415	438	460	373	390	476	605	734	864
<b>Total</b>	<b>987</b>	<b>1,463</b>	<b>1,073</b>	<b>1,315</b>	<b>1,487</b>	<b>1,738</b>	<b>2,303</b>	<b>2,435</b>	<b>2,554</b>	<b>2,071</b>	<b>2,165</b>	<b>2,642</b>	<b>3,361</b>	<b>4,080</b>	<b>4,800</b>

Available Recreation Opportunities RVDs by Class in 2001 <sup>2/</sup> (1,000 RVDs)	Projected Consumption of RVDs by Class (1,000 RVDs) <sup>3/</sup>			
	1995	2000	2005	2010
ROS 1	1,489	528	672	816
ROS 2	1,825	1,638	1,821	1,821
ROS 3	2,998	476	605	864
<b>Total</b>	<b>6,313</b>	<b>2,642</b>	<b>3,099</b>	<b>3,645</b>

	Historic and Projected Employment Generated in Average Annual Employment														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	2000	2005	2010
Direct Employment <sup>4/</sup>	730	1,083	794	973	1,100	1,286	1,704	1,802	1,890	1,533	1,602	1,955	2,293	2,495	2,698
From Nonresident <sup>5/</sup>	321	476	349	428	484	566	750	793	832	674	705	860	1,009	1,098	1,187
<b>Total from Nonresident<sup>6/</sup></b>	<b>389</b>	<b>576</b>	<b>423</b>	<b>518</b>	<b>586</b>	<b>685</b>	<b>907</b>	<b>959</b>	<b>1,006</b>	<b>816</b>	<b>853</b>	<b>1,041</b>	<b>1,221</b>	<b>1,328</b>	<b>1,436</b>

<sup>1</sup> Figures for 1984 to 1995 are estimated from historical use data. Figures in subsequent years are estimates based on a linear projection using the 1984 to 1995 estimates of actual use (see Figure 3.4-7). The distribution of RVDs by ROS setting is based on estimates for 1994 ROS classes 1, 2, and 3 are assumed to account for 20 percent, 62 percent, and 18 percent of total RVDs, respectively.

<sup>2</sup> Estimated available recreation opportunities are based on the supply of ROS settings in identified recreation places on the Tongass. These estimates are for NFS lands only. They do not include State or private lands in recreation places within the Tongass National Forest boundary.

<sup>3</sup> Projected consumption of RVDs by ROS class is based on projected demand with the consumption of ROS 2 opportunities constrained by the existing supply.

<sup>4</sup> Direct employment is calculated using a job/RVD ratio of 0.00074. This ratio was developed for the 1997 Forest Plan Revision Final EIS analysis (see USDA Forest Service, 1997a; p. 3-460).

<sup>5</sup> Nonresident use is estimated to be 44 percent of total forest use. This analysis focuses upon nonresident visitors because jobs generated by nonresident expenditures on goods and services are considered comparable to an export industry that brings new money into the region, creating new wealth and development opportunities. Resident recreational activity, on the other hand, brings no new money into the region, and thereby does not expand the local job base.

<sup>6</sup> Total employment generated by nonresident activities is estimated using a multiplier of 1.21.

Source: USDA Forest Service, 1997a; (Table 3-136)

The number of cruise ship passengers visiting Juneau increased by about 69 percent between 1995 and 2000, from 380,529 visitors to 632,000.

**Recent Trends.** The projections discussed above assume that recreation use/projected demand will continue to increase on an annual basis, increasing from 2,305,000 RVDs in 1995 (actual estimate) to 4,800,000 RVDs by 2010 (projection), an increase of 108 percent. The use of a linear projection (i.e., the assumption that Tongass-based recreation activity will increase in the future at the same rate as it has in the past) is problematic when used with extended projections into the future. Numerous factors will affect future demand for recreation. These include general economic trends, trends in public tastes, changes in relative costs (airfare to Juneau for example), and temporary factors, such as the weather, gasoline shortages, ferry strikes, and other local, national, and international factors. The current economic downturn may, for example, have significant effects on the number of visitors to the region in the future. Linear projections ignore all of these elements and assume that use will continue to grow indefinitely.

As noted earlier, recreation visitor use data are no longer compiled for the Tongass in RVDs so it is not possible to directly evaluate whether this linear projection adequately captures trends in visitor use over the past 6 years. There are, however, a number of indirect measures that shed some light on recent trends. These include indirect measures of visitors to the region. The volume of cruise ship passengers visiting Juneau, for example, increased by about 69 percent between 1995 and

2000, from 380,529 visitors to 632,000. As discussed above, cruise ship passengers comprise the majority of visitors to the region. Independent visitors, in contrast, appear to have stayed relatively constant over this period. The number of Juneau airline departures increased slightly between 1995 and 1999, arrivals by road stayed relatively constant in both Haines and Skagway, and the volume of Southeast Alaska State Ferry passengers was about 9 percent lower in 2000 than it was in 1995 (see Figure 3.3-3 in the *Recreation and Tourism* section).

The number of outfitter/guide clients using the shoreline areas on the north part of the Tongass increased from approximately 1,550 in 1994 to 14,096 in 1999.

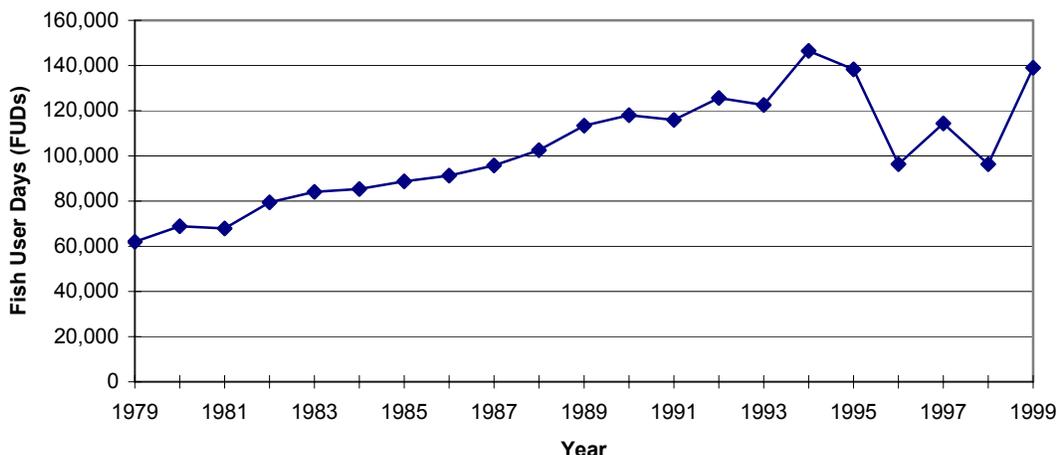
The 2000 Southeast Alaska commercial recreation survey found that 73 percent of the businesses surveyed had experienced an increase in the number of clients served since 1995 (Alaska DCBD, 2001). Outfitter/guide use information compiled for the shoreline areas on the north part of the Tongass from 1994 to 1999 shows a dramatic increase in outfitter/guide use, with the number of clients increasing from approximately 1,550 in 1994 to 14,096 in 1999 (USDA Forest Service, 2001c).

Hunting and sport fishing represent a large proportion of total recreation activity on the Tongass National Forest. The Alaska DCED's 2000 commercial recreation survey found that saltwater fishing was the most popular outfitter/guide activity, with 63 percent of surveyed businesses engaged in this activity. Approximately 21 percent and 14 percent of surveyed businesses were involved in freshwater fishing and hunting, respectively (Alaska DCBD, 2001; see Table 3.3-26 in the *Recreation and Tourism* section). Trends in sport fishing on the Tongass are shown for 1979 through 1999 in Figure 3.4-9. These estimates, based on annual sport fishing surveys conducted by the Alaska Department of Fish and Game (ADF&G), are reported in fish user days (FUDs). Sport fishing includes trout and steelhead fishing occurring in fresh water streams within the National Forest as well as coastal and ocean salmon fishing, a substantial proportion of which is tied to productive salmon streams in the Tongass National Forest. The upward trend in FUDs was quite pronounced through 1995. Nonresidents reportedly generated the majority of the growth through 1995, indicating the increasing importance of this activity as a source of new money and employment for the region. Annual sportfishing angler-days in Southeast Alaska have fluctuated quite noticeably since 1995, but the share of total days fished accounted for by nonresidents has remained fairly constant around 50 percent (Howe et al., 2001). Sport fishing on the Tongass also showed significant fluctuation between 1995 and 1999 with the number of days fished in 1995 and 1999 roughly equivalent (Figure 3.4-9). Historic data for hunting activity on the Tongass are presented in Figure 3.4-10. These data show an upward trend through 1995, the last year that these data are available.

These data present mixed support for the linear growth projection that is presented in Figures 3.4-7 and 3.4-8 and Table 3.4-7 and forms the baseline for the recreation component of this economic and social analysis. The number of annual summer visitors to the region doubled between 1993 and 2001, with the majority of this increase likely accounted for by increases in cruise ship passengers. The number of independent visitors, in contrast, appears to have stayed relatively constant over this period. Package visitors have historically been thought to spend relatively less time engaged in activities that are directly related to the forest. However, most outfitter/guide businesses in the region have experienced growth in recent years and land-based outfitter/guide use within one mile of the shoreline of the Tongass is thought to have doubled over this period. As previously noted, the Alaska DCBD outfitter/guide survey found that cruise ship passengers accounted for 41 percent of total clients for the surveyed businesses. Saltwater fishing was identified as the most popular activity in the outfitter/guide business survey, but sport fishing measured in FUDs has fluctuated considerably since 1995, with the number of days fished in 1995 and 1999 roughly equivalent.

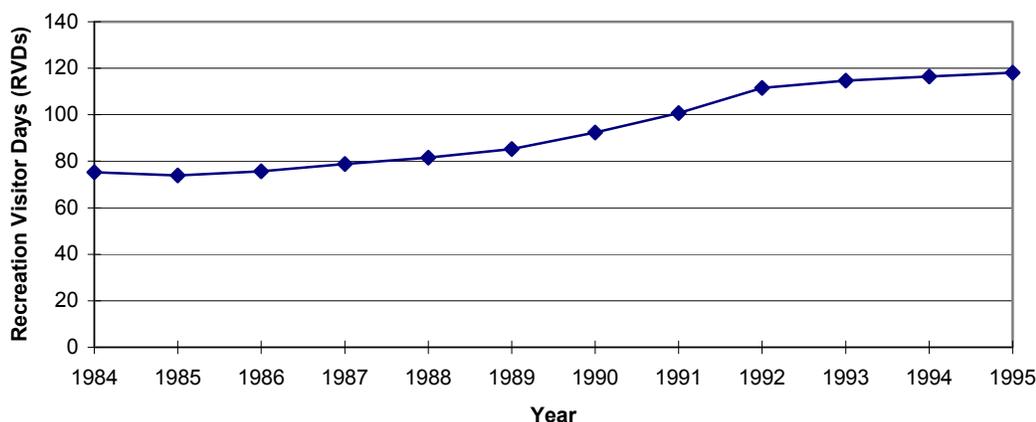
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**Figure 3.4-9**  
**Sport Fishing on the Tongass National Forest, 1979-1999**



Note: The 1979 to 1994 data were obtained from the ADF&G sport fishing survey. Sport fishing, as defined for the 1997 Forest Plan Revision Final EIS analysis, includes trout and steelhead fishing occurring within the National Forest, as well as a share of salmon fishing thought to represent the proportion of Southeast Alaska salmon originating in National Forest streams. This total ranged from 25 to 27 percent of total Southeast Alaska angler days for the period from 1984 to 1994. Estimates for 1995 to 1999 represent 26 percent of total Southeast angler days for these years.  
Sources: 1979-1994: USDA Forest Service, 1997a (Figure 3-25; Original Source: ADF&G Sport Fishing Study); 1995-1999: Howe et al., 2001.

**Figure 3.4-10**  
**Hunting Activity on the Tongass National Forest, 1984-1995**



Note: Forest-wide visitor statistics have not been compiled for the Tongass National Forest since 1996. The Tongass began participating in the NVUM project in 2000, but these survey-based data are compiled in terms of visits not RVDs.  
Source: USDA Forest Service, 1997a (Figure 3-26).

There are a number of potential sources of uncertainty in the foregoing quantitative analysis, and each highlights both key issues surrounding recreational use on the Tongass National Forest and the difficulty in deriving and predicting economic measures associated with this use. Some of the most important sources of potential uncertainty are discussed in the 1997 Forest Plan Revision Final EIS and incorporated here by reference (USDA Forest Service, 1997a; pp. 3-461, 3-462). The

discussion presented in the 1997 Final EIS highlights the difficulty in measuring and predicting economic activity associated with recreation and tourism on the Tongass National Forest. Nonetheless, two important facts are evident in Figures 3.4-7 and 3.4-8 and Table 3.4-7: 1) recreation on the Tongass has been growing at a very fast rate over the last ten years, and 2) ROS 2-type recreation and tourism is the most common use.

### ***Commercial Fishing and Seafood Processing***

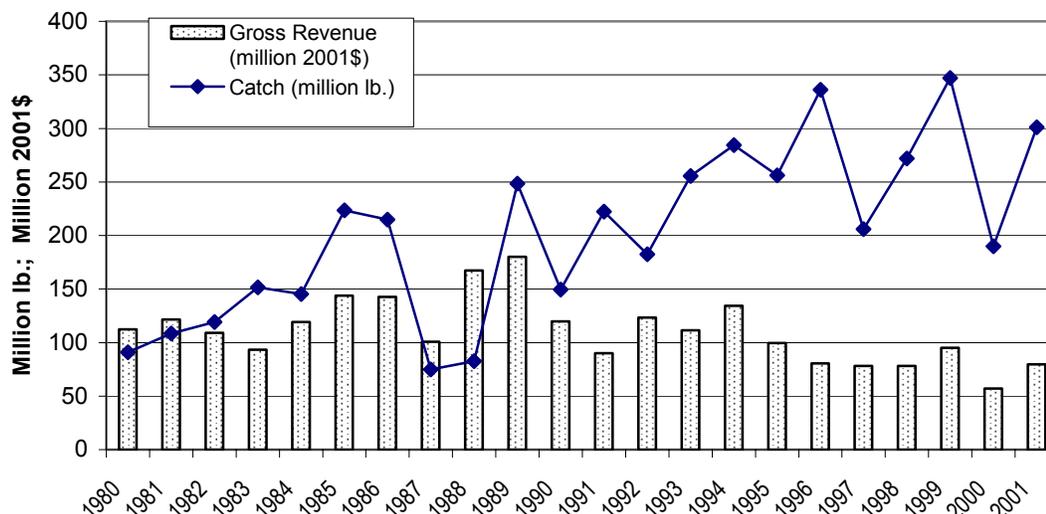
While commercial salmon fishing comprises the bulk of Southeast Alaska's fishing industry, halibut, crab and herring fishing combined makes up a substantial proportion of the region's total catch (approximately 24 percent in 1994 on a value basis). Dive fishing for marine invertebrates (primarily sea cucumbers, sea urchins, and geoducks) comprises a smaller proportion of Southeast Alaska's commercial fishery, with total earnings ranging from \$3.4 million to \$4.8 million between 1997 and 2001 (Alaska Commercial Fisheries Entry Commission [CFEC], 2002). There is an important connection between salmon and other wildlife and fish species on the Tongass. Crab, halibut, herring, bears, eagles, and other species depend on the annual return of millions of salmon and on the juvenile salmon produced in the Tongass streams and lakes. As a result, management decisions that affect salmon indirectly affect other species that are commercially fished. These relationships are, however, poorly understood and difficult to quantify. The commercial fishing discussion presented in this section, therefore, focuses on the salmon fishery. Data available for the seafood processing industry, however, do not allow for an easy distinction between salmon processors and other firms. Data presented for the seafood processing sector, therefore, include the entire seafood processing industry.

Although the profitability of the seafood industry in Southeast Alaska continuously changes, it remains a major component of the regional economy. Together, the salmon harvesting and seafood processing sectors accounted for approximately 3,080 jobs in 2001, around 8 percent of regional employment (Table 3.4-3). Unlike other basic sectors of Southeast Alaska's economy, components of the seafood industry are spread throughout the region with a significant presence in virtually every community. Salmon continues to be an important part of the industry in Southeast Alaska in both the volume and value of catch, accounting for approximately 75 percent of total pounds landed and about 40 percent of estimated gross earnings in 2001 (Alaska CFEC, 2002). Alaska's market share of the global salmon supply (estimated at 31 percent in 1990) has, however, been falling. The loss of market share is not a function of poor stocks or low supply, but a consequence of the growing acceptability of farmed fish as a source of fresh salmon and other seafoods. Seafood processing has also undergone fundamental changes in recent years with the increased use of floating fish processing facilities and a trend toward frozen rather than canned salmon. The seafood industry is discussed in more detail in the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a; p. 3-452 to 3-456).

Value and volume measures of salmon harvest for Southeast Alaska are shown in Figure 3.4-11. Both measures show considerable variation from year-to-year. In contrast to revenue and catch figures, employment (Figure 3.4-12) in both salmon fishing and, to a lesser extent, seafood processing has remained fairly stable. A generally increasing catch using the same work force has, on average, allowed fisherman to maintain real incomes in spite of falling prices. The commercial fishing and seafood processing industries are generally characterized by high degrees of nonresident participation. Nonresidents accounted for approximately 34 percent and 76 percent of employment in the fish harvesting and processing sectors in Southeast Alaska in 1994, respectively (Figure 3.4-3). Statewide, nonresidents accounted for 73.3 percent of seafood processing workers and 58.3 percent of fishers and related fishing workers in 2001 (Alaska DOL, 2003).

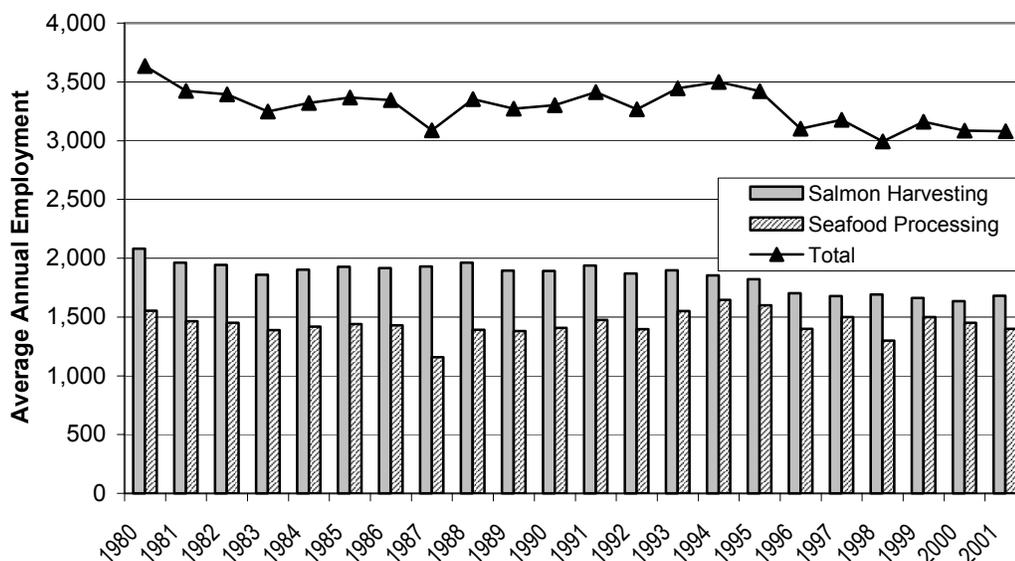
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**Figure 3.4-11**  
**Southeast Alaska Salmon Harvest: Gross Landings and Gross Earnings, 1980 to 2001**



Note: Gross Earnings to commercial fishers are ex-vessel values deflated using the national Producer Price Index (PPI).  
 Source: Alaska Commercial Fisheries Entry Commission, 2002.

**Figure 3.4-12**  
**Direct Salmon Harvesting & Fish Processing Employment in Southeast Alaska, 1980 to 2001**



Notes:

- Salmon harvesting employment totals presented in this figure were estimated based on data by Fishery and average crew sizes, time spent fishing, and preparation time for different fisheries. Average annual earnings were calculated by dividing net revenues among captains and employees by fishery. Profits to captains are not included in this calculation. The employment and income coefficients used in this analysis are presented in Table 3-135 of the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a).
- Seafood processing employment for 1995 through 2001 was obtained from the Alaska DOL, who provided these data rounded to the nearest 100 employees.

Source: Alaska Commercial Fisheries Entry Commission, 2002; Alaska DOL, 2001c; and USDA Forest Service, 1997a (Table 3-135).

Statewide, fleet participation in the Alaska salmon fisheries dropped significantly in 2002, partly as a result of low ex-vessel prices, but also due to processor limitations on the number of vessels they would serve. Low prices and loss of market opportunities have resulted in a notable decline in the value of limited entry permits in the salmon fisheries, declining in total value from approximately \$1.25 billion in 1990 to \$226 million in 2002. Wards Cove Packing Company, the eighth largest processor in Alaska, announced in December 2002 that it was terminating its Alaska salmon operations. The impacts of this decision are expected to be felt statewide in terms of direct employment, markets for fishermen, fish taxes, and support industries. Wards Cove operated facilities in Ketchikan and Excursion Inlet in Southeast Alaska with average monthly employment of 133 and 71 workers, respectively, with respective monthly employment peaking at 423 and 259 workers (Alaska DOL, 2002b).

The 1997 Forest Plan Revision Final EIS analysis assumed that 80 percent of Southeast Alaska salmon originate on the Tongass, and thus, 80 percent of the salmon fishing industry is dependent upon the Forest. The dependence of fish processing employment on the Tongass was derived similarly with the added assumption that salmon represented 60 percent (on volume basis) of the total processed catch. As a result, 48 percent of seafood processing employment is assumed to be dependent upon the Forest.

The proposed alternatives are not anticipated to affect anadromous fish habitat on the Tongass National Forest (see fish section). In addition, much of the future of the fishing industry in Southeast Alaska will be dependent upon occurrences outside of the Tongass National Forest such as off-shore harvest levels and changes in ocean currents. As a result of this and other factors, no reliable projections of future salmon harvests were available or considered necessary for this analysis.

### **Mining and Mineral Development**

Mineral exploration and mining have been a part of life in Southeast Alaska for over 120 years. Today, the mining industry is exploring new areas for potential mineral deposits and is revisiting historic mining areas using modern exploration techniques. The 1997 Forest Plan Revision Final EIS analysis noted that there are 13 identified mineral deposits on the Tongass National Forest that appeared economically viable under certain conditions. The Present Net Value of these 13 deposits was estimated at \$25.6 billion (USDA Forest Service, 1997a; p. 3-464). Existing and potential mining development activities identified in the 1997 Final EIS analysis included the Quartz Hill molybdenum site in Misty Fjords, the Greens Creek zinc, lead, and silver mine on Admiralty Island, and the Kensington mine north of Juneau.

In 1999, 318 workers were directly employed by the mining industry (Alaska DOL, 2001e). Mining-related indirect and induced employment is estimated at 153 jobs, resulting in a total of 471 jobs generated by the mining industry in that year. Estimated annual average employee earnings of \$60,971 per year in 1995 were twice the regional average. This annual average estimate is equal to \$65,141 in 1999 dollars. Based on this estimate, direct and total employee earnings in the mining sector were approximately \$20.7 million and \$25.9 million in 1999. Approximately 93 percent of direct mining employment was located in Juneau Borough, with the majority of this associated with the Greens Creek Mine on Admiralty Island.

### **Natural Amenities and Quality of Life**

Natural amenities and local quality of life have increasingly been recognized as important factors determining the economic prospects of many rural communities in the American West and elsewhere (Power, 1996; Rasker, 1995; Rudzitis and Johnson, 2000). While local amenities and life quality do not directly generate income in the same sense as, say, a sawmill or tourist lodge, they do act to attract and keep residents. This, in turn, supports communities and their economies in

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several ways. First, many of these residents may earn a substantial proportion of their income from non-job related sources that are independent of local economic activity. Much of this income will then be spent locally, resulting in additional employment and income in the community. Second, residents bring with them important skills and energy that constitute valuable assets for the community. Broadly termed “human capital” by economists, these skills (and the energy with which residents apply them) can earn additional outside income as well as provide essential social resources to the community. These residents may also help attract and retain businesses that are dependent on a skilled labor force, but otherwise relatively footloose from a location standpoint.

Since it is tracked as a separate category in standard income statistics, non-wage income and its contribution to local economies is directly measurable. As shown in Table 3.4-8, non-job related income (i.e., transfer payments and dividends, interest, and rent) accounted for 35 percent of total income in Southeast Alaska in 2000, as compared to 17 percent in 1980. Non-job related income in the state of Alaska as a whole exhibited a similar change over this period, increasing from 16 percent to 33 percent of total income. Non-job related income accounted for 31 percent of total income for the United States as a whole, but showed relatively little change over the past two decades increasing from 28 percent to total income in 1980 (Table 3.4-8).

Investment income (dividends, interest, and rent) and transfer payments from government form the two major categories of non-wage income. Transfer payments can be further broken out into various categories with social security payments and medical benefits being among the most important. Transfer payments per capita in 2000 were approximately \$1,000 or 25 percent higher in Southeast Alaska and Alaska than they were in the United States as a whole (Table 3.4-9). “Other payments” comprised approximately 40 percent of per capita transfer payments in Southeast Alaska and Alaska in 2000, compared to just 7 percent nationwide. This category includes certain income categories that are directly linked to birthrights or residence in Alaska, notably annual payments from the Alaska permanent fund, which have averaged between \$1,000 and \$2,000 per resident in recent years, and dividends from various Alaska native corporations, which are variable but often quite substantial. Much of the growth in transfer payments in Southeast Alaska and Alaska between 1980 and 2000 is due to increases in the other payments category, which exhibited a more than five-fold increase over this period.

Retirees comprise the most common (but by no means the only) source of non-wage income in many rural communities (Colt, 2001). In fact, this has given rise in some places to local marketing strategies specifically aimed at attracting retirees and thereby developing the local “retirement industry.” The growing economic importance of retirees is not readily apparent in Southeast Alaska in Table 3.4-9 because the increase in the “other payments” category tends to overshadow other changes. However, although retirement and disability payments comprise a relatively small share of total income by national standards, they almost doubled over this period, while medical payments increased by approximately 300 percent. This is partially the result of natural aging processes, but the mean age in the study area, and Alaska as a whole, has been rising at a much faster rate than elsewhere in the United States. This, in turn, may serve as a partial indication that Alaska is becoming more attractive for people as a place to live and not merely as a place to earn money.

**Table 3.4-8  
Components of Per Capita Income**

	Southeast Alaska			Alaska			United States		
	2000		%	2000		%	2000		%
	Total (\$)	Percent of Total	1980- 2000 Change	Total (\$)	Percent of Total	1980- 2000 Change	Total (\$)	Percent of Total	1980- 2000 Change
Personal income	31,243	100	0	29,642	100	0	29,469	100	0
Earnings	20,270	65	-18	19,861	67	-18	20,287	69	-3
Transfer payments	4,793	15	9	4,801	16	10	3,793	13	1
Dividends, interest, and rent	6,180	20	9	4,980	17	7	5,389	18	2

1 Earnings includes wages and salaries, other labor income, and proprietors' income.

2 Transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, and veterans benefit payments. Government payments to individuals in Alaska include Alaska Permanent Fund benefits, which are derived from oil revenues and paid to every resident.

3 1980-2000 Change is the change in percentage share of total per capita income (e.g., earnings in Southeast Alaska in 1980 comprised 83 percent of total per capita income compared to 65 percent in 2000, a difference of 18 percent). In inflation-adjusted dollars this represented a 14 percent decrease from \$23,597 to \$20,270.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, 2002.

**Table 3.4-9  
Components of Per Capita Transfer Payments**

	Southeast Alaska			Alaska			United States		
	2000		%	2000		%	2000		%
	Total (\$)	Percent of Total	1980- 2000 Change	Total (\$)	Percent of Total	1980- 2000 Change	Total (\$)	Percent of Total	1980- 2000 Change
Retirement and disability	950	20	-8	769	16	-6	1,508	40	-6
Medical payments	1,028	21	6	1,156	24	4	1,500	40	17
Income maintenance benefits	382	8	-4	466	10	-10	377	10	-2
Unemployment insurance	200	4	-10	178	4	-11	73	2	-5
Other payments <sup>1/</sup>	1,966	41	24	1,909	40	30	7	0	0
Miscellaneous other <sup>2/</sup>	266	6	-7	325	7	-6	328	9	-4
<b>Total transfer payments</b>	<b>4,793</b>	<b>100</b>	<b>0</b>	<b>4,801</b>	<b>100</b>	<b>0</b>	<b>3,793</b>	<b>100</b>	<b>0</b>

1 Consists largely of Bureau of Indian Affairs payments, education exchange payments, Alaska Permanent Fund dividend payments, compensation of survivors of public safety officers, compensation of victims of crime, disaster relief payments, compensation for Japanese internment, and other special payments to individuals.

2 Miscellaneous other includes veterans benefit payments, Federal education and training assistant payments (excluding veterans), payments to nonprofit institutions, and business payments to individuals.

3 1980-2000 Change is the change in percentage share of total per capita income (e.g., "other payments" in Southeast Alaska in 1980 comprised 17 percent of total per capita income compared to 41 percent in 2000, a difference of 24 percent). In inflation-adjusted dollars this represented a more than five-fold increase, as other payments increased from \$300 per capita to \$1,966.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, 2002.

The role of "human capital" in local economies is not directly measurable, but it is undoubtedly substantial. The skills possessed by a community's population can be essential in determining its adaptability to negative shocks and its ability to take advantage of new economic opportunities. Skilled employees, for example, constitute a key resource for existing or potential employers, and local entrepreneurs can help identify and grow new business opportunities if they exist. Owing to improvements in transportation and telecommunications, other residents may be able to sell their skills in distant or "virtual" labor markets without leaving home. Equally important is the skills and energy residents can bring to local government and other community organizations. Research has indicated that effective and energetic local government supported by strong community involvement is an important ingredient in community resiliency and the ability to weather adverse economic events.

### 3 Environment and Effects

Although it is difficult to directly measure the importance of natural amenities in attracting and keeping residents, proximity to natural environments and the recreational activities they support are undeniably a benefit enjoyed by residents, especially in the more rural communities of Southeast Alaska. At the same time, the atmosphere of a community also constitutes an important amenity, and this may often be linked to more traditional forms of economic activity, such as fishing or timber. In other words, changes in the local economy such as a shift to tourism may impact local atmosphere and amenities even if the surrounding natural environment remains essentially unchanged. These impacts are largely assumed to be negative as tourism leads to crowding and the loss of traditional charm, but this need not always be the case. Certain tourism establishments, such as restaurants, meeting centers or entertainment facilities, may often serve local residents as well, thus adding to the amenities available to them. Finally, the size of a community will significantly impact the local amenities available. If a community is too small, or too poor, it cannot provide many of the basic social and economic amenities many residents require, local natural amenities notwithstanding.

It is very hard to determine the impact of the different alternatives on local amenities and, further, on the economic activity these amenities generate. In most cases and localities the impacts of the action alternatives relative to the no-action alternative on amenities will not be significant enough in themselves to result in measurable changes in economic activity. The cumulative impact of changing land uses and economic activities over the coming decades, on the other hand, may have profound effects on local amenities, both natural and social. These impacts, however, will be the result of numerous different processes and influences, many of which are well beyond the control of the current planning effort and the Forest Service in general.

#### Payments to the State

Prior to 2000, in states with national forests, 25 percent of the returns to the US Treasury from revenue producing Forest Service activities such as timber sales, were returned to each state for distribution back to counties (or in Alaska, boroughs) having acreage within a national forest. Those payments were called the “25 percent fund payments” and were dedicated by law to roads and schools. In October 2000, the *Secure Rural Schools and Community Self Determination Act of 2000* was enacted to stabilize federal payments to states, in response to declining federal receipts.

Under the Secure Rural Schools and Community Self-Determination Act of 2000, Alaska will receive payments of approximately \$9 million per year through 2006. These payments will not be affected by the alternatives considered in this SEIS.

For fiscal years 2001 through 2006 under the new legislation, Alaska boroughs and communities have elected to receive a full payment amount rather than 25 percent of receipts. The full payment amount is the average of highest three payments made to the state during the 14 year period between 1986 and 1999. These annual full payment amounts would be primarily dedicated to roads and schools, with provisions for special project funding under certain conditions. Under the full payment approach, Forest Service payments to the State of Alaska during the 2001 to 2006 period would not be linked to annual Forest Service revenue, rather they would be based on the high three year historic average. As a result, Alaska will receive payments of approximately \$9 million per year. The difference in revenues among the alternatives considered in this SEIS would have no effect on the payments boroughs receive during the 2001 through 2006 time period. Payments will be reevaluated after 2006.

Payments made to the state of Alaska from 1986 through 2001 are shown in Table 3.4-10.

**Table 3.4-10**  
**Payments to Alaska 1986 to 2001 (Amounts in \$1,000s)**

Year	Payment (\$000s) <sup>1/</sup>
1986	745.6
1987 <sup>2/</sup>	0.0
1988	528.5
1989	6,266.0
1990	10,639.1
1991	10,791.2
1992	3,833.4
1993	4,406.4
1994	9,786.1
1995	8,230.8
1996	6,249.3
1997	1,252.1
1998	1,939.8
1999	2,086.6
2000	2,321.0
2001 <sup>3/</sup>	9,019.7

Notes:

1. Data are adjusted for inflation using the U.S. producer price index and presented in 2000 dollars and 1,000s.
  2. Tongass receipts in Fiscal Year 1987 were negative due to Comptroller General Decision B-224730 of March 31, 1987, to retroactively implement the emergency rate redeterminations for short-term sales. Without this reduction, Tongass receipts would have been positive by \$2.1 million (unadjusted for inflation). As a result of the negative receipt, no payments were made to the State of Alaska that year.
  3. Represents legislated payment system as of October 2000
- Source: USDA Forest Service, 1997a; 2002b.

### 3 Environment and Effects

## Environmental Consequences

### Direct, Indirect, and Cumulative Effects

- Economic Impact Analysis
  - Wood Products Industry
    - Short-term Effects
      - Effects on the Timber Industry
      - Effects on Communities
      - Effects of Mill Closures
    - Long-term Effects
      - Demand
      - Installed Production Capacity
      - Employment and Income
  - Recreation and Tourism
    - Supply
    - Demand
    - Consumption
    - Employment and Income
    - Other Potential Impacts
      - Group Sizes
      - Helicopter Landing Tours
  - Mining
  - Transportation and Utilities
  - Salmon Harvesting and Processing
  - Natural Amenities and Quality of Life
  - Summary of Impacts
- Economic Efficiency Analysis
  - Timber
  - Recreation and Tourism
  - Costs
  - Salmon Harvesting and Processing
  - Mining
  - Subsistence
  - Non-use and Ecosystem Services
    - Non-use Values
    - Ecosystem Services
  - Natural Amenities and Quality of Life
- Tongass National Forest Budget
- Payments to the State

### Direct, Indirect, and Cumulative Effects

This section describes the potential direct, indirect, and cumulative economic effects of the eight alternatives. The analysis is divided into two main sections: 1) economic impact analysis, and 2) economic efficiency analysis. The Tongass National Forest budget and payments to the State are addressed in two short sections at the end. The impact analysis section addresses the effects of the proposed alternatives on regional employment and income. The efficiency analysis attempts to measure all of the costs and benefits to society, both future and present, of each alternative. The costs and benefits assessed in an economic efficiency analysis are not restricted to cash transactions, but also include non-market benefits such as consumer surplus. The concepts and methodologies used in each of these analyses are described in detail in the following sections. In general, it should be remembered that impact and efficiency analyses measure different things and are not directly comparable. Alternatives with positive impacts on jobs and income will not necessarily have high benefits under efficiency analysis.

The cumulative effects of the alternatives are assessed as part of the impact and efficiency analyses in the following sections. These effects are addressed in a number of ways including the following. The regional economic overview in the Affected Environment portion of this section addresses the regional economy as a whole to establish the context for this analysis. Potential changes in the wood products industry are viewed in the context of ongoing changes in other sectors of this industry, particularly past and projected future trends in logging on Native Corporation lands. Effects on the recreation and tourism industry are viewed in the broader context of ongoing and possible future trends in visitation to Southeast Alaska. The effects analysis also considers the economic implications of the potential effects of the alternatives on possible future transportation and public utility projects.

### Economic Impact Analysis

This section addresses the potential effects of the proposed alternatives on regional employment and income. The section is divided into seven main parts. The first six parts address the effects of the alternatives on the wood products industry, recreation and tourism, mining, transportation and utilities, salmon harvesting and processing, and quality of life, respectively. The seventh part provides a summary of the effects discussed in the preceding four sections.

The Economic Impact Analysis addresses the effects of the alternatives on regional employment and income.

### Wood Products Industry

This section addresses the potential effects of the alternatives on the wood products sector in two ways. The first section evaluates the short-term implications of the alternatives by addressing their potential effects on National Forest timber sale volume under contract. Timber sale volume under contract in this context refers to the volume associated with sales that have been sold but not harvested. The second section takes a more long-term perspective and addresses the potential future supply of National Forest timber based on the available Allowable Sale Quantity (ASQ) estimated for each alternative. The ASQ is the maximum amount of timber that may be scheduled for sale from the suitable lands identified under each alternative.

Timber sale volume under contract is the volume associated with sales that have been sold but not harvested. Designating an area that contains volume under contract wilderness or LUD II would likely result in the purchaser being unable to harvest this volume.

### Short-term Effects

In order to provide a stable timber sales program and provide a continued flow of timber to regional timber processors, the Forest Service employs a “buffer stock” approach to timber sale planning. The resulting timber sale program is complex and requires that the Forest Service manage four “pools” of timber volume, commonly referred to as the “timber pipeline.” These pools of timber volume include timber volume under contract, NEPA-cleared volume, timber volume in preparation, and timber volume identified in the Forest Service’s 10-year Plan. The “timber pipeline” and its constituent parts are discussed in more detail in the *Timber* section of this SEIS.

Timber sales can take from 3 to 5 years to complete. Sales offered by the Forest Service vary in size to meet the needs of different purchasers. The time taken to complete a sale may vary with the size of the offering. Uncertainty and delays may be introduced through appeals and litigation. The buffer stock approach and the variable length of the timber sale process generally makes it difficult to draw a direct relationship between particular sales and regional timber demand. It is, however, clear that a reduction in the timber volume under contract could have potentially significant effects on regional timber operators, with commensurate effects on regional employment and income. Designating an area that contains timber volume under contract as Recommended Wilderness or Recommended LUD II would likely result in the purchaser being unable to harvest this volume. The possibility exists that affected volumes could be replaced, but this would take time and severe short-

### 3 Environment and Effects

term reductions in the volume under contract would have direct and relatively immediate effects upon the affected operators.

The following discussion is divided into two main sections. The first section addresses the potential effects of the alternatives upon the timber industry. The second section discusses the potential effects that the alternatives would have on employment and income in Southeast Alaskan communities.

#### ***Effects on the Timber Industry***

The Forest Service had approximately 295 MMBF under contract in September 2002. These sales are identified by purchaser in Table 3.4-11. This table also identifies the volume that would be located in Recommended Wilderness or Recommended LUD II by alternative. Existing volumes under contract likely represent the vast majority, if not the entire short-term timber supply for the identified facilities. Local sawmills and other processors have been unable to compete with the log export market for private timber, and virtually no volume from the Native Corporation harvests is processed locally. Any reduction in the existing volume under contract would be unlikely to be made up from other areas within the next year or two. Gateway Forest Products (Gateway) and the three largest operating facilities in the region, Silver Bay Logging (Silver Bay), Viking Lumber, and Pacific Log and Lumber, have the largest volumes under contract. Icy Straits, also known as Whitestone Southeast Logging Company (Whitestone), also has a relatively large volume under contract. The Gateway veneer mill and Pacific Log and Lumber are located in Ketchikan. The Silver Bay, Viking Lumber, and Icy Straits facilities are located in Wrangell, between Craig and Klawock, and in Hoonah, respectively. Volume under contract is presented graphically by major purchaser and alternative in Figure 3.4-13.

The following sections discuss the potential effects by alternative. This discussion focuses on timber supply and does not address the potential demand for each facility's products, which could have an equally important bearing on a mill's actual future production levels or continued operation (see the Current Status of the Industry discussion in the *Affected Environment* portion of this section). Table 3.4-12 compares the sawlog component of the available volume under contract with 2000 production levels by alternative. A figure of 2.0, for example, indicates that the sawlog component of the available volume under this alternative is twice the volume that was processed by that facility in 2000.

As noted in the Affected Environment section, it is unknown whether the 2000 production levels for the region's larger mills, which ranged from 21 percent (Silver Bay) to 28 percent (Pacific Log and Lumber) of estimated installed capacity, would be sufficient to allow long-term continued operation of these facilities. There could be many reasons why 2000 does not represent an average year, and estimated production levels from the 2000 survey should not be interpreted as predictions of future rates of utilization. The 2000 levels are simply used in the following analysis as a benchmark to provide some perspective on the potential short-term effects by alternative.

Testimony by a representative of Silver Bay at the Evidentiary Hearing of *Sierra Club and Others vs. Rey* (February 2002) indicated that Silver Bay, for example, has been operating their mill at a loss over the past three years and subsidizing the mill's operation with income from logging jobs with other companies. Silver Bay processed 14 MMBF in 2000 and similar volumes in 1999 and 2001. This representative estimated that they would need to process approximately 36 MMBF in 2002 to "stand a chance" of breaking even.

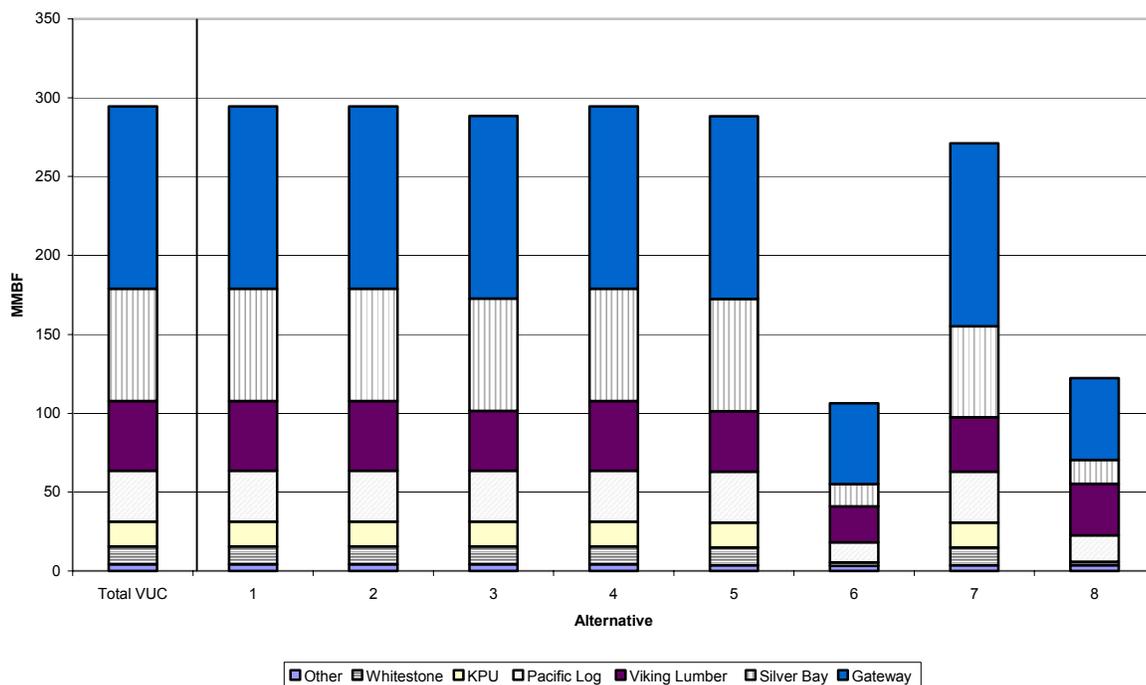
**Table 3.4-11  
Sale Volume Under Contract by Purchaser and Alternative**

Mills	Location	Volume under Contract (MBF)	Volume under Contract Affected by Alternative									
			Alternatives 1, 2, and 4	Alternative 3	Alternative 5	Alternative 6	Alternative 7	Alternative 8				
			Volume	Percent	Volume	Percent	Volume	Percent	Volume	Percent	Volume	Percent
<b>Major Operators</b>												
Gateway Forest Products	Ketchikan	115,780	0	0	0	0	64,481	56	0	0	63,877	55
Silver Bay Logging	Wrangell Craig/ <sup>1</sup>	71,004	0	0	0	0	56,750	80	13,164	19	55,854	79
Viking Lumber Company	Klawock	44,248	0	0	6,210	14	5,757	13	21,454	48	11,536	26
Pacific Log and Lumber, Ltd	Ketchikan	32,208	0	0	0	0	19,616	61	0	0	15,521	48
<b>Smaller Operators</b>												
Whitestone Southeast Logging Co.	Hoonah	11,265	0	0	0	0	8,984	80	0	0	8,984	80
The Mill, Inc	Petersburg	644	0	0	0	0	446	69	0	0	0	0
<b>Total (Mills)</b>		<b>275,149</b>	<b>0</b>	<b>0</b>	<b>6,210</b>	<b>2</b>	<b>171,731</b>	<b>62</b>	<b>22,828</b>	<b>8</b>	<b>155,772</b>	<b>57</b>
<b>Other Purchasers</b>												
3-D Logging	Whale Pass	111	0	0	0	0	0	0	0	0	0	0
Beaver Creek Logging	Craig	61	0	0	0	0	0	0	0	0	0	0
D&L Woodwork	Hoonah	123	0	0	0	0	0	0	0	0	0	0
David Seaford	Thorne Bay	1,350	0	0	0	0	0	0	0	0	0	0
H&L Salvage	Craig	25	0	0	0	0	0	0	0	0	0	0
Jack Harrison	Craig	48	0	0	0	0	0	0	0	0	0	0
Ketchikan Public Util.	Ketchikan	15,762	0	0	0	0	15,762	100	0	0	15,762	100
Luthier Tone Woods	Wrangell	38	0	0	0	0	0	0	0	0	0	0
Mnt. Man Cutting	Craig	162	0	0	0	0	0	0	0	0	0	0
New Age												
Mining/Excavation	Thorne Bay	1,193	0	0	0	0	652	55	652	55	652	55
Porter Lumber	Thorne Bay	372	0	0	0	0	0	0	0	0	0	0
Richard Blauvelt	Thorne Bay	35	0	0	0	0	0	0	0	0	0	0
Thorne Bay Wood Products	Thorne Bay	147	0	0	0	0	0	0	0	0	0	0
<b>Total (Other Purchasers)</b>		<b>19,425</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16,414</b>	<b>84</b>	<b>652</b>	<b>3</b>	<b>16,414</b>	<b>84</b>
<b>Grand Total (Mills and Other Purchasers)</b>		<b>294,574</b>	<b>0</b>	<b>0</b>	<b>6,210</b>	<b>2</b>	<b>188,145</b>	<b>64</b>	<b>23,480</b>	<b>8</b>	<b>172,186</b>	<b>58</b>

Notes:  
 1 Approximately 61 percent of these volumes are assumed to be comprised of sawlogs. See Table 3.4-5 for estimated installed production capacity and 2000 production levels by timber processor.  
 2 None of the areas containing sale volume under contract would be affected by Alternatives 1, 2, and 4.  
 3 Gateway Forest Products' filed for bankruptcy protection in February 2002. U.S. Bankruptcy Court dismissed the case in April 2002. The sawmill was sold and dismantled. The city of Ketchikan purchased the veneer mill and is presently looking for an operator.  
 4 Silver Bay Logging filed for bankruptcy protection in February 2003. The company announced that it plans to continue operating and plans to harvest 25 MMBF of timber in 2003.  
 MBF = thousand board feet.

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**Figure 3.4-13**  
**Available Sale Volume Under Contract by Purchaser and Alternative**



**Notes:**

This presentation assumes that volume under contract located in a Recommended Wilderness or LUD II area would not be available for harvest.

VUC = Volume under contract.

Source: Table 3.4-8.

Silver Bay Logging announced in February 2003 that it has filed for Chapter 11 reorganization with the U.S. Bankruptcy Court, citing depressed lumber prices and increased costs to harvest Federal timber sales as the principle reasons for the filing. The company also announced that they plan to continue operating and plan to harvest approximately 25 MMBF of timber in 2003.

The low utilization rates across the industry may indicate that changes in capacity are likely as the region's wood products sector adjusts to current supply and end-market realities. Under current market conditions, if a mill were to close, it is highly unlikely that it would be reopened or replaced by other processing capacity. To the extent that they reduce volume under contract or otherwise impact short-term supply, there is a possibility that the more restrictive alternatives, in conjunction with current market conditions, may result in closure of the remaining larger sawmills in the region. However, the risk of this occurring, and the actual thresholds at which it becomes probable are not known.

**Table 3.4-12**  
**Years of Operation based on 2000 Production Levels and the Sawlog**  
**Component of the Existing Sale Volume under Contract**

Purchaser <sup>1</sup>	Volume Under Contract (MMBF) <sup>2</sup>	2000 Mill Production (MMBF)	Production Years at 2000 Levels Alternatives <sup>3,4</sup>					
			1, 2, 4	3	5	6	7	8
<b>Major Operators</b>								
Silver Bay Logging	71,004	14,000	3.1	3.1	3.1	0.6	2.5	0.7
Viking Lumber Company	44,248	13,000	2.1	1.8	1.8	1.1	1.6	1.5
Pacific Log and Lumber, Ltd	32,208	9,000	2.2	2.2	2.2	0.9	2.2	1.1
<b>Smaller Operators</b>								
Whitestone Southeast Logging Co.	11,265	5,000	1.4	1.4	1.4	0.3	1.4	0.3
The Mill, Inc	644	7,000	0.1	0.1	0.1	0.0	0.1	0.1
<b>Total (Mills)</b>	<b>159,369</b>	<b>48,000</b>	<b>2.0</b>	<b>1.9</b>	<b>2.0</b>	<b>0.7</b>	<b>1.7</b>	<b>0.9</b>

<sup>1</sup> Gateway is not included in this table because they only operated for a portion of 2000 and the veneer plant is presently shut down.  
<sup>2</sup> Approximately 61 percent of this volume is assumed to be comprised of sawlogs.  
<sup>3</sup> This table compares the sawlog component of the available volume under contract with 2000 production levels by alternative. A figure of 2.0, for example, indicates that the sawlog component of the available volume under this alternative is twice the volume that was processed by that facility in 2000.  
<sup>4</sup> It is unknown whether the 2000 production levels for the region's larger mills, used here as a benchmark, would be sufficient to allow long-term continued operation of these facilities. Mills typically operate based on a backlog of three years of supply. None of the region's mill's currently have three years backlog, even assuming that 2000 production levels are sufficient to allow continued operation.  
 Source: USDA Forest Service, 2001a.

Significant harvest reductions on the Tongass could have effects on the timber industry as a whole. Specialized support services, such as road building, barge and tug lines, and logging companies, and other elements of the timber industry infrastructure could also be affected. A significant reduction in Tongass harvests could result in a general loss of confidence in the Southeast Alaska timber industry, which could affect the ability of the remaining operators and specialized support services to get financing, bonding, and security at reasonable costs. The potential extent of these types of effects is unknown but are nevertheless real concerns that need to be acknowledged. These types of effects would appear more likely to occur under the more restrictive alternatives.

**Alternatives 1, 2, and 4.** There would be no effect on the areas containing volume under contract under Alternatives 1, 2, and 4. Approximately 61 percent of the volume identified in Table 3.4-11 is comprised of sawlogs. The sawlog components of the volumes under contract with Silver Bay, Viking, and Pacific Log and Lumber are approximately 3.1 times, 2.1 times, and 2.2 times 2000 levels, respectively. Whitestone's volume under contract is approximately 1.4 times its 2000 production levels (Table 3.4-12).

**Alternative 3.** Under this alternative, 14 percent of the volume under contract with Viking Lumber (6.2 MMBF) would be in a Recommended Wilderness area. This reduction in available volume could potentially affect operation of the Viking Lumber facility in the short-run. The sawlog component of the remaining 86 percent of Viking's volume under contract (23.2 MMBF) would be approximately 1.8 times its 2000 production level (Table 3.4-12). The results of the Forest Service's 2000 mill survey indicated that Viking Lumber processed 13 MMBF in 2000.

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**Alternative 5.** Under this alternative, 13 percent of Viking Lumber's volume under contract (5.7 MMBF) would be in a Recommended Wilderness area. The potential effects to Viking are likely to be the same under this alternative as they would be under Alternative 3.

New Age Mining/Excavation would have 55 percent (0.7 MMBF) of its volume under contract affected by this alternative (Table 3.4-11). This would also be the case under Alternatives 6, 7, and 8.

**Alternative 6.** Effects under this alternative would range from 48 percent of the volume under contract with Viking Lumber (21 MMBF) to 80 percent of Silver Bay's volume under contract (57 MMBF). This alternative could have significant effects for all three larger mills. The sawlog component of Silver Bay's remaining volume (8.7 MMBF) represents approximately 13 percent of the mill's estimated installed production capacity and approximately 60 percent of the volume processed by the mill in 2000 (Table 3.4-12). Pacific Log and Lumber would experience similar short-term effects, with 61 percent of its volume under contract affected. The sawlog component of the remaining volume (7.7 MMBF) would be approximately 90 percent of the volume processed by the mill in 2000.

Approximately 48 percent of the volume under contract with Viking Lumber (21 MMBF) would be in a Recommended Wilderness or Recommended LUD II area under this alternative. The sawlog component of the remaining volume (13.9 MMBF) would be equivalent to 1.1 times the volume processed by the Viking mill in 2000 (Table 3.4-12). Approximately 80 percent of the volume under contract with Whitestone (9 MMBF) would be in a Recommended Wilderness or Recommended LUD II area under this alternative. The sawlog component of the remaining volume (1.4 MMBF) would be equivalent to about 30 percent of the volume processed by the Icy Straits mill in 2000 (Table 3.4-12).

**Alternative 7.** Under this alternative, 19 percent of the volume under contract with Silver Bay (13.2 MMBF) and 22 percent of Viking Lumber's volume under contract (9.7 MMBF) would be in a Recommended Wilderness area. The sawlog component of the remaining volume under contract with Silver Bay (35.3 MMBF) would be equivalent to 2.5 times the volume processed in 2000. The sawlog component of Viking Lumber's remaining volume under contract (21.1 MMBF) would be approximately 1.6 times the mill's 2000 production level (Table 3.4-12).

**Alternative 8.** The potential effects of this alternative on Silver Bay and Whitestone would be very similar to those discussed for Alternative 6. The effects upon Viking Lumber would be similar to those under Alternative 7. Approximately 48 percent of the volume under contract with Pacific Log and Lumber would be in a Recommended Wilderness area under this alternative. The sawlog component of the remaining volume (10.2 MMBF) would be 1.1 times the estimated volume processed by this facility in 2000 (Table 3.4-12).

#### **Effects on Communities**

Reductions in the volume under contract would affect both sawmill and logging employment. Potential decreases in sawmill employment were calculated using a ratio of 3.33 jobs/MMBF. Changes in logging employment were estimated using a ratio of 1.95 jobs/MMBF. These ratios are based on average levels of employment per unit of product output for the 1990 to 1994 period for all species. This time period includes both high levels of production in 1990 (resulting in low levels of employment per unit output) and lower levels in 1993 and 1994 (USDA Forest Service, 1997a; p. 3-479). A review of data for 2000 suggests that, despite the significant structural change that has occurred in the Southeast Alaska wood products industry in recent years, this ratio is still representative of current conditions.

A potential loss of mill jobs would, for the most part, be concentrated in the community where the mill is located. Potential reductions in logging jobs are more difficult to tie to specific communities due to the mobility of sales and movement of operations.

A potential loss of mill jobs would, for the most part, be concentrated in the community where the mill is located because the majority of mill workers reside in close proximity to their place of work. The potential effects of the alternatives on sawmill employment are presented net of Alternatives 1, 2, and 4, which would not affect the existing volume under contract, in Table 3.4-13.

Potential reductions in logging jobs are more difficult to tie to specific communities due to the mobility of sales and movement of operations. Spatial proximity between a sale location and a nearby community with existing logging employment does not necessarily indicate that the sale would be logged by residents of that community. This relationship is, however, more likely to occur in locations where access is provided by roads from nearby communities than in cases where the sale is in a remote location and would require logging equipment to be barged in, regardless of where the logging contractor is located. There is also little apparent correlation between the location of the sale and the purchaser, with all three larger mills having sales volume under contract in a number of different areas. With these thoughts in mind, the potential effects of the alternatives upon logging employment are presented by sale location net of Alternatives 1, 2, and 4 in Table 3.4-14.

In addition to the difficulties of linking logging jobs with particular communities, it is also difficult to determine which logging jobs are associated with Forest Service timber sales and which are associated with private harvest. Logging jobs associated with Native Corporation, other private, and state harvest would not be directly affected by the proposed alternatives. It is, however, possible that private and state timber operations could be indirectly affected as a result of effects on specialized support industries and other elements of the timber industry infrastructure, as well as a potential general loss of confidence in the Southeast Alaska wood products sector as a whole.

Estimated changes in sawmill and logging employment shown in Tables 3.4-13 and 3.4-14, respectively, are presented in job-years, which represent the equivalent of one year's employment. This potential employment loss would not all occur in one year and estimated job totals do not directly translate into estimated numbers of affected workers.

There would be no effect on the areas containing volume under contract under Alternatives 1, 2, and 4. Potential reductions in employment under the other alternatives would range from approximately 13 sawmill job-years and 12 logging job-years under Alternatives 3 and 5 to approximately 364 sawmill job-years and 367 logging job-years under Alternative 6 (Tables 3.4-13 and 3.4-14). Projected overall direct job loss under Alternative 7 would be 94 job-years. Projected job losses under Alternative 8 would be similar to those under Alternative 6, with an overall projected loss of approximately 668 direct sawmill and logging job-years.

**Effects of Mill Closures.** The preceding discussion implicitly assumes a linear relationship between reductions in the volume under contract and sawmill employment, with a one percent decline in harvest resulting in a one percent decline in sawmill employment. This type of relationship is also assumed with respect to logging employment. There are a number of factors that suggest that this type of direct relationship rarely exists. Sawmill operations are driven by market demand and require the volume and species that will produce the lumber needed to meet particular market segments. The mix of log grades and species varies from sale to sale and also from unit to unit within a sale. Testimony by representatives of Viking Lumber and Silver Bay at the Evidentiary Hearing of *Sierra Club and Others vs. Rey* (February 2002) indicated that reducing the size or reconfiguring a timber sale can affect the economic viability of the sale.

**Table 3.4-13 Potentially Affected Volume Under Contract and Sawmill Employment by Alternative**

Purchaser	Location	Volume Under Contract (MBF)	Alternatives 1, 2, and 4		Net Change from Alternatives 1, 2, and 4									
			Sawlog Volume (MBF)	Job-Years <sup>1</sup>	Alternative 3	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 3	Alternative 5	Alternative 6	Alternative 7	Alternative 8
			Sawlog Volume (MBF)	Job-Years	Sawlog Volume (MBF)	Job-Years	Sawlog Volume (MBF)	Job-Years	Sawlog Volume (MBF)	Job-Years	Sawlog Volume (MBF)	Job-Years	Sawlog Volume (MBF)	Job-Years
<b>Major Operators</b>														
Gateway Forest Products <sup>3</sup>	Ketchikan	115,780	70,626	235	0	0	0	0	-39,333	-131	0	0	-38,965	-130
Pacific Log & Lumber Ltd	Ketchikan	32,208	19,647	65	0	0	0	0	-11,966	-40	0	0	-9,468	-32
Silver Bay Logging Company	Wrangell	71,004	43,312	144	0	0	0	0	-34,618	-115	-8,030	-27	-34,071	-113
Viking Lumber Company	Craig/Klawock	44,248	26,991	90	-3,788	-13	-3,512	-12	-13,087	-44	-5,895	-20	-7,037	-23
<b>Small Operators</b>														
Whitestone SE Logging Co.	Hoonah	11,265	6,872	23	0	0	0	0	-5,480	-18	0	0	-5,480	-18
<b>Other Operators</b>														
Other Small Mills <sup>4</sup>	Other	20,069	6,755	22	0	0	-398	-1	-4,798	-16	-398	-1	-4,526	-15
<b>Total</b>		<b>294,575</b>	<b>174,204</b>	<b>580</b>	<b>-3,788</b>	<b>-13</b>	<b>-3,909</b>	<b>-13</b>	<b>-109,282</b>	<b>-364</b>	<b>-14,323</b>	<b>-48</b>	<b>-99,547</b>	<b>-332</b>

**Notes:**

- Jobs totals are estimated using a ratio of 3.33 jobs/MMBF. These estimates assume that approximately 61 percent of the volumes under contract are comprised of sawlogs. Estimated sawmill job-years represent one year of sawmill employment based on the 3.33 jobs/MMBF ratio. This employment would not all necessarily occur in one year and estimated job-years do not directly translate into numbers of affected workers.
- Changes in sale volume under contract and associated jobs are shown for Alternatives 3, 5, 6, 7, and 8 relative to estimated volumes and sawmill jobs for Alternatives 1, 2, and 4. For example, -3,788 MBF and -13 jobs for Viking under Alternative 3 means that there would be 3,788 MBF (sawlog volume) less harvested in this area under this alternative than under Alternatives 1, 2, and 4. Using the 3.33 jobs/MMBF ratio, this would translate into a reduction of 13 job-years.
- Future use of the volume under contract with Gateway Forest Products is uncertain at this time. All or a portion of the volume may be manufactured at the veneer plant if an operator is found. It is also possible that Gateway may subcontract or third-party this volume to other local processors. A portion of the volume may ultimately be turned back to the Forest Service for reoffer. At this time, it is anticipated that the volume will eventually contribute to sawmill employment.
- Ketchikan Public Utilities ROW total sale volume of 15,762 MBF is included in the VUC. Since only 6,767 MBF is required for removal, this is all that is used to estimate sawmill employment.

**Table 3.4-14  
Potentially Affected Volume Under Contract and Associated Logging Employment by Sale Location and Alternative**

Location	Alternatives 1, 2, 4		Net Change from Alternatives 1, 2, and 4											
	Alternative 3		Alternative 5			Alternative 6			Alternative 7			Alternative 8		
	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years	Volume (MBF)	Logging Job-Years
Central Prince of Wales	3,132	6	0	0	-1,916	-4	0	0	0	0	0	-1,916	-4	
Chichagof	11,388	22	0	0	-8,984	-18	0	0	0	0	0	-8,984	-18	
Ketchikan/Revilla	90,759	177	0	0	-57,491	-112	0	0	0	0	0	-56,639	-110	
Kuiu	29,719	58	0	0	-14,677	-29	0	0	0	0	0	-10,582	-21	
North Prince of Wales	18,406	36	0	0	-11,229	-22	-652	-1	-652	-1	-11,229	-22	-652	
Petersburg	34,541	67	0	0	-27,862	-54	0	0	-27,862	-54	-13,164	-26	-27,371	
Petersburg/Kake	32,278	63	-6,210	-12	-16,108	-31	-5,757	-11	-16,108	-31	-9,664	-19	-13,449	
South Prince of Wales	46,985	92	0	0	-28,690	-56	0	0	-28,690	-56	0	0	-20,828	
Wrangell	27,367	53	0	0	-21,188	-41	0	0	-21,188	-41	0	0	-21,188	
<b>Total</b>	<b>294,574</b>	<b>574</b>	<b>-6,210</b>	<b>-12</b>	<b>-188,145</b>	<b>-367</b>	<b>-6,409</b>	<b>-12</b>	<b>-188,145</b>	<b>-367</b>	<b>-23,480</b>	<b>-46</b>	<b>-172,186</b>	

Notes:

1. Job-year totals are estimated using a ratio of 1.95 jobs/MMBF. These estimates assume that the entire volume under contract would be removed. This may result in an overestimate because approximately 61 percent of the volume under contract is comprised of sawlogs and current direction allows purchasers to leave utility log volumes on site. Estimated logging job-years represent one year of logging employment based on the 1.95 jobs/MMBF ratio. This employment would not all necessarily occur in one year and estimated job-years do not directly translate into estimated numbers of affected workers.
2. Changes in sale volume under contract and associated jobs are shown for Alternatives 3, 5, 6, 7, and 8 relative to estimated volumes and logging jobs for Alternatives 1, 2, and 4. For example, -6,210 MBF and -12 jobs for Petersburg/Kake under Alternative 3 means that there would be 6,210 MBF less harvested in this area under this alternative than under Alternatives 1, 2, and 4. Using the 1.95 jobs/MMBF ratio, this would translate into a reduction of 12 job-years.
3. These potential reductions in logging employment are difficult to tie to specific communities or community groups. Spatial proximity between a sale location and a nearby community with existing logging employment does not necessarily indicate that the sale would be logged by residents of that community. This relationship is, however, more likely to occur in locations where access is provided by roads from nearby communities than in cases where the sale is in a remote location and would require logging equipment to be barged in, regardless of where the logging contractor is located.

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The economic viability of a sale may, for example, depend upon the whole volume being removed to cover fixed costs. In other cases, particular units may be more valuable than others and in effect subsidize the harvest. Both representatives also indicated that some of the timber sales they presently have under contract are currently not economic to harvest as a result of market conditions. In addition, in this context, portions of sales not located in a roadless area may not be available for harvest because the road that would access that timber may go through the roadless area or the planned log transfer facility may be in the roadless area. For example, five sales under contract to one company are in roaded areas but have no available LTF within the roaded portion of the sale area.

Industry response to changes in supply may involve discreet and relatively large adjustments in production and employment, which may take the form of temporary or permanent mill closure. As previously noted, there is a possibility that the short-term supply reductions projected under the more restrictive alternatives could, in conjunction with current market conditions, result in closure of the remaining larger sawmills in the region. However, the risk of this occurring and the actual thresholds at which it becomes probable are not known. This section discusses the potential social and economic effects of these mills closing and represents a worst-case scenario whereby all mills and Tongass-related logging activities would no longer take place.

Temporary (one or more years) or permanent mill closure would result in direct job losses, as well as secondary (indirect and induced) job losses in the regional economy. If a mill were to close under current conditions, it is highly unlikely that it would be reopened or replaced by other processing capacity. Direct job loss would occur in the affected sawmills and the logging sector. The majority of harvest from the Tongass National Forest supplies local mills. Closure of these mills would eliminate the market for sale volume under contract with those mills and also much of the remaining sale volume under contract with other purchasers (see Table 3.4-11). This would affect potential logging employment accordingly, unless export permits for Tongass timber were expanded. Direct job losses would also include reductions in Forest Service employment.

Based on the mill-specific employment data gathered as part of the Forest Service's 2000 mill survey, closure of the three larger sawmills and the Icy Straits facility would result in the temporary or permanent loss of 149 direct jobs (Table 3.4-15). Table 3.4-15 also includes the Gateway veneer mill on the assumption that this mill would be operational, resulting in a total estimate direct loss of 183 jobs. These job losses would be primarily concentrated in the communities where the mills are located. Total employment data for community groups, as defined by the Alaska DOL, suggest that these job losses would represent 3 percent of total 1999 employment in Central Prince of Wales (Craig, Hollis, and Klawock), 1 percent of total employment in Ketchikan, 7 percent of total employment in Wrangell, and 4 percent of total employment in North Chichagof (see Table 3.4-16). Using the 2.09 wood products employment multiplier (see Table 3.4-15), total sawmill-related job loss (direct, indirect, and induced) would be approximately 383 jobs (assuming the Gateway Veneer Mill would be operational). The indirect and induced job losses would occur throughout the region and it is difficult to accurately estimate the portion of these effects that would occur in the community groups that contain the affected sawmills.

**Table 3.4-15**  
**Direct and Total Employment and Earnings by Potentially Affected Sawmill**

	Pacific Log					Total
	Gateway Veneer <sup>1</sup>	and Lumber	Silver Bay	Viking	Icy Straits	
<b>Employment (Jobs)</b>						
Direct (Sawmill Jobs) <sup>2</sup>	34	43	55	33	18	183
<b>Total (Direct, Indirect, and Induced)<sup>3</sup></b>	<b>71</b>	<b>90</b>	<b>115</b>	<b>69</b>	<b>38</b>	<b>383</b>
<b>Income (\$million)</b>						
Direct (Sawmill Jobs) <sup>4</sup>	1.51	1.91	2.44	1.46	0.80	8.12
<b>Total (Direct, Indirect, and Induced)<sup>5</sup></b>	<b>2.28</b>	<b>2.88</b>	<b>3.68</b>	<b>2.21</b>	<b>1.20</b>	<b>12.25</b>

<sup>1</sup> The Gateway veneer mill was purchased by the city of Ketchikan in April 2002. The volume under contract with Gateway may be manufactured in the veneer plant, it may be transferred to and processed by other local mills, or it could be turned back to the Forest Service for reoffer. The potential effects shown in this table assume that the Gateway facility would be operational.

<sup>2</sup> Direct employment estimates are based on the results of the Forest Service's 2000 mill survey.

<sup>3</sup> The total employment effects of these mills were estimated using an employment multiplier of 2.09. Indirect and induced job losses would occur throughout the region and it is difficult to accurately estimate the portion of these effects that would occur in the community groups that contain the affected sawmills.

<sup>4</sup> Direct income estimates are based on the estimated number of employees multiplied by the annual average wage for the wood products sector for 1999, adjusted for inflation to 2000 dollars.

<sup>5</sup> Total income was estimated using an income multiplier of 1.51 (see Table 3.4-4).

**Table 3.4-16**  
**Logging Employment by Community Group**

	1999			Logging Percent Change 1990-1999
	Total Employment	Logging	Logging Percent of Total	
Baranof	13	1	8	-98
Central Prince of Wales	1,051	85	8	-73
Chatham Strait	223	40	18	-55
Cleveland Peninsula	195	180	92	na
Hydaburg	75	1	1	na
Juneau	16,284	55	0	na
Kake	257	53	21	-57
Ketchikan	7,014	195	3	-76
North Chichagof	411	99	24	-29
North Prince of Wales	361	74	20	-70
Petersburg	1,395	5	0	-93
Wrangell	823	2	0	na
Yakutat	381	13	3	-65
<b>Total</b>	<b>28,483</b>	<b>803</b>	<b>3</b>	<b>-60</b>

Notes:

1. Data are only presented for those community groups with logging employment in 1999. While there was no logging employment in the Kuiu Island, Metlakatla, and Stephens Passage community groups in 1999, logging employment in these communities accounted for 77, 16, and 61 jobs in 1990, respectively.

2. Data compiled from this source indicate that logging employment declined from 1,985 in 1990 to 803 in 1999, a decrease of 60 percent.

3. These data are for covered employment only. They do not include proprietors or self-employed workers.

4. The individual communities and named places that comprise these community groups are identified in Table 3.4-24.

na - There was no logging employment in 1990.

Source: Alaska DOL, 2002c.

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If the larger mills in the region were to close there would be little regional demand for the remaining volume under contract, especially those volumes that are under contract with the affected mills themselves. Under this scenario, assuming that there was no expansion in export permits for Tongass timber, it is likely that the majority of Tongass-related logging would no longer take place, resulting in a maximum loss of more than 574 logging job-years (Table 3.4-14). The largest absolute reductions in logging job-years would occur in the Ketchikan/Revilla (177 jobs), South Prince of Wales (92 jobs), Petersburg (67 jobs), Petersburg/Kake (63 jobs), Kuiu (58 jobs), and Wrangell (53 jobs) areas (Table 3.4-14). These estimates are based on an average ratio of logging jobs/MMBF and the assumption that the volumes under contract would otherwise be harvested.

While it is not possible to tie reductions in logging employment to specific communities, significant reductions or a complete stop in logging activities would have significant effects on those communities that continue to have a relatively large share of employment in logging. Actual employment data is not available at the community level, but the data by community group presented in Table 3.4-16 indicate that nearly all community groups in the region with logging employment have experienced significant reductions in this employment over the last 10 years. It is, however, important to note that these employment data are by place of work and not place of residence. The number of logging jobs in the Cleveland Peninsula community group in 1999, for example, was notably larger than the number of residents in the area. These employment totals also include workers that do not reside in Southeast Alaska (nonresident workers). Nonresident workers comprised 35 percent of total employment in the Southeast Alaska wood products sector in 1994 (see Figure 3.4-3).

The projected ASQ provides another perspective on the number of jobs that could be forgone if the larger sawmills in the region were to close. The annual average NIC I component of the projected ASQ for the next decade under the current Forest Plan is 212 MMBF. Using the sawmill and logging job/MMBF ratios used in the preceding discussion, this would result in 431 and 413 sawmill and logging job-years being foregone, respectively. Using the sawmill and logging employment multipliers, estimated total (direct, indirect, and induced) foregone employment would be 1,694 job-years, which would be distributed throughout the region. This does, however, assume that the entire NIC I component of the ASQ would be harvested, which has not been the case in recent years, and assumes that sawmill employment would be higher in the future than it presently is, 459 job-years compared to approximately 276 jobs (see Figure 3.4-6). In addition, it may be noted that, historically, only 70 percent of the estimated NIC I volume has been sold and harvested.

The community discussions presented in the *Subregional Overview and Communities* section indicate that wood products-related activities play important roles in at least 11 of the 32 communities that were addressed. The majority of these communities are located on Prince of Wales Island. These communities include Coffman Cove, Craig, Hollis, Klawock, Naukati Bay, Thorne Bay, and Whale Pass. Other communities with a relatively heavy reliance on timber and logging activities include Ketchikan, Saxman, and Wrangell. Mill closures and harvest reductions over the past decade have likely had negative effects on all of these communities. This is not, however, reflected in 2000 Census data for some of these communities, which actually experienced population growth between 1990 and 2000 according to the census (Table 3.4-35). Other communities, such as Whale Pass, Wrangell, and Thorne Bay, saw declines in population over this period. Closure of the region's remaining larger mills and a partial reduction or complete halt in Tongass-related logging activity would likely have significant effects on these communities and could, in some cases, cause affected residents to move elsewhere looking for work.

In some communities, this potential loss of logging and related employment would be exacerbated by a loss of jobs in local Forest Service offices. Closure of the Tongass National Forest's timber program could reduce the Forest's budget by as much as a third, which would in turn lead to a reduction in employees, specifically those directly and indirectly related to the timber program (see the Tongass National Forest Budget discussion at the end of this section). While it is possible that some existing Forest Service employees would be assigned to other tasks, it is likely that some reduction in Forest Service employment would occur under this scenario. Forest Service Ranger District offices are located in Craig, Hoonah, Juneau, Ketchikan, Petersburg, Sitka, Thorne Bay, Wrangell, and Yakutat. All of these offices, with the exceptions of Hoonah, Juneau, and Yakutat, have more than 10 employees that work in forestry programs. The loss of these jobs or some of these jobs would be especially hard felt in the smaller communities, such as Craig and Thorne Bay.

Allowable Sale Quantity (ASQ) is the maximum quantity of timber that may be scheduled from suitable lands on the entire forest. Usually expressed as an annual average, it is a ceiling not a future sale level projection or target.

### **Long-term Effects**

This section addresses the potential effects of the alternatives on the future supply of National Forest timber based on the available ASQ calculated for each alternative. The ASQ is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period (36 CFR 219.3). It is usually expressed as an annual average. The ASQ is a ceiling; it is not a future sale level projection or target and does not reflect all of the factors that may influence future sale levels. This is discussed further in the *Timber* section of this document. The estimated ASQ by alternative is the maximum amount of timber that may be scheduled for sale from the suitable lands identified under each alternative. The ASQ consists of two non-interchangeable components (NICs): NIC I, which includes lands that can be harvested with normal logging systems, and NIC II, which is comprised of lands with especially high logging costs usually due to isolation or special equipment requirements. Acres included in the ASQ but not in NIC I are more costly to harvest and not likely to be cut under current market conditions.

Estimated annual average ASQ and NIC I volumes are presented by alternative for the first decade following implementation in Table 3.4-17. These volumes are divided into general log class and species type based on the ratios identified in Table 3.3-5. This table also includes projected non-National Forest harvests, which are assumed to be 91 MMBF based on Brooks and Haynes' (1997) estimate for 2005 (see Table 3.4-6 of this document). Harvest from private lands comprises the majority (75 MMBF) of the non-National Forest harvest, with harvest from other public lands accounting for the remaining 16 MMBF. As previously noted, harvests from private lands are exported as logs and not processed locally. Harvest from the Tongass National Forest accounted for 92 percent of the wood sawn in Southeast Alaska in 2000. Harvest from State land accounted for 7 percent (USDA Forest Service, 2001a). Estimated supply by alternative is presented graphically in Figure 3.4-14 using the NIC I volumes only.

The following section is divided into three parts. The first two parts evaluate the alternatives in terms of projected demand for 2005 and installed production capacity identified during the Forest Service's 2000 mill survey, respectively. The third part assesses the long-term effects of the alternatives in terms of employment and income.

**Demand.** Brooks and Haynes' (1997) medium projection for 2005 is used as one benchmark to evaluate the alternatives. This projection, summarized in Table 3.4-6, estimates that 152 MMBF of Tongass timber would be harvested in 2005. This estimate is consistent with the 2002 demand analysis that was developed to comply with Section 101 of TTRA and ensure that annual timber sale offerings are consistent with market demand (USDA Forest Service, 2000a). This projected level

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**Table 3.4-17  
Estimated Timber Supply (First Decade Annual Average)**

	Alternative								
	2005 <sup>1</sup>	1	2	3	4	5	6	7	8
<b>Total ASQ Harvested (MMBF log scale)<sup>2</sup></b>									
Hem-Spruce Sawlogs	--	158	158	144	158	127	56	106	59
Hem-Spruce Chip logs	--	73	73	66	73	59	26	49	27
Cedar Logs	--	28	28	26	28	23	10	19	11
Total Tongass	152	259	259	236	259	209	92	174	96
Non-Tongass National Forest <sup>3</sup>	91	91	91	91	91	91	91	91	91
<b>Total Southeast Alaska</b>	<b>243</b>	<b>350</b>	<b>350</b>	<b>327</b>	<b>350</b>	<b>300</b>	<b>183</b>	<b>265</b>	<b>187</b>
<b>NIC 1 Only Harvested (MMBF log scale)<sup>2</sup></b>									
Hem-Spruce Sawlogs	--	130	130	118	130	105	46	87	48
Hem-Spruce Chip logs	--	59	59	54	59	48	21	40	22
Cedar Logs	--	23	23	21	23	19	8	16	9
Total Tongass	152	212	212	194	212	171	75	143	79
Non-Tongass National Forest <sup>3</sup>	91	91	91	91	91	91	91	91	91
<b>Total Southeast Alaska</b>	<b>243</b>	<b>303</b>	<b>303</b>	<b>285</b>	<b>303</b>	<b>262</b>	<b>166</b>	<b>234</b>	<b>170</b>

<sup>1</sup> The 2005 baseline estimate is from Brooks and Haynes (1997) (see Table 3.4-6).

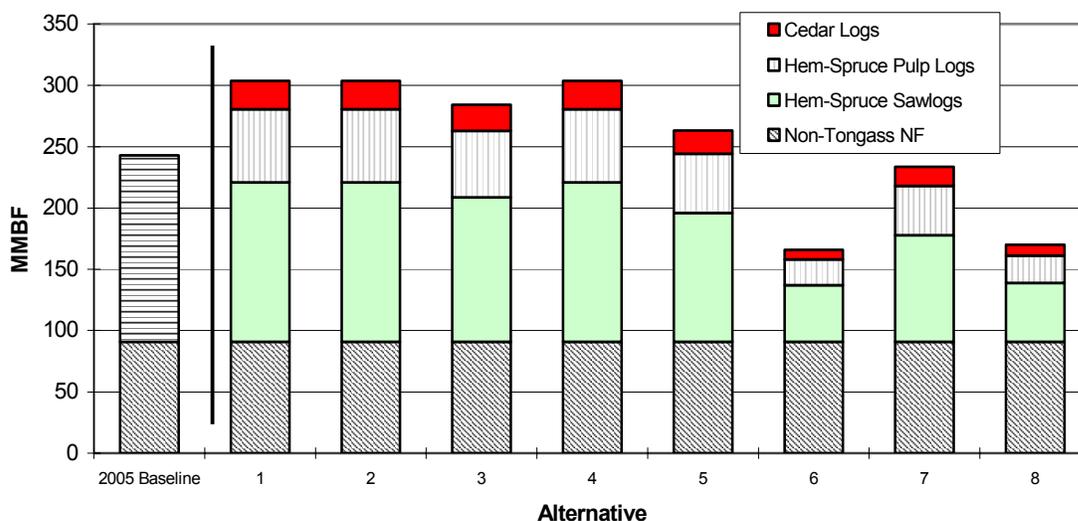
<sup>2</sup> ASQ and NIC I estimates were divided into species and log grades based on the ratios identified in Table 3.3-5.

<sup>3</sup> This 91 MMBF is from Brooks and Haynes' 2005 projection and consists of 75 MMBF from private lands and 16 MMBF from other public lands. Following the historic pattern, harvest from private lands is assumed to be exported in log form and not processed in Southeast Alaska. Non-Tongass harvest levels are assumed to be constant across alternatives.

ASQ = Allowable Sale Quantity

NIC I = Non-Interchangeable Component I. NIC I includes lands that can be harvested with normal logging systems.

**Figure 3.4-14  
Estimated Supply by Alternative: NIC I Only (First Decade Annual Average)**



Notes:

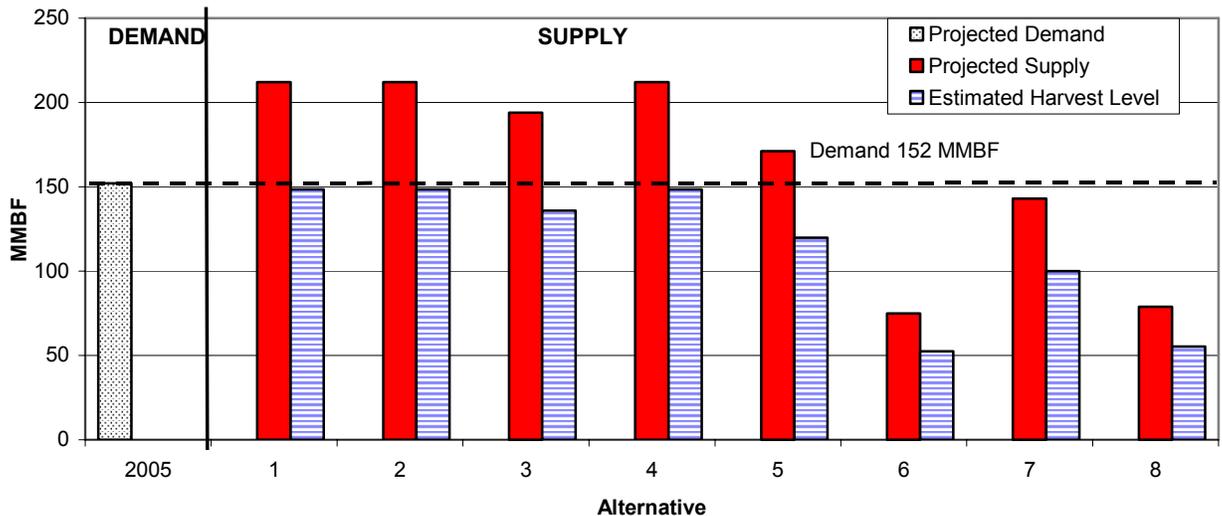
1. The 2005 baseline is from Brooks and Haynes (1997) (see Table 3.4-6).

2. The NIC I amounts presented here represent the maximum volumes that could be harvested under each alternative. It would take unprecedented market conditions for the entire NIC I volume to be harvested and sold. Historically, around 70 percent of the estimated NIC I volume has been sold and harvested.

3. The Non-Tongass National Forest component is from Brooks and Haynes' 2005 projection and consists of 75 MMBF from private lands and 16 MMBF from other public lands. Following the historic pattern, harvest from private land is assumed to be exported in log form and not processed in Southeast Alaska. Non-Tongass harvest levels are assumed to be constant across alternatives.

of demand is compared with the estimated annual average NIC I component of each alternative for the first decade following implementation in Figure 3.4-15. It is important to understand that like the ASQ volume, the NIC I component is not a future sale level projection or target. Rather, it represents the maximum volume that could be harvested with normal logging systems. It would take unprecedented conditions to meet the maximum volume authorized for each sale by the programmatic Forest Plan. In order for this to occur, sales would need to consistently meet the upper limits established by the 1997 Forest Plan's standards and guidelines regulating timber sale design and resource protection. The sales would also need to meet the economic criteria required to sell and sale implementation would need to not be affected by litigation. Realistically, approximately 70 percent of the total volume allowed by the NIC I ceiling can be expected to be sold and harvested under any of the alternatives. This is reflected in the second set of bars on the supply side of Figure 3.4-15.

**Figure 3.4-15**  
**Projected Demand and Estimated Average Annual Supply, First Decade**



Notes:

1. The estimated demand for 2005 (152 MMBF) is based on the Brooks and Haynes (1997) medium scenario.
2. Estimated supply by alternative is based on the projected volume of the NIC I component of the ASQ. The projected volume of the NIC I component is not a projected harvest level. Realistically, approximately 70 percent of the total volume allowed by the NIC I ceiling can be expected to be sold and harvested under any of the alternatives. This is reflected in the second set of bars on the supply side of the figure.

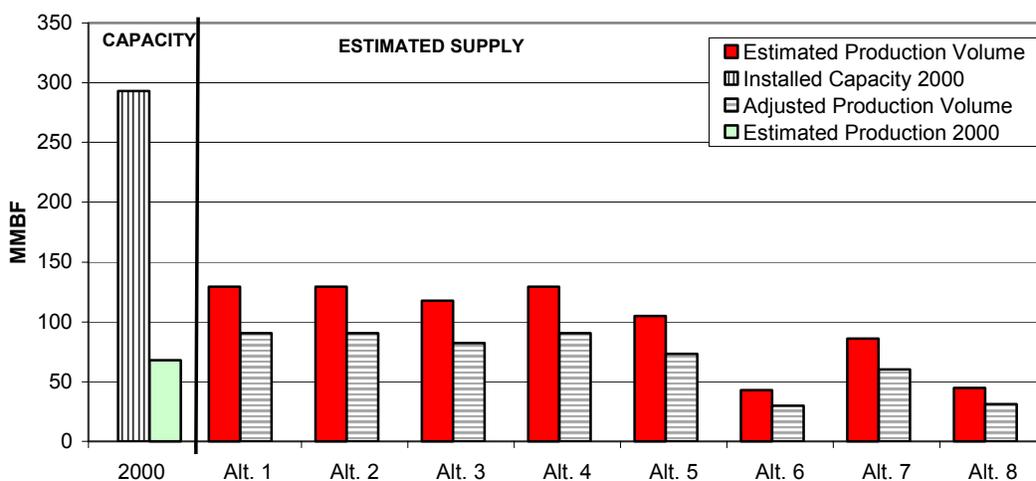
The Brooks and Haynes 2005 scenario provides one benchmark against which to evaluate potential harvest levels by alternative. As discussed in the affected environment section, this scenario merely describes possible levels of activity given certain assumptions. As no supply curves and subsequent price equilibrium are used in these studies, their results do not correspond to an economic concept of demand and are more correctly viewed as predicted levels of production and sales under key assumptions. It is, therefore, important to note that the results of the Forest Service's 2000 mill survey and data from the annual Timber Supply and Demand reports, suggest a number of differences between Brooks and Haynes' (1997) assumptions and actual conditions in 2000. Brooks and Haynes assumed, for example, that North

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America's share of Japanese softwood lumber imports would range from 70 to 76 percent, depending on their scenario. North America accounted for just 61 percent of Japanese softwood lumber imports in 1999 (USDA Forest Service, 2001c). Similarly, Brooks and Haynes assumed that 25 percent of lumber production would go to domestic U.S. markets. According to the mill survey, 72 percent of production in 2000 supplied domestic markets. It is, however, likely that much of this timber was remanufactured and then exported.

**Installed Production Capacity.** Estimated installed production capacity and percent utilization are identified by mill in Table 3.4-5. Installed production capacity is compared with the estimated sawlog component of the average annual NIC I volumes by alternative for the first decade following implementation in Figure 3.4-16. The installed capacity figure identified in Figure 3.4-16 was adjusted between the Draft and Final SEIS to account for the permanent closure of the Annette Island Sawmill, Gateway Forest Products (lumber), and Metlakatla Forest Products facilities. The actual mill production total was also adjusted to exclude production at the Gateway Forest Products (lumber) facility in 2000. There was no production at the Annette Island Sawmill or Metlakatla Forest Products facilities in 2000. These adjustments resulted in a revised installed mill capacity of 293 MMBF, actual mill production of 68 MMBF, and a 23 percent utilization rate (see Table 3.4-5).

**Figure 3.4-16**  
**Sawmill Capacity for 2000 and Estimated Average Annual Supply, First Decade**



**Notes:**

1. Installed capacity (293 MMBF) is the installed production capacity identified through a survey in 2000 (see Table 3.4-5). The estimated production total for 2000 (68 MMBF) is provided for comparison. This total was adjusted to exclude production at the Gateway Forest Products (lumber) facility in 2000.
2. The NIC I volumes are the estimated sawlog components of the projected NIC I volumes. This is assumed to be 61 percent of total NIC I volume for all alternatives. It is important to understand that projected NIC I levels by alternative are not projected harvest levels. It would take unprecedented conditions to meet the maximum volume authorized for each sale by the programmatic Forest Plan. Realistically, approximately 70 percent of the total volume allowed by the NIC I ceiling can be expected to be sold and harvested under any of the alternatives. This is reflected in the second set of bars on the supply side of the figure.

The estimated sawlog components of the projected NIC I volumes range from 15 percent of the adjusted installed production capacity (293 MMBF) under Alternatives 6 and 8 to 44 percent under Alternatives 1, 2, and 4 (Figure 3.4-16). Again, it is important to recognize that the NIC I component is not a future sale level projection or target. Rather, it represents the maximum volume that could be harvested with normal logging systems. As noted above, it would take unprecedented conditions to

meet the maximum volume authorized for each sale by the programmatic Forest Plan. Realistically, approximately 70 percent of the total volume allowed by the NIC I ceiling can be expected to be sold and harvested under any of the alternatives. This is reflected in the second set of bars on the supply side of Figure 3.4-16. Assuming this were the case, the sawlog component of the average annual harvest over the next decade would range from 10 percent (Alternative 6) to 31 percent (Alternatives 1, 2, and 4) of the adjusted installed production capacity (293 MMBF). This would be equivalent to 0.4 (Alternative 6) to 1.3 (Alternatives 1, 2, and 4) times total adjusted mill production in 2000 (68 MMBF).

**Employment and Income.** Projected levels of employment and income are presented by alternative in Table 3.4-18. These estimates are based on the annual

**Table 3.4-18  
Projected Timber Industry Employment at Full Implementation (First Decade, Annual Average)**

	Alternative								
	2000	1	2	3	4	5	6	7	8
<b>Actual (2000) and Projected Harvest NIC I Volumes (MMBF)<sup>1</sup></b>									
Tongass National Forest	147	212	212	194	212	171	75	143	79
Total Harvest <sup>2</sup>	338	303	303	284	303	263	161	232	164
<b>Employment (Average Annual)</b>									
<b>Direct Employment<sup>3</sup></b>									
Logging <sup>4</sup>	711	591	591	556	591	511	324	456	332
Sawmills <sup>5</sup>	280	431	431	394	431	347	152	290	160
<b>Total</b>	<b>991</b>	<b>1,021</b>	<b>1,021</b>	<b>950</b>	<b>1,021</b>	<b>858</b>	<b>476</b>	<b>747</b>	<b>492</b>
<b>Total Employment (Direct, Indirect, Induced)<sup>6</sup></b>									
Logging	1,365	1,134	1,134	1,067	1,134	981	622	876	636
Sawmills	585	900	900	824	900	726	318	607	335
<b>Total</b>	<b>1,950</b>	<b>2,034</b>	<b>2,034</b>	<b>1,891</b>	<b>2,034</b>	<b>1,707</b>	<b>940</b>	<b>1,483</b>	<b>972</b>
<b>Income (Million 2000\$)</b>									
<b>Direct Income<sup>7</sup></b>									
Logging	31.5	26.2	26.2	24.6	26.2	22.6	14.3	20.2	14.7
Sawmills	12.4	19.1	19.1	17.5	19.1	15.4	6.8	12.9	7.1
<b>Total</b>	<b>43.9</b>	<b>45.3</b>	<b>45.3</b>	<b>42.1</b>	<b>45.3</b>	<b>38.0</b>	<b>21.1</b>	<b>33.1</b>	<b>21.8</b>
<b>Total Income (Direct, Indirect, Induced)<sup>6</sup></b>									
Logging	43.8	36.4	36.4	34.2	36.4	31.5	19.9	28.1	20.4
Sawmills	18.7	28.8	28.8	26.4	28.8	23.3	10.2	19.4	10.7
<b>Total</b>	<b>62.6</b>	<b>65.2</b>	<b>65.2</b>	<b>60.6</b>	<b>65.2</b>	<b>54.7</b>	<b>30.1</b>	<b>47.6</b>	<b>31.2</b>

<sup>1</sup> It is important to note that the NIC I levels by alternative that form the basis of these employment and income estimates are not projected harvest levels. Rather, they represent the maximum volumes that could be harvested under each alternative. It would take unprecedented conditions for the entire NIC I volume to be harvested and sold under any of these alternatives. Realistically, approximately 70 percent of the estimated NIC I volume can be expected to be sold and harvested. As a result, the employment and income estimates presented in this table likely overestimate the employment and income that would be associated with each alternative. They do, however, allow comparison between alternatives.

<sup>2</sup> Total harvest includes Tongass, Private (Native Corporation), and State harvests. Private and State harvests are assumed to remain constant at 91 MMBF under all alternatives.

<sup>3</sup> Logging and sawmill job/MMBF ratios, 1.95 jobs/MMBF and 3.33 jobs/MMBF, respectively, are based on average levels of employment per unit of product output for the 1990 to 1994 period. This time period includes both high levels of production in 1990 (resulting in low levels of employment per unit output) and lower levels in 1993 and 1994. As a result, these averages provide a reasonable estimate of the equilibrium level of employment per product.

<sup>4</sup> Logging employment is calculated by multiplying total Southeast Alaska harvest (including non-Tongass harvest) by the appropriate ratio. Timber sales on the Tongass now include an Optional Removal clause that allows sale purchasers to leave behind utility logs. These logs still have to be purchased as part of the timber sale but the purchaser no longer has to remove them, saving on logging and haul costs. As a result, applying the historic logging jobs/MMBF ratio to the ASQ and NIC I numbers may result in an overestimate of potential associated employment.

<sup>5</sup> Sawmill employment is calculated based on the estimated sawlog share of harvest on the Tongass (61 percent). Non-Tongass timber is assumed to be exported without local processing.

<sup>6</sup> Employment and income multipliers are from the 1998 IMPLAN model (see Table 3.4-4).

<sup>7</sup> Direct income is estimated using the annual average wage for the wood products sector for 1999, adjusted for inflation to \$44,330 in 2000 dollars.

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average NIC I component of the ASQ and calculated using the same job/MMBF ratios used in the short-term effects section (3.33 sawmill jobs/MMBF and 1.95 logging jobs/MMBF). These estimates assume that the entire NIC I component for 2002 to 2012 would be harvested, which is, as noted in the preceding sections, unlikely to occur. They also assume a linear relationship between harvest and employment levels, with a one percent change in harvest resulting in a one percent change in employment. As noted in the short-term effects section, this rarely occurs in the real world.

The logging employment totals identified in Table 3.4-18 also include jobs associated with non-Tongass National Forest harvest activities. Non-Tongass harvest is assumed to be 91 MMBF for all alternatives. This estimate is based on Brooks and Haynes' medium scenario for 2005. Non-Tongass harvest is assumed for the purpose of this analysis to be exported in unprocessed form.

Assuming that the entire NIC I component were to be harvested over the next decade, average annual direct wood products employment would range from 492 jobs under Alternative 6 to 1,021 jobs under Alternatives 1, 2, and 4. Approximately 177 of these jobs would be associated with non-Tongass harvests under each alternative. Average annual total employment (direct, indirect, and induced) would range from 972 jobs under Alternative 6 to 2,034 jobs under Alternatives 1, 2, and 4. The potential effects on direct and total income are also summarized by alternatives in Table 3.4-18.

#### Recreation and Tourism

The following analysis addresses recreation and tourism over the decade following implementation. Recreation supply is subject to cumulative impacts with the effects of timber harvest activities on recreation places accumulating over time and increasing impacts felt in later decades.

#### *Supply*

The general methodology for deriving projected levels of recreation and tourism employment is described in detail in the affected environment part of this section. Three types of recreation opportunity settings (ROS 1, ROS 2, and ROS 3) are used in the economic analysis. Timber harvest and other activities result in a reclassification of certain acres from one ROS group to another. Road construction, for example, will generally cause a given area to be reclassified as ROS 3 (Roaded Natural, Roaded Modified, and Rural). The availability for use of ROS 3 designations also depends upon the connection between proposed road networks and ferry landings or local communities. Had these acres been classified as ROS 1 (or ROS 2) previously, the result would be a net reduction of ROS 1 (or ROS 2) and an increase in ROS 3. Depending upon the relative demand for different ROS groups, the result could be either an increase, a decrease, or no change in recreation and tourism activity. If, in the current example, demand for ROS 1 exceeds supply and ROS 3 settings are in surplus, then the net result would be a decrease in recreational activity. If, however, supply exceeds demand for both ROS classes, the net impact on recreation and tourism activity is assumed for the purposes of this analysis to be zero.

Each ROS group has a maximum capacity based on the type of experience expected within the setting. ROS 1 has the lowest capacity per acre because it provides primitive recreation opportunities that require that users not be within sight or sound of other parties. While ROS 2 has a larger capacity per acre than ROS 1,

users in this setting expect to see only a few other parties during their trip. ROS 3 has the highest capacity and users in this setting may expect to interact frequently with others. Timber harvest activity could, therefore, result in an increase in recreation capacity measured in terms of RVDs, because areas classified as ROS 1 or ROS 2 would be converted to ROS 3.

**Demand**

Future demand for recreational activity on the Tongass National Forest was predicted using a linear projection of total RVDs (see Figure 3.4-7). Historical patterns of RVD use by ROS class were then used to predict future recreation and tourism demand by ROS class. Using this methodology, estimated demand for ROS 2 class RVDs (Semi-Primitive Motorized) exceeded estimated supply of ROS 2 settings in 1998. Differences in projected levels of recreation use between alternatives are small because ROS 2 is the only setting where demand exceeds supply in the first decade of this analysis and effects related to harvest activity have had little time to accumulate. As discussed in the Affected Environment section, the finding that demand exceeds supply is based on the supply of ROS 2 opportunities in identified recreation places only and assumes that there would be no change in the current availability of recreational settings. These assumptions do not accurately reflect underlying supply realities but were necessary to allow a quantitative comparison of the alternatives.

**Consumption**

Projected supply and consumption are presented in RVDs by alternative for the next decade in Table 3.4-19.

**Table 3.4-19  
Recreation/Tourism Supply, Demand, and Consumption (First Decade, Annual Average)**

	2000	2005	Alternative							
			1	2	3	4	5	6	7	8
<b>Supply (1,000 RVDs)</b>										
ROS 1	---	1,489	1,435	1,435	1,439	1,435	1,459	1,489	1,466	1,489
ROS 2	---	1,825	1,798	1,798	1,801	1,799	1,804	1,822	1,808	1,821
ROS 3	---	2,998	3,431	3,431	3,399	3,427	3,253	3,008	3,195	3,010
<b>Total</b>		6,313	6,664	6,664	6,639	6,662	6,516	6,319	6,469	6,319
<b>Demand (1,000 RVDs)</b>										
ROS 1	672	816								
ROS 2	2,084	2,530								
ROS 3	605	734								
<b>Total</b>	3,361	4,080								
<b>Projected Consumption (1,000 RVDs)</b>										
ROS 1	---	816	816	816	816	816	816	816	816	816
ROS 2	---	1,821	1,798	1,798	1,801	1,799	1,804	1,822	1,808	1,821
ROS 3	---	734	734	734	734	734	734	734	734	734
<b>Total</b>	---	3,372	3,349	3,349	3,352	3,350	3,354	3,373	3,359	3,372

Source: USDA Forest Service. See text for explanations.

**Employment and Income**

Projected average annual recreation and tourism-related employment and income is presented by alternative in Table 3.4-20. Direct employment was calculated using a job/RVD ratio of 0.00074, which was developed for the 1997 Forest Plan Revision Final EIS (see the *Affected Environment* subsection of this section). Nonresident recreational activities were assumed to account for 44 percent of direct employment. Direct nonresident employment also includes an estimate of the jobs associated with non-Tongass recreation and tourism activities pursued by nonresidents. This category is intended to represent the jobs associated with recreation and tourism activities that do not physically take place on the Tongass. These types of activities

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include viewing scenery from cruise ships (see Table 3.4-20, footnote 3). The distinction between resident- and nonresident-related employment is important because jobs generated by nonresident expenditures on goods and services are considered comparable to an export industry that brings new money into the region. Expenditures by local residents, on the other hand, represent a recirculation of money that is already present in the regional economy and are, therefore, not typically identified as “new” money. However, if residents are substituting local recreation for non-local recreation then their money can be considered to be money that would otherwise not be present in the local economy. The extent to which this is the case can only be identified by surveying local residents and asking detailed questions about their substitution decisions with respect to Tongass-based recreation (Rudzitis and Johnson, 2000). This type of information is not available for the Tongass and, more importantly, inclusion of resident recreation-related employment in the final summary table would have little effect on these results, which show very little difference across the alternatives under either scenario.

**Table 3.4-20  
Recreation/Tourism Related Employment (First Decade, Annual Average)**

	Alternative								
	2000	1	2	3	4	5	6	7	8
<b>Employment (Jobs)</b>									
Direct Employment <sup>1</sup>	2,295	2,477	2,477	2,479	2,478	2,481	2,495	2,484	2,494
Total Employment <sup>2</sup>	2,776	2,997	2,997	3,000	2,998	3,002	3,019	3,006	3,017
Nonresident Recreation-Related Direct Employment <sup>3</sup>	4,278	5,013	5,013	5,014	5,013	5,014	5,020	5,016	5,020
Total Nonresident Recreation- Related Employment	5,176	6,065	6,065	6,066	6,066	6,067	6,075	6,069	6,074
<b>Income (Million 2000\$)</b>									
Direct Income <sup>4</sup>	46.3	50.0	50.0	50.0	50.0	50.1	50.3	50.1	50.3
Total Income <sup>5</sup>	61.1	66.0	66.0	66.0	66.0	66.1	66.4	66.2	66.4
Nonresident Recreation-Related Direct Income	86.3	101.1	101.1	101.1	101.1	101.2	101.3	101.2	101.3
Total Nonresident Recreation- Related Income	113.9	133.5	133.5	133.5	133.5	133.5	133.7	133.6	133.7

<sup>1</sup> Direct employment was estimated using a job/RVD ratio of 0.00074 (average annual).

<sup>2</sup> Total (direct, indirect, and induced) employment estimates were calculated using a 1.21 employment multiplier (see Table 3.4-4).

<sup>3</sup> Nonresident recreation-related employment was calculated using the assumption that 44 percent of ROS 1, 2, and 3 RVDs are consumed by nonresidents. This estimate also includes non-Tongass-related recreation employment, which is assumed to remain constant across all of the alternatives. This estimate was developed by subtracting estimated direct nonresident Tongass recreation-related employment in 2000 (1,009) from total estimated nonresident recreation-related employment in 2001 (4,278; see Table 3.4-3). The resulting estimated total nonresident, non-Tongass, recreation-related employment (3,269) was projected to increase by 20 percent by 2005. This increase is half the increase in growth of Juneau cruise ship passenger volumes between 1995 and 2000.

<sup>4</sup> Direct income is estimated based on the 1999 average annual salary for the recreation and tourism sector (\$19,778; see Table 3.4-3) adjusted for inflation to \$20,174 in 2000 dollars.

<sup>5</sup> Total (direct, indirect, and induced) income estimates were calculated using a 1.32 income multiplier (see Table 3.4-4).

#### **Other Potential Impacts**

While the differences in total employment between the alternatives are very small, it should be noted that the preceding ROS-based analysis does not capture all the potential effects of the proposed alternatives on tourism. The ROS-based analysis addresses the effects of the alternatives upon Forest recreation and an estimate of employment and income associated with nonresident, recreation and tourism that does not take place on the Forest is also included. However, the non-Tongass estimates do not vary by alternative and the projected change in RVDs is based on changes in ROS settings, which do not fully reflect the potential changes that

wilderness designation could have upon the tourism industry. Potential changes not captured in the preceding analysis include impacts associated with restricting group sizes and helicopter landing tours in wilderness. These impacts are discussed in the following sections.

**Group Sizes.** Current wilderness management standards and guidelines on the Tongass generally recommend considering a party size of no more than 12 persons on any one site or activity. Party sizes in Semi-primitive ROS settings outside of Wilderness, such as SPNM and SPM in LUD II areas, should generally be limited to 12 to 20 people. Larger party sizes may be allowed in some limited instances (see USDA Forest Service, 1997b, page 4-41). Outfitter/guides serving groups with more than 12 persons account for a large number of visitors, but this use tends to be concentrated in relatively few areas of the Forest. These areas include the Chichagof, Taku-Snettisham, North Baranof, Behm Islands, Keku, and Spires roadless areas. These areas would all be designated wilderness under Alternative 8. Businesses serving large volumes of clients could be potentially displaced or forced to change their operations. Displacing large guided tours from one location to another could also negatively affect users at other locations. At the same time, limiting the size of groups could serve to benefit other, smaller outfitter/guide businesses. This is discussed further in the *Recreation and Tourism* section. The potential economic impacts of these types of restrictions are difficult to project. While this type of intensive use presently occurs at a limited number of sites, future demand for this kind of activity is difficult to project at this time. The annual number of outfitter/guide clients using the shoreline areas of the north part of the Forest, for example, increased from 1,550 in 1994 to 14,000 in 1999 (USDA Forest Service, 2002f).

**Helicopter Landing Tours.** Designating areas that are presently helicopter landing tour destinations as wilderness could negatively affect businesses providing this service. This would likely be the case under Alternative 8, which proposes to designate the Roadless Area that contains the Juneau Icefield as wilderness. Helicopter landing tours also occur in a number of locations elsewhere on the Forest, including the Revilla and Spires roadless areas. The numbers of visitors are, however, much lower than those to the Juneau Icefield. The Revilla roadless areas would be designated wilderness under Alternative 8. The Spires Roadless Area would be designated wilderness under alternatives 3, 4, 6, 7, and 8. Future helicopter tours are likely to continue to occur in proximity to areas where there are clusters of potential clients, such as Juneau, Ketchikan, and Sitka, and to a lesser extent Petersburg and Wrangell.

Gross revenues associated with commercial helicopter landing tours on the Juneau Icefield were estimated to be in the neighborhood of \$13 million to \$26 million in 2001. While much of this revenue is paid to the cruise lines and vendors from outside the region, a portion is retained locally to pay wages and salaries and purchase supplies. Approximately 200 individuals are employed each year by helicopter companies and subcontractors for work directly related to commercial icefield landing tours (USDA Forest Service, 2002g). This employment and associated income, as well as other landing tour-related local expenditures, could be foregone under Alternative 8.

### Mining

While it is not possible to project the potential effects of the proposed alternatives on mining employment or income, allocating areas to Recommended Wilderness could affect mining activities in the future. Allocating an area to Recommended Wilderness would not affect existing or proposed mining activities, but may make minerals more costly to develop. If recommended areas are designated as

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wilderness by Congress, then these areas would be closed to mineral entry, subject to valid existing mineral rights. Mineral exploration and development is permitted under LUD II but these activities are constrained by more restrictive protocols than are in place in the majority of LUDs. Approximately 148 locatable mineral resource deposits have been identified on the Tongass and grouped into 52 identified mineral activity tracts. The percentage of these areas that would be located in wilderness and other restrictive LUDs ranges from 25 percent under Alternative 1 to 64 percent under Alternative 8. The percentage of areas that are believed to have undiscovered mineral resources that would be located in Recommended Wilderness and other restrictive LUDs ranges from 35 percent under Alternative 1 to 90 percent under Alternative 8. Future mining employment and income could be restricted accordingly, depending on whether these locatable deposits would be economically viable in the future.

#### Transportation and Utilities

Residents of Southeast Alaska are dependent on air and water transportation for travel between most communities, rather than roads or rail. There are limited road connections between the region and the continental road system. There are also limited road connections between communities. Several possibilities exist for State Highways that could connect some Southeast Alaska communities to the continental road system, and for new internal corridors. Restrictions on transportation corridors as a result of wilderness designation could limit road access to a number of communities, which could in turn limit types of future economic development in those communities and affect residents' quality of life in terms of access to emergency facilities, recreation, and other communities. These effects may be perceived as negative by some community members, while others may consider some aspects of limited access to have a positive effect on their quality of life. Restrictions on internal transportation corridors and transportation connections to road systems outside the region could also affect future economic development for the region as a whole, by limiting potential transportation routes for the exchange of goods and services. This may be considered as either positive or negative by some residents.

Alternatives 1 through 7 would have little effect on the implementation of the Southeast Alaska Transportation Plan (SATP; Alaska Department of Transportation and Public Facilities, 1999, as amended) because most planned developments would take place in existing developed areas. However, under Alternative 8, development of the proposed South Wrangell ferry terminal and road connection could be restricted, as could the ultimate development along all the potential transportation corridors identified in the SATP.

With two exceptions, Alternatives 1 through 7 would have little or no effect on other potential regional transportation developments that are not included in the SATP. Construction along one potential corridor, along the west side of Lynn Canal, could be restricted under Alternatives 6 and 7 by reclassification of land to Recommended Wilderness and eventual designation as wilderness. Alternatives 3, 5, 6, and 7 would similarly affect development of a road connection between Kake and Petersburg via Duncan Canal. Alternative 8 would affect both of these potential routes, along with several others that have received consideration in recent years. The potential effects of the alternatives on transportation opportunities are discussed further in the *Transportation and Utilities* section of this SEIS.

The State of Alaska has proposed corridors for transmission lines and/or undersea cables to link many Southeast Alaska communities to British Columbia. An intertie corridor, connecting the Swan Lake project (near Carroll Inlet) with the Tyee project (on the Bradfield Canal) has been permitted and is planned for construction beginning in summer 2003. A number of other potential interties could include

powerlines between a number of different communities, including some of the smaller and more remote communities, such as Kake and Meyers Chuck. Restrictions on transmission line corridors could affect future community development, as well as limiting the provision of basic services to existing community residents and businesses. It could also limit possible power generation options for some communities. Many Southeast Alaska communities use diesel-powered generation plants for electricity.

Alternatives 1 through 4 would have little or no effect on power transmission line developments. The other alternatives could potentially affect future projects, with Alternative 8 having the greatest effect. The potential effects of the proposed alternatives on utilities are discussed in further detail in the *Transportation and Utilities* section of this SEIS.

### **Salmon Harvesting and Processing**

There is not expected to be any significant change to the commercial fishing or fish processing industries over the next decade as a result of National Forest activities. As noted in the Affected Environment discussion, much of the future of the fishing industry in Southeast Alaska is expected to depend upon occurrences outside of the Tongass National Forest such as off-shore harvest levels and changes in ocean currents. In addition, a large segment of the commercial fishing industry operates under a limited entry harvest system. New permit holders are not quickly added to the market during high fish harvest years, nor are they removed during periods of low harvest. The result in either case is the same number of commercial fishers catching either more or less fish.

The 1997 Final EIS noted that the amount of acreage of timber harvest was at most less than 20,000 acres per year, representing approximately 0.5 percent of the total remaining productive old growth (or 5 percent over the next decade) and less than 0.02 percent of the entire Forest. Under Alternative 1, an estimated maximum average of 2,000 acres would be harvested a year over the next four decades (see Table 3.2-6). This level of harvest in conjunction with the Riparian Management standards and guidelines established in the 1997 Forest Plan, is not expected to have a significant effect on commercial fisheries employment over the next 10 years.

### **Natural Amenities and Quality of Life**

As discussed in the Affected Environment portion of this section, natural amenities and local quality of life have increasingly been recognized as important factors that serve to attract and retain residents. It is, however, very difficult to determine the effect of the different alternatives on local amenities and, further, on the economic activity that these amenities are believed to indirectly generate. In most cases and localities the impacts of the action alternatives relative to the no-action alternative on amenities are not expected to be significant enough in themselves to result in measurable changes in economic activity.

Some respondents commenting on the Draft SEIS raised the possibility that wilderness designation could affect adjacent private property values. Some felt that wilderness designation would increase adjacent private property values, while others felt it would have a negative effect on these values. In general, it is possible that wilderness designation could have either of these effects or no effect at all, depending on a number of different factors including site specific issues. This type of analysis is site specific and beyond the scope of this programmatic analysis.

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#### Summary of Impacts

Projected annual average employment and income levels are summarized for the next 10 years in Table 3.4-21. In terms of direct employment in the wood products and recreation and tourism industries, the alternatives range from 5,497 jobs under Alternative 6 to 6,034 jobs under Alternatives 1, 2, and 4 (Table 3.4-21). Most of the difference between these two values (538 jobs) is caused by differences in timber-related employment. Recreation and tourism employment shows much less variation across the alternatives, with a difference between high and low employment levels of less than 10 direct jobs. Direct earnings follow a similar pattern, as do total employment and earnings.

The employment and income estimates for the wood products sector assume that the entire NIC I volume projected for each alternative for the first decade following implementation would be harvested. As previously noted, it should be recognized that it would take unprecedented conditions for the entire NIC I component of the ASQ to be sold and harvested. Realistically, approximately 70 percent of the estimated NIC I volume can be expected to be sold and harvested. Recreation and tourism employment and income estimates are for nonresident, recreation and tourism activity only.

Potential direct employment effects are also shown in Table 3.4-22, which shows the projected change in employment by sector as a percent of current totals. Projected recreation and tourism employment is expected to increase by approximately 17 percent from 2000 levels under all of the alternatives. The majority of this projected increase is due to the projected change in non-Tongass, nonresident, recreation related employment, which does not vary by alternative. Changes in projected wood products employment range from a loss of approximately 52 and 50 percent of total 2000 employment under Alternatives 6 and 8, respectively, to a gain of about 3 percent under Alternatives 1, 2, and 4.

Approximately 148 locatable mineral resource deposits have been identified on the Tongass and grouped into 52 identified mineral activity tracts. The percentage of these areas that would be located in Recommended Wilderness and other restrictive LUDs ranges from 25 percent under Alternative 1 to 64 percent under Alternative 8. Areas believed to have undiscovered mineral resources would also be affected. Future mining employment and income could be restricted accordingly, depending on whether these locatable deposits would be economically viable in the future.

Wilderness designation could affect regional transportation projects, which could, in turn, restrict transportation access to affected communities and the region as a whole. These restrictions could indirectly affect employment and income by limiting community and regional economic development opportunities. This may also be the effect of potential restrictions on regional utility projects. Alternatives 1, 2, and 4 would have little effect on regional transportation and utility projects. The other alternatives could potentially affect future projects, with Alternative 8 having the greatest effect.

#### Economic Efficiency Analysis

Economic efficiency analysis takes a national accounting approach and seeks to measure all of the costs and benefits to society associated with a given alternative and summarize them in the form of a Present Net Value (PNV). This type of analysis may be used to help identify alternatives that maximize net public benefits. PNV figures are calculated by subtracting costs from benefits to yield a net value. Future values (i.e., costs and benefits incurred and received in the future) are discounted using an appropriate discount rate to obtain a present value. The PNV of a given alternative is the discounted sum of all benefits minus the discounted sum of all costs associated with that alternative. Following Forest Service standard procedures, a four percent discount rate is used in this analysis.

**Table 3.4-21  
Projected Annual Average Employment and Income Effects by Alternative  
(First Decade)**

	2000	Alternative							
		1	2	3	4	5	6	7	8
<b>Direct Employment and Income</b>									
<b>Employment (Jobs)</b>									
Wood Products	991	1,021	1,021	950	1,021	858	476	747	492
Recreation/Tourism	4,278	5,013	5,013	5,014	5,013	5,014	5,020	5,016	5,020
<b>Total</b>	<b>5,269</b>	<b>6,034</b>	<b>6,034</b>	<b>5,963</b>	<b>6,034</b>	<b>5,873</b>	<b>5,497</b>	<b>5,763</b>	<b>5,512</b>
<b>Earnings (Million 2000\$)</b>									
Wood Products	43.9	45.3	45.3	42.1	45.3	38.0	21.1	33.1	21.8
Recreation/Tourism	86.3	101.1	101.1	101.1	101.1	101.2	101.3	101.2	101.3
<b>Total</b>	<b>130.2</b>	<b>146.4</b>	<b>146.4</b>	<b>143.3</b>	<b>146.4</b>	<b>139.2</b>	<b>122.4</b>	<b>134.3</b>	<b>123.1</b>
<b>Total Employment and Income</b>									
<b>Employment (Jobs)</b>									
Wood Products	1,950	2,034	2,034	1,891	2,034	1,707	940	1,483	972
Recreation/Tourism	5,176	6,065	6,065	6,066	6,066	6,067	6,075	6,069	6,074
<b>Total</b>	<b>7,127</b>	<b>8,100</b>	<b>8,100</b>	<b>7,957</b>	<b>8,100</b>	<b>7,774</b>	<b>7,015</b>	<b>7,552</b>	<b>7,046</b>
<b>Earnings (Million 2000\$)</b>									
Wood Products	62.6	65.2	65.2	60.6	65.2	54.7	30.1	47.6	31.2
Recreation/Tourism	113.9	133.5	133.5	133.5	133.5	133.5	133.7	133.6	133.7
<b>Total</b>	<b>176.5</b>	<b>198.7</b>	<b>198.7</b>	<b>194.1</b>	<b>198.7</b>	<b>188.3</b>	<b>163.8</b>	<b>181.1</b>	<b>164.9</b>

Notes:

1. Wood products employment and income estimates assume that the entire NIC I volume projected for each alternative for the first decade following implementation would be harvested. It would take unprecedented market conditions for the entire NIC I volume to be sold and harvested. Historically, around 70 percent of the estimated NIC I volume has been sold and harvested.
2. Recreation/tourism employment and income estimates are for nonresident, recreation and tourism-related employment only.

Sources: Tables 3.4-18 and 3.4-20.

**Table 3.4-22  
Projected Change in Direct Employment by Sector as a Percent of Current Totals**

Sector	2000	Alternative							
		1	2	3	4	5	6	7	8
Wood Products	991	3.1	3.1	-4.2	3.1	-13.4	-52.0	-24.6	-50.4
Recreation/Tourism	4,278	17.2	17.2	17.2	17.2	17.2	17.4	17.2	17.3

Source: Table 3.4-21.

Economic efficiency analysis takes a national accounting approach and seeks to measure all of the costs and benefits to society associated with a given alternative and summarize them in the form of a Present Net Value.

A major component of PNV is comprised of what economists term producer and consumer surplus. Producer surplus refers to the amount of money a company receives from sales over and above its costs of production and is analogous to the concept of profits. Consumer surplus, on the other hand, refers to the amount of benefit a person receives from a good minus the cost of purchasing it. This benefit is commonly defined as the maximum amount a person would be willing to pay for the good minus its actual price and is referred to as net willingness to pay (WTP). Where goods are traded in the market place, such as in the case of timber, consumer and producer surplus can be calculated after estimating the demand and supply schedules for the given market good. For goods that are not traded, such as

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forest recreation and tourism or ecosystem services, more elaborate techniques must be used.

The Present Net Value (PNV) of a given alternative is the discounted sum of all benefits minus the sum of all costs associated with that alternative.

From a theoretical standpoint, an efficiency analysis should measure all of the relevant economic values associated with the plan. These include the economic value generated from commodity production, the value experienced by recreationists and other users of the forest, the “non-use” values held by those who value the existence of the forest resource even if they do not use it, and the value of various services provided by the forest, such as water resource enhancement, that are not directly traded in any economic market place.

A number of comments received during the Draft SEIS comment period expressed concern that the economic efficiency analysis did not assign monetary values to the potential effects of the alternatives on other resources. Specific resource areas identified included commercial fishing and processing, subsistence, and mining. In addition, concern was expressed that the Draft SEIS did not assign monetary values to the potential effects of the alternatives on non-use values, ecosystem services, and quality of life or off-site benefits. Several comments suggested that by focusing on timber and recreation and tourism, the Draft SEIS failed to assess much of the value of natural ecosystems and the negative impacts associated with timber harvest. Comments suggested that positive benefits associated with wilderness that were not valued in the Draft SEIS included those associated with recreation and tourism, fish and wildlife habitat, water purification and regulation, carbon sequestration, genetic material, long-term forest productivity, and quality of life.

Given the complexity of forest ecosystems and the elusive nature of many of the values associated with them, accounting for all of these values in a single PNV measure is a practical impossibility. The following analysis quantifies values and costs related to timber harvest and recreation use in monetary terms. This by no means implies that the Forest Service believes that the other types of values mentioned above are unimportant. Many of the other sections in this document, in fact, present substantial amounts of information and analysis relative to the resources supporting these other values. Decision-makers and the public should consider the economic values presented in this section within the context of the information presented elsewhere in this document, much of which cannot readily be translated into economic terms.

The following analysis provides estimates of revenues for the timber program and estimated use values for recreation and tourism over a 160-year planning period. Costs include only those planning and administration costs that could be estimated to vary across different alternatives. It was assumed that any alternative would be fully implemented in the first year of the planning period, and future values were discounted at four percent. Table 3.4-23 displays these cost and benefits followed by more detailed explanations of their derivation. The potential effects of the proposed alternatives on mining, subsistence, and non-use and ecosystem service values, including passive use, ecosystem service, and quality of life values are assessed qualitatively.

#### **Timber**

The timber benefits presented in Table 3.4-23 are simply the present value of expected Forest Service Revenues from the timber sale program. Future timber sale revenues were estimated for the 160-year planning period using projected harvest volumes for each alternative. These volumes were calculated based on the estimated NIC I volumes by alternative. The harvest volumes were then multiplied by \$36.17 per MBF, the average value per MBF harvested on the Tongass from 1997 to 2001 (adjusted for inflation and expressed in 2000 dollars).

**Table 3.4-23  
Present Value for Recreation/Tourism, Timber Receipts, and Variable Program Costs (million 2000\$)**

	Alternative							
	1	2	3	4	5	6	7	8
<b>Benefits</b>								
Timber <sup>1/</sup>	207	207	191	207	171	85	145	88
Recreation/Tourism	6,573	6,573	6,579	6,574	6,594	6,617	6,601	6,616
<b>Costs<sup>2/</sup></b>								
NEPA Preparation	235	235	216	235	194	96	164	99
Sale Preparation	132	132	121	132	109	54	92	56
Sale Administration	52	52	48	52	43	21	36	22
Engineering Support	161	161	148	161	133	65	112	68
<b>Present Net Value</b>	<b>6,201</b>	<b>6,201</b>	<b>6,236</b>	<b>6,202</b>	<b>6,287</b>	<b>6,465</b>	<b>6,342</b>	<b>6,459</b>

Note: Cost and benefit streams extended over a 160-year analysis period and discounted at 4% per annum.

<sup>1</sup> Based on \$36.17 per MBF expected timber sale revenue

<sup>2</sup> Based on per MBF planning and support charges: \$41 for NEPA preparation; \$23 for sale preparation; \$9 for sale administration; and \$28 for engineering support.

Industry revenues and profits are omitted from the calculation. This is because efficiency analysis commonly assumes perfect competition in the private sector. This implies, in turn, that competing purchasers of federal timber will bid up the price of stumpage to the point where all economic profits (i.e., profits over and above a competitive rate of return to capital) are dissipated.

It is important to note that the PNV calculation for timber does not assign monetary values to perceived local benefits associated with timber-related employment and salaries and related economic activity, as well as other perceived benefits associated with capital investment in roads and log transfer facilities. These issues are addressed in the preceding economic impact assessment.

As previously noted, it is also important to recognize that the NIC I component is not a future sale level projection or target. Rather, it represents the maximum volume that could be harvested with normal logging systems. It would take unprecedented market conditions for the entire NIC I volume to be harvested and sold under any of these alternatives. Historically, around 70 percent of the estimated NIC I volume has been sold and harvested.

**Recreation and Tourism**

Unlike timber, recreation and tourism is not directly traded in the market place, and the techniques used to calculate receipts for recreational activity are considerably different than those used for timber revenues. Recreational users of the Tongass National Forest generally pay for only a small proportion of the total benefits they receive from the forest. The benefits they receive are not recorded in any market transaction and must therefore be estimated. The measure used in this analysis is average net willingness to pay, which represents the average amount an individual is willing to pay for a given recreational experience over and above what they actually did pay. The numbers presented here are derived from 1988 survey data. For general recreational activity, this figure is estimated at \$29.10 (2000\$) per RVD, and for sport fishing the estimate is approximately \$904 per RVD (2000\$). Using the proportion of 1994 total RVDs comprised by sport fishing, a weighted average of \$59.31 per RVD was derived. This figure represents the average amount a Tongass

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National Forest recreational user would be willing to pay for a day's recreation over and above expenses already incurred. These net willingness to pay figures are from the 1997 Forest Plan Revision Final EIS adjusted for inflation (USDA Forest Service, 1997a; p. 3-503).

Future recreation and tourism use on the Tongass was estimated using techniques described in the Affected Environment portion of this section and further detailed in the impact analysis of recreation and tourism activity presented above. Projected future value was derived by multiplying total RVD use by the average net WTP estimate of \$59.31. These values were then discounted using the standard 4 percent rate, and the resulting estimates are shown in the second row of Table 3.4-23. Recreation and tourism estimates are approximately 30 times higher than those for timber, indicating the importance of the Tongass National Forest as a recreation resource for both local residents and outside visitors. While the estimated present values for recreation and tourism are estimated to be significantly higher than those for timber, they show much less percent variation across alternatives than the timber estimates do.

There is the potential for substantial error in these value estimates, and decision makers and the public should avoid a mistaken sense of precision when considering them. Various aspects of recreation and tourism-related value, for example, were impossible to measure or estimate for this report. All RVDs have been treated as equivalent, but it is likely that net WTP varies for different ROS classes. Likewise, the net WTP value for a given recreation experience will vary according to a host of factors which may be impacted differently under the different alternatives. By using a constant dollar per RVD estimate, this takes only quantity into account and ignores quality. This quality can take many forms, but must include aesthetic considerations, personal attachments (in the case of local residents who habitually frequent the same "favorite places"), availability of fish and game, the effects of crowding, and ease of access. Moreover, these quality considerations will extend beyond recreational use directly occurring upon the Tongass National Forest to include cruise ship passengers and others who have come to the region to mainly experience its beauty and wild character.

Also, costs such as infrastructure development and maintenance (for trails and camp sites, for example) are not included. This is in contrast to timber, where infrastructure costs such as road construction are incorporated as reductions to the expected purchase price of Forest Service Timber. Technically speaking, PNV estimates for timber and recreation are not directly comparable as a result. Still, the magnitude of Forest Service infrastructure costs in recreation and tourism are likely quite small in relation to the overall value (or willingness to pay) generated by this activity, and their inclusion would not change the overall implications of the current analysis.

#### **Costs**

The Forest Service incurs various costs in the management of the national forests. Some of these can be directly attributed to a specific management activity or objective, but many others cannot. Likewise, some costs will vary depending upon specific activities stipulated in the forest plan. Others, however, are essentially fixed operating costs that will likely not vary for different alternatives. Only variable costs are included in the current analysis.

The costs presented in Table 3.4-23 are based on average costs resulting from planning and administration activities in conjunction with recent timber sale projects on the Tongass National Forest. They are expressed in terms of dollars per MBF, but this does not mean that timber is the only resource output being managed for or that the management of other resources does not also incur costs. The choice of

alternatives will undoubtedly affect Forest Service operating costs in ways not accounted for in this analysis, but our inability to accurately predict the way these costs differ across alternatives precludes their inclusion.

Additional costs may be imposed on organizations or individuals outside of the Forest Service. These costs are commonly termed “negative externalities” by economists. The current analysis makes no attempt to assign dollar values for the negative externalities that may be associated with the alternatives. Instead, the Forest Service addresses these by providing as much information as possible about the physical and ecological impacts of the alternatives, and using this information in the public participation process associated with the plan.

### **Salmon Harvesting and Processing**

The effects of the alternatives on fish resources are expected to be at or below the level predicted for Alternative 11 in the 1997 Forest Plan Revision Final EIS (1997 Final EIS pages 3-46 through 3-73). The analysis of effects on fish habitat included in the Forest Plan Final EIS is incorporated into the SEIS by reference. This is also the case with the commercial fishing portion of the economic efficiency analysis presented in the 1997 Final EIS (pages 3-490 and 3-491). This section of the 1997 Final EIS explains why there are not expected to be any significant changes to commercial fisheries employment as a result of National Forest activities.

### **Mining**

Estimates of mining PNV were also omitted from this analysis because it is not possible to quantify the potential effects of the alternatives on future mining activities. Allocating areas to Recommended Wilderness would not affect existing or proposed mining activities, but may make minerals more costly to develop in the future. As noted in the section on mining in the impact analysis, approximately 148 locatable mineral resource deposits have been identified on the Tongass and grouped into 52 identified mineral activity tracts. The percentage of these areas that would be located in Recommended Wilderness and other LUDs that would restrict development ranges from 25 percent under Alternative 1 to 64 percent under Alternative 8. Areas believed to have undiscovered mineral resources would also be affected. Future mining activities could be restricted accordingly, depending on whether these locatable deposits would be economically viable in the future. The potential effects of the alternatives on mining are discussed in more detail in the *Minerals* section of this document.

### **Subsistence**

Subsistence activities have significant economic, as well as cultural and spiritual value for many Southeast Alaska residents. However, there are a number of difficulties involved in trying to quantify these values in monetary terms. A recent study that attempted to quantify the economic importance of Alaska’s ecosystems used three different standard methods to estimate the statewide net economic benefits associated with subsistence (Colt, 2001). This study concluded that “(i)n summary, it remains quite difficult to measure the net economic value of subsistence in economic terms. Using standard techniques, one can come up with estimates that range from zero (using a \$4.00/lb replacement value less the cost of cash and labor input) to more than \$1.7 billion (upper bound on net willingness to accept compensation for lost subsistence opportunities)” (Colt, 2001; 37). Assigning an accurate economic value to subsistence is one significant problem in trying to calculate a PNV for subsistence. A second major problem involves quantifying the potential effects of the alternatives in terms of pounds of subsistence harvest foregone. This type of information is not available, as discussed in the *Subsistence* section of this SEIS.

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It is important to recognize that while it is not possible to assign subsistence a net economic value for the economic efficiency analysis, this does not mean that the potential effects of the alternatives on subsistence are not important. The potential effects of the alternatives on subsistence are addressed programmatically in the *Subsistence* section of this document. They are also discussed on a community basis in the *Communities* portion of the *Economic and Social Environment* section. The analysis presented in the Subsistence section assesses the potential effects of the alternatives in terms of abundance and distribution, access, and competition. In addition, formal subsistence hearings were held in 16 Southeast Alaska communities following publication of the Draft SEIS.

#### **Non-use and Ecosystem Services**

This section discusses non-use and ecosystem service values. Definitions of ecosystem services can be broad, including both use and non-use values. The following discussion uses a more narrow definition that applies to the group of services that is sometimes referred to as “life-support services.” This definition excludes non-use and quality of life values, which are discussed separately below, as well as recreation use.

Non-use values represent the value that individuals assign to a resource independent of their use of that resource. Non-use values include existence, option, and bequest values.

#### **Non-use Values**

Economists have argued that recreation use represents only a portion of the economic value of wilderness. There are also non-use values associated with wilderness. Non-use values represent the value that individuals assign to a resource independent of their use of that resource. These types of values, which include existence, option, and bequest values, are usually measured via surveys that ask people how much they would be willing to pay to preserve a particular area. These values represent the value that individuals obtain from knowing that the wilderness exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it would be left for future generations to inherit.

While the non-use values associated with the Tongass National Forest as a whole are no doubt considerable, they are extremely difficult to accurately measure, particularly on a per acre basis. The results from surveys in other areas do provide some insight to potential non-use values that might be associated with the proposed alternatives. The findings of a number of recent studies are summarized in Table 3.4-24. These studies attempt to quantify the non-use values associated with wilderness areas or other types of areas in Alaska. WTP values are typically calculated on a per household basis and then expanded to a broader population. A critical issue here becomes identifying the extent of the survey area. Summing these types of values per household across large areas generates very high values. This issue is evident in the different geographical extent of the areas surveyed in the studies summarized in Table 3.4-24.

Examining the results of two of the studies summarized in Table 3.4-24 (Walsh et al., 1984 and Pope and Jones, 1990), Loomis (2000) noted two trends that are relevant to this discussion. First, WTP per household increases with an increase in the number of acres proposed for wilderness protection, but at a decreasing rate. Second, existence, option, and bequest values in both cases represented about half the total value of wilderness.

The results of the studies summarized in Table 3.4-24 suggest that the non-use values associated with designating new wilderness on the Tongass are likely to be high, especially given the national importance of this issue. These values would likely increase with the number of acres, but at a lower rate. In terms of the proposed alternatives, the value per household is likely to be highest for Alternatives 8, 7, 6, and

5, in that order, with the amount of recommended wilderness ranging from 2 million acres under Alternative 5 to 9.5 million acres under Alternative 8.

The summary of recent studies presented in Table 3.4-24 is meant to provide some indication of the results of other studies, only. While there is a general consensus that non-use values of this type exist and federal policy includes approval of such techniques, the methodologies for measuring the size of these values are both controversial and difficult to apply in a consistent fashion.

**Ecosystem Services**

Ecosystem services are those services and benefits provided by healthy ecosystems. Definitions of ecosystem services can be broad, including both use and non-use values. A number of different definitions and groupings have been identified (Colt, 2001; Costanza et al., 1997; Krieger, 2001; Morton, 1999). Some definitions include consumptive uses, such as logging, fishing, and hunting, that can be considered market goods. The values associated with these types of services are discussed in the preceding sections. Other types of ecosystem services provide what might be considered long-term life support benefits to society as a whole. Examples of these types of benefits that pertain to forests include watershed services, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity (Krieger, 2001).

**Table 3.4-24  
Summary of Willingness-to-Pay Estimates of Existence Values**

Author (Date)	Study Location	Description of Resource	Description of Commodity	Annual Willingness to Pay (2000\$) <sup>1</sup>
Carson et al. 1992	Alaska: Prince William Sound	Prince William Sound coast and waters	WTP for spill prevention plan	\$3.13 per U.S. household per year (\$32.31 one-time)
Goldsmith and Hill 1998	Alaska: Bristol Bay Wildlife Refuges	13.2 million acre wildlife refuges made up of three separate refuges	WTP for preserving wildlife habitat in Bristol Bay.	\$26.05 to \$52.11 per household U.S.
Walsh, et al. 1984	Colorado	1.2 million acre designated wilderness area (2% of total state acreage) made up of 13 separate areas.	WTP to preserve existing wilderness areas in Colorado -- 1.2 million acres  -- 10 million acres	\$23.07 per Colorado household  \$52.75 (1984\$) per Colorado household
Reid et al. 1993	British Columbia	Current Wilderness in British Columbia.	WTP for doubling wilderness in British Columbia  WTP for tripling wilderness in British Columbia	\$11.80 per B.C. household (\$118.02 one-time)  \$15.02 per B.C. household (\$150.21 one-time)
Pope and Jones 1990	Utah	Bureau of Land Management land (BLM)	WTP for designation of BLM land in Utah million acres as wilderness. --2.7 million acres  --16.2 million acres	\$69.50 per household  \$121.49 per household
Loomis 2000 <sup>2</sup>	Western U.S outside Alaska	National Forest Roadless areas in Western U.S.	WTP to preserve roadless lands in the west	\$6.72 per acre

<sup>1</sup> Values were adjusted to 2000\$ using the Anchorage CPI for Alaska values and the U.S. CPI for all other areas.

<sup>2</sup> Estimated by Loomis using benefit-transfer approach from Walsh et al. (1989) and Pope and Jones (1990).

Sources: Colt, 2001; Loomis, 2000.

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Some economists have expressed concerns that ecosystem service values are not adequately considered in decision-making processes because they are not valued on a par with goods and services that are traded in commercial markets. A number of methods have been used to assign monetary values to these types of services. These methods include travel cost, hedonic pricing, and defensive expenditure approaches that use observed behavior to estimate values, as well as contingent valuation approaches that ask people what they would be willing to pay for an ecosystem service.

Costanza et al. (1997) recently estimated that the total value of the services currently provided by the world's ecosystems ranges from \$16 trillion to \$54 trillion per year, with an average value of \$33 trillion. Costanza et al.'s estimate involved the review and synthesis of a wide variety of existing studies and included estimates of recreation and cultural values, as well as more life-support-related services. Many of the studies used in their synthesis were based directly or indirectly on estimates of willingness to pay. Colt (2001) applied Costanza et al.'s values to Alaska and estimated that the ecosystem values associated with the state's lands and waters ranged from \$1.2 billion to \$1.6 billion. Colt's estimate only included the components of Costanza et al.'s analysis that he considered to relate directly to life support services. As noted with respect to non-use values, while the ecosystem service values on the Tongass are undoubtedly large, they are very difficult to accurately quantify in monetary terms.

The values identified by Costanza et al., for example, which are based on a wide variety of data sources and aggregated on a global scale, allow useful rough estimates of magnitude at the global scale, but they are not suitable for a detailed comparison of alternatives at the Forest-level. It is also very difficult to quantify the effects of the alternatives on physical and biological resources in unit values. However, as noted earlier, the fact that no monetary value is assigned to ecosystem services in this document does not lessen their importance in the decision making process. A large proportion of this document is devoted to assessing impacts to the forest resource that cannot be readily expressed in monetary terms.

A number of comments received on the Draft SEIS appeared to assume that Wilderness or LUD II recommendations are necessary for the long-term protection of non-commodity forest values. It is important to recognize when evaluating the potential effects of the alternatives on non-commodity forest values, such as non-use values, ecosystem services, and quality of life issues, that Wilderness or LUD II recommendation is not the only option available or in place to protect these values and resources. Under the 1997 Forest Plan, land use designations (LUDs) specify ways of managing an area of land and the resources it contains. LUDs may emphasize certain resources, such as remote recreation or old-growth wildlife habitat, or combinations of resources, such as providing scenic quality in combination with timber harvesting. Each LUD has a detailed management prescription, which includes standards and guidelines.

Under the 1997 Forest Plan, there are 15 LUDs that range from Wilderness to Timber Production, in terms of the level of development permitted. While each LUD has a different purpose and management emphasis, they may be generally grouped into four categories based on the kind of effects they potentially create. These four categories are wilderness, natural setting, moderate development, and intensive development (see Table 3.1-1 for a complete listing). Timber management and other types of development are only allowed in the moderate and intensive development LUDs. Not all lands allocated to development LUDs are available for timber production. Under the current Forest Plan (Alternative 1), 3.6 million acres or 22 percent of the Forest is allocated to Development LUDs. Approximately 664,000 acres of this area, or 4 percent of the forest, is estimated to be suitable for timber production (Table 3.4-25). Under Alternative 6, the most restrictive alternative from a

**Table 3.4-25.  
Land Use Designations and Estimated Suitable Lands by Alternative  
(1,000s Acres)**

LUD Group/Alternative	1	2	3	4	5	6	7	8
Wilderness	5,914	6,635	6,989	6,651	7,920	9,117	10,553	15,360
Natural Setting	7,247	6,526	6,433	6,510	5,823	6,577	3,731	295
Development	3,640	3,640	3,379	3,640	3,058	1,107	2,517	1,146
<b>Total</b>	<b>16,801</b>							
Percent of Forest in Development LUDs	22	22	20	22	18	7	15	7
Estimated Land Suitable for Timber Production	664	664	621	664	589	344	521	351

development perspective, 7 percent of the Forest would be allocated to development LUDs, with approximately 344,000 acres estimated to be suitable for timber production.

Under the 1997 Forest Plan, 4 percent of the forest is estimated to be available and suitable for timber production. Timber management activities on these lands are governed by a large number of rules and regulations designed to protect or mitigate negative impacts to resources. These standards and guidelines, presented in Chapter 4 of the 1997 Forest Plan, address the following resource areas:

- ◆ Air
- ◆ Beach and Estuary Fringe
- ◆ Facilities
- ◆ Fire
- ◆ Fish
- ◆ Forest Health
- ◆ Heritage Resources
- ◆ Karst and Caves
- ◆ Lands
- ◆ Minerals and Geology
- ◆ Recreation and Tourism
- ◆ Riparian
- ◆ Rural Community Assistance
- ◆ Scenery
- ◆ Soil and Water
- ◆ Subsistence
- ◆ Threatened, Endangered, & Sensitive Species
- ◆ Timber
- ◆ Trails
- ◆ Transportation
- ◆ Wetlands
- ◆ Wildlife

**Natural Amenities and Quality of Life**

As discussed in the Affected Environment portion of this section, natural amenities and local quality of life have increasingly been recognized as important factors that serve to attract and retain residents. It is, however, very difficult to determine the effect of the different alternatives on local amenities and, further, on the economic activity that these amenities are believed to indirectly generate. In most cases and localities the impacts of the action alternatives relative to the no-action alternative on amenities are not expected to be significant enough in themselves to result in measurable changes in economic activity.

Some respondents commenting on the Draft SEIS raised the possibility that wilderness designation could affect adjacent private property values. Some felt that wilderness designation would increase adjacent private property values, while others felt it would have a negative effect on these values. In general, it is possible that wilderness designation could have either of these effects or no effect at all, depending on a number of different factors including site specific issues. This type of analysis is site specific and beyond the scope of this programmatic analysis.

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#### Tongass National Forest Budget

The Forest Service budget is appropriated through Congress on a yearly basis. National Forest budget requests are considered as part of total budget requests submitted to the United States Congress by the executive branch each year, with Congress having final say. The relevant portions of the Tongass National Forest budget are summarized for 2001 in Table 3.4-26.

The budget items that would vary by alternative are those related to timber harvest activities: as the ASQ, location, and quality of the scheduled timber harvest changes, so do the budget requirements associated with resource outputs. These budget items include all the resource support, like wildlife biologists, necessary for timber harvesting.

The budget items that would be affected by variations in timber harvest volumes are as follows:

- NFPN – Land Management Planning
- NFIM – Inventory and Monitoring
- CMRD – Roads Capital Improvements & Maintenance
- NFTM – Timber Management
- NFVM – Vegetation and Watershed Management

These budget amounts would vary by alternative based on the estimated level of timber harvest. Budgets amount for these items would be higher for these items under Alternatives 1, 2, and 4, with Alternative 8 requiring the lowest amount of funding for timber management related activities.

**Table 3.4-26  
Fiscal Year 2001 Budget Allocation by Resource Item**

Fund Code	Budget Line Item	Allocation
<b>National Forest System</b>		
NFPN	Land Management Planning	429,100
NFIM	Inventory and Monitoring	3,294,200
NFRW	Recreation/Heritage/Wilderness	5,998,200
NFWF	Wildlife and Fish Habitat Management	6,255,100
NFTM	Timber Management	26,385,200
NFVM	Vegetation and Watershed Management	3,757,350
NFMG	Minerals	814,500
NFLM	Landownership Management	2,517,000
NFLE	Law Enforcement	328,300
	Total	49,778,950
<b>Wildland Fire Management</b>		
WFPR	Fire Preparedness	720,000
WFHF	Hazardous Fuels	0
WFSU	Fire Operations	0
	Total	720,000
<b>Capital Improvement &amp; Misc.</b>		
CMFC	Facilities Capital Improvements and Maintenance	5,852,200
CMRD	Roads Capital Improvements and Maintenance	14,238,200
CMTL	Trails, Capital Improvements and Maintenance	1,641,000
	Total	21,731,400
<b>Total</b>		<b>72,230,350</b>

Note: This table only summarizes those portions of the 2001 Tongass National Forest allocation that pertain to this analysis.

Source: USDA Forest Service, 2002c.

Designating areas Wilderness would also affect some budget items, independent of proposed timber management activities. These items would include:

- NFRW – Recreation/Heritage/Wilderness
- NFWF – Wildlife and Fish Habitat Management
- CMFC – Facilities Capital Improvements and Maintenance
- CMTL – Trails, Capital Improvements and Maintenance

These budget items would likely vary based on the amount of new designated wilderness. The Recreation/Heritage/Wilderness budget item would likely increase with increases in wilderness acres, with the largest increase occurring under Alternative 8. The other three identified budget items would likely decrease with increased wilderness acres. Decreases would likely occur because activities that might otherwise take place, such as fish and wildlife habitat improvements and recreation cabin construction would be restricted in new wilderness areas. These decreases would be greater under Alternative 8, with current budget requirements remaining largely unchanged under Alternatives 1, 2, and 4.

### Payments to the State

Projected differences in Forest Service revenues across the alternatives would have no effect on the payments for schools and roads the State receives from the Forest Service during the 2003-2006 period.

As discussed in the affected environment portion of this section, under the *Secure Rural Schools and Community Self-Determination Act of 2000* affected Alaska boroughs elected to receive the “full payment” amount for fiscal years 2001 through 2006. This is the average of the highest three payments made to the state between 1986 and 1999 and is not be linked to annual Forest Service revenues, but is instead based upon the 14 year historic “high three-year” average. Therefore, projected differences in Forest Service revenues across the alternatives would have no effect on the payments for schools and roads the State receives from the Forest Service during the 2003-2006 period.

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#### Subregional Overview and Communities

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- Communities
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    - Kasaan
    - Ketchikan
    - Klawock
    - Metlakatla
    - Meyers Chuck
    - Naukati Bay
    - Pelican
    - Petersburg and Kupreanof
    - Point Baker
    - Port Alexander
    - Port Protection
    - Saxman
    - Sitka
    - Skagway
    - Tenakee Springs
    - Thorne Bay
    - Whale Pass
    - Wrangell
    - Yakutat
- Environmental Justice

## Introduction

The preceding section of this document addressed the potential impacts of the proposed alternatives upon the regional economy as a whole. Potential impacts (e.g., a reduction of timber related employment arising from declines in harvest) would not, however, be viewed similarly by all boroughs or communities in Southeast Alaska or distributed equally among them. It is, therefore, important to consider the potential effects at a more detailed geographic scale. The following section is divided into two parts. The first part, entitled Subregional Overview, addresses the economic and social composition of the boroughs and census areas (CAs) that comprise Southeast Alaska, as well as providing summary data at the community group level. This discussion provides an important perspective on the likely distribution of the potential effects identified in the regional economy analysis, as well as setting the stage for the second part of this section, which discusses the potential effects of the alternatives on each of Southeast Alaska's 32 communities.

## Subregional Overview

Addressing potential effects at the subregional level can be difficult because the types of data available at the state or regional level are often not available for smaller localities. In addition to problems arising from inadequate data, the lack of detailed information on the exact location of expected harvests and on the competitive position of individual firms makes it impossible to know which jobs or firms may be affected under a given alternative. Any attempt to provide numerical estimates of long-term impacts at the community level would be prone to large errors, and give a false sense of accuracy and certainty. As a result, the following analysis presents a more detailed picture of the current situation and past trends at the Borough/CA and community group levels, but does not attempt to quantify potential impacts by alternative.

Economic developments are discussed in the following sections using data compiled at the Borough/CA level, as well as employment data compiled by the Alaska DOL at the community group level. Community groups are sub-areas of boroughs and CAs developed by the Alaska DOL. Some of the community groups represent individual communities; others include several communities (see Table 3.4-33). Information at the community group level provides a more detailed picture of local employment patterns than is usually available.

### **Southeast Alaska Boroughs and Census Areas**

There are large differences in the economic structure and development of the boroughs and CAs (referred to as the "boroughs" in the following discussion) that comprise Southeast Alaska. A common problem encountered in the analysis of the Southeast Alaska economy is that, owing to its relative size, Juneau dominates statistics at the regional level. As a result, regional trends in population, employment, or income tend to closely represent developments in Juneau and often do not reflect changes in other boroughs. By analyzing certain economic statistics at the borough level, differences in economic structure and trends that are obscured at the regional level, become apparent. The following sections discuss population, employment, and income trends at the borough level.

## Population

The population of Alaska grew over the past two decades increasing from about 402,000 in 1980 to approximately 627,000 in 2000, an increase of 56 percent. Southeast Alaska's population increased by 36 percent over the same time period. Increases at the borough level ranged from 8 percent for Wrangell-Petersburg to 57 percent and 61 percent for Juneau and Prince of Wales-Outer Ketchikan,

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respectively, with Juneau accounting for about 55 percent of Southeast Alaska's population growth over this period. Population increases were larger in the 1980s than in the 1990s in all cases, and population in Wrangell-Petersburg and Prince of Wales-Outer Ketchikan actually declined between 1990 and 2000 (Table 3.4-27).

Components of regional population change are presented by borough in Table 3.4-28. With the exception of Haines and Juneau, the relatively modest increases in regional population in the 1990s were mainly the result of natural increase (number of births exceeding number of deaths). The other boroughs in Southeast Alaska and the state of Alaska as a whole experienced net outmigration over this period. Net outmigration was particularly notable in Sitka and Ketchikan Gateway, this is likely at least partially a result of the respective pulp mill closures in 1993 and 1997. In Sitka, an estimated 1,303 more people (about 16 percent of the 1999 population) left than moved there between 1990 and 1999 (Table 3.4-28). An estimated 1,160 more people (about 8 percent of the 1999 population) left Ketchikan Gateway than moved there between 1990 and 1999 (Table 3.4-28). Net in-migration comprised a relatively small proportion (11 percent) of the population increase in Juneau, but accounted for approximately half of the population growth in Haines over this period. It should be noted that while these data provide some likely indication of population trends over the past decade, there are some fairly large differences between the estimates for 1999 (Table 3.4-28) and actual counts for 2000 (Table 3.4-27). This is particularly the case with Sitka and Juneau.

Population projections made by the Alaska DOL in 1998 anticipated regional population growth between 1998 and 2018, with relatively large absolute gains projected for Ketchikan Gateway (5,704) and Juneau (3,736) (Table 3.4-29). Census count data for 2000 are presented in Table 3.4-29 for comparison. Sitka and Wrangell-Petersburg were projected to experience a net decrease in population over this period.

**Table 3.4-27  
Borough/Census Area Population, 1980 to 2000**

Borough/Census Area/ Region	1980	1990	2000	1980 to 1990		1990 to 2000	
				Absolute Change	Percent Change	Absolute Change	Percent Change
<b>Northern Boroughs</b>							
Haines Borough	1,680	2,117	2,392	437	26	275	13
Juneau Borough	19,528	26,751	30,711	7,223	37	3,960	15
Sitka Borough	7,803	8,588	8,835	785	10	247	3
Northern Complex <sup>1</sup>	3,478	4,404	4,244	926	27	-160	-4
<b>Southern Boroughs</b>							
Ketchikan Gateway Borough	11,316	13,828	14,070	2,512	22	242	2
Prince of Wales-Outer Ketchikan CA	3,822	6,278	6,146	2,456	64	-132	-2
Wrangell-Petersburg CA	6,167	7,042	6,684	875	14	-358	-5
<b>Southeast Alaska</b>	<b>53,794</b>	<b>69,009</b>	<b>73,082</b>	<b>15,215</b>	<b>28</b>	<b>4,073</b>	<b>7</b>
Alaska	401,851	550,043	626,932	148,192	37	76,889	14

<sup>1</sup> 1980 and 1990 data are for the Skagway-Yakutat-Angoon Census Area. 2000 data combine the Skagway-Hoonah-Angoon Census Area and Yakutat Borough. Yakutat Borough was incorporated in 1992.

Source: Alaska DOL, 2001a; U.S. Census Bureau, 1995.

**Table 3.4-28  
Components of Regional Population Change, 1990-1999**

	1990	1999 <sup>1</sup>	1990 to 1999			Percent Change
			Natural Increase	Net Migration	Net Change <sup>2</sup>	
<b>Northern Boroughs</b>						
Haines Borough	2,117	2,288	90	86	171	8
Juneau Borough	26,752	30,192	3,024	392	3,440	13
Sitka Borough	8,588	8,193	835	-1,303	-395	-5
Northern Complex <sup>3</sup>	4,404	4,259	267	-399	-145	-3
<b>Southern Boroughs</b>						
Ketchikan Gateway Borough	13,828	14,097	1,380	-1,160	269	2
Prince of Wales-Outer Ketchikan CA	6,278	6,694	694	-269	416	7
Wrangell-Petersburg CA	7,042	6,802	487	-737	-240	-3
<b>Southeast Alaska</b>	<b>69,009</b>	<b>72,525</b>	<b>6,568</b>	<b>-3,004</b>	<b>3,516</b>	<b>5</b>
Alaska	550,043	619,500	76,685	-15,046	69,457	13

<sup>1</sup> These data were published prior to release of the 2000 Census redistricting data and, therefore, estimated population data for 1999 are used rather than 2000 census counts.

<sup>2</sup> The natural increase and net migration figures do not sum exactly to the net change figures because two smaller additional components of demographic change – net federal movement and a residual – are not included in this table.  
Source: U.S. Census Bureau, 2000.

**Table 3.4-29  
Regional Population Projections, 2008 and 2018**

	2000	2008	2018	2000-2018	
				Actual Change	Percent Change
<b>Northern Boroughs</b>					
Haines Borough	2,392	2,776	3,146	754	32
Juneau Borough	30,711	32,413	34,447	3,736	12
Sitka Borough	8,835	8,409	7,978	-857	-10
Northern Complex <sup>1</sup>	4,244	4,514	4,518	274	6
<b>Southern Boroughs</b>					
Ketchikan Gateway Borough	14,070	16,428	19,774	5,704	41
Prince of Wales-Outer Ketchikan CA	6,146	7,281	7,611	1,465	24
Wrangell-Petersburg CA	6,684	6,866	6,502	-182	-3
<b>Southeast Alaska</b>	<b>73,082</b>	<b>78,687</b>	<b>83,976</b>	<b>10,894</b>	<b>15</b>
Alaska	626,932	693,018	776,488	149,556	24

<sup>1</sup> Northern Complex is an aggregate of the Skagway-Hoonah-Angoon Census Area and Yakutat Borough.  
Source: Alaska DOL, 1998; 2001a.

### Employment

Total full- and part-time employment is presented by borough for 1990 and 2000 in Table 3.4-30. These data compiled by the U.S. Department of Commerce, Bureau of Economic Analysis include proprietors and self-employed workers. Proprietors and self-employed workers accounted for 26 percent of total employment in Southeast Alaska in 1999 (Table 3.4-2), ranging from 19 percent of total employment in Juneau to 50 percent in Haines. These data indicate that overall employment in Southeast Alaska increased by approximately 11 percent during the 1990s, with population increasing by 6 percent over the same period (Table 3.4-27). Employment increased in all boroughs with the exception of Ketchikan Gateway, which experienced a net loss of 529 jobs or 4.9 percent of total employment over this period. Total employment in Juneau increased by 4,036 jobs or 22 percent. Employment in Haines also saw a relatively large gain, increasing by 31 percent or 520 jobs.

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**Table 3.4-30  
Borough/Census Area Employment, 1990 and 2000**

	Total Employment		Wood Products			Lodging, Rest. & Rec		
	1990-2000 Change		1990-2000 Change		% Local Total	1990-2000 Change		% Local Total
	2000	(%)	2000	(%)		2000	(%)	
<b>Northern Boroughs</b>								
Haines Borough	2,174	31.4	0	-100.0	0.0	214	112.4	21.6
Juneau Borough	22,046	22.4	68	na	0.4	1,873	60.5	11.0
Sitka Borough	6,385	3.0	1	-100.0	0.0	371	2.7	5.2
Northern Complex	3,093	4.4	183	-43.7	9.0	319	52.3	15.7
<b>Southern Boroughs</b>								
Ketchikan Gateway Borough	10,239	-4.9	383	-73.2	9.4	698	3.6	17.1
Prince of Wales-Outer Ketchikan CA	2,951	5.3	281	-59.9	15.1	226	57.2	12.1
Wrangell-Petersburg CA	4,734	9.3	158	-64.3	6.0	161	-22.3	6.1
<b>Southeast Alaska</b>	<b>51,622</b>	<b>10.5</b>	<b>1,074</b>	<b>-69.3</b>	<b>3.0</b>	<b>3,862</b>	<b>35.0</b>	<b>10.8</b>

1 These data, compiled from U.S. Department of Commerce, Bureau of Economic Analysis (BEA) data and are for full and part-time employment, including proprietors and self-employed.

2 These data, compiled from Alaska DOL (NAWS) data (Alaska DOL, 2002a) and the 1997 Forest Plan Revision Final EIS, do not include proprietors and self-employed workers. BEA data, the source for the total employment column, is not available at this level of disaggregation.

3 Lodging, Restaurants, and Recreational and Entertainment Services. This measure does not directly reflect recreation and tourism-related employment but is included as an indicator of trends and relative concentration of recreation and tourism-dependent jobs. The numbers presented here do not include proprietors and self-employed and, therefore, are likely underestimates as proprietors and self-employed workers tend to comprise a large share of total employment in these sectors.

4 The percent of local total is benchmarked against total NAWS employment, which excludes proprietors and self-employed, not the BEA numbers shown in the left column.

5 Aggregate of Skagway-Hoonah-Angoon Census Area and Yakutat Borough.

Source: Alaska DOL, 2002a; U.S. Department of Commerce, Bureau of Economic Analysis, 2002; USDA Forest Service, 1997a (Table 3-154).

Employment in wood products and lodging, restaurants, and recreational and entertainment services is also summarized by borough in Table 3.4-30. These data compiled by the Alaska DOL include covered employment only. They do not include proprietors or self-employed workers. As a result, the numbers presented in Table 3.4-30 are likely underestimates. This is particularly the case with lodging, restaurants, and recreational and entertainment services because proprietors and self-employed workers tend to comprise a large share of total employment in these sectors. U.S. Department of Commerce, Bureau of Economic Analysis data, which include proprietors and self-employed workers, are not available at this level of disaggregation.

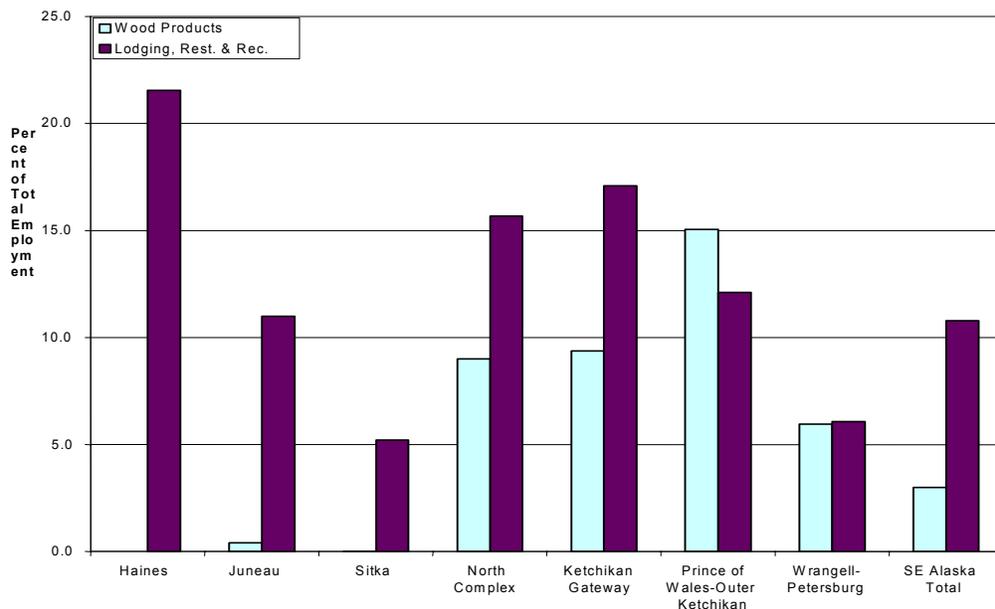
Employment in the wood products sector declined in all boroughs over this period, with the largest loss (1,046 jobs) occurring in Ketchikan Gateway. Losses ranged from a low of 44 percent of 1990 wood products employment in Northern Complex to 100 percent in Sitka and Haines. The wood products sector accounted for 433 and 141 jobs in Sitka and Haines in 1990, respectively. These sharp declines in employment in part reflect the years selected for comparison. Wood products employment, which has followed cyclical trends over the past two decades, peaked in 1990 (see Figure 3.4-6). A comparison between 1985 and 1999, for example, would show a less dramatic decline. Comparing two points in time also has the effect of suggesting a linear trend that may not be the case. Wood products employment in Wrangell-Petersburg CA, for example, declined by 64 percent between 1990 and 2000, but actually increased by about 88 percent between 1995 and 2000. Nevertheless, by 2000 wood products accounted for a relatively small share of total employment in most boroughs, comprising less than one percent of covered employment in Haines, Juneau, and Sitka. Wood products did, however, continue to comprise a relatively large share of employment in Prince of Wales-Outer

Ketchikan (15.1 percent), Ketchikan Gateway (9.4 percent), and Northern Complex (9.0 percent) (Table 3.4-30).

In contrast to wood products employment, employment in lodging, restaurants and recreation-related services has demonstrated strong gains since 1990. The contrast between losses in wood products industry employment versus gains in recreation-related employment is consistent with overall trends discussed in the regional economic section, but there is considerable variation across boroughs. Employment in this category in Haines, for example, more than doubled, with lodging, restaurants and recreation-related services accounting for 22 percent of total employment in 2000. The Wrangell-Petersburg CA, on the other hand, saw a substantial decrease (22 percent) in employment in this category, which represented just 6 percent of total employment in 2000. Certain boroughs (and, by extension, the communities that they encompass) appear to have benefited more from the expansion of the tourist-related economy than others.

Table 3.4-30 and Figure 3.4-17 also highlight a distinction between northern and southern boroughs. With the exception of the Northern Complex, boroughs in the northern part of Southeast Alaska were less dependent on the wood products component of their industrial base in 2000. The majority of wood products employment in the region (77 percent) and all of the jobs in wood products processing arising from harvests on the Tongass National Forest are concentrated in the southern boroughs, particularly Ketchikan Gateway and Prince of Wales-Outer Ketchikan. Recreation and tourism employment, by contrast, shows higher concentrations in the north, with northern boroughs accounting for 72 percent of total

**Figure 3.4-17**  
**Wood Products and Lodging, Restaurant, and Recreation Services Share of Total Employment by Borough, 2000 (Percent)**



Notes: NAWS = Non-agricultural wage and salary employment. Excludes proprietors and self-employed. See notes to Table 3.4-30.

Source: Alaska DOL, 2002a (see Table 3.4-30)

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regional employment in this category. Growth in employment in this area has generally been more pronounced in the north; however, Prince of Wales-Outer Ketchikan also experienced a relatively large increase in this sector (57 percent) during the 1990s. This picture becomes more complex at lower levels of aggregation, with certain areas of the north demonstrating high concentrations in logging employment, and others in the south demonstrating no wood products industry employment at all. It may also be noted that data presented in the 1997 Forest Plan Revision Final EIS analysis suggested that seafood processing in 1995 tended to be more concentrated in the southern boroughs, which accounted for 63 percent of total regional employment in this sector (USDA Forest Service, 1997a; Table 3-154).

#### Income

Overall, real per capita income, which is calculated by dividing total income for a given region by the population of that region, increased in the region by 12 percent in the 1980s, with increases ranging from just 1 percent in Juneau Borough to 46 percent in Haines (Table 3.4-31). From 1990 to 2000 per capita income in the region as a whole declined by 2 percent, with relatively large decreases in Haines, Ketchikan Gateway, Prince of Wales-Outer Ketchikan, and Wrangell-Petersburg, likely reflecting declines in relatively high paying wood products employment in these areas. Per capita income in Sitka Borough stayed fairly constant (-1 percent) over this period, despite closure of the APC Pulp Mill in 1993. The absolute level of per capita income is considerably lower for Prince of Wales-Outer Ketchikan, indicating that, on average, residents at this area receive 33 percent less income than the regional average.

**Table 3.4-31**  
**Per Capita Income, 1980 to 2000**

	1980 (2000\$) <sup>1</sup>	1990 (2000\$) <sup>1</sup>	2000	1980 to 1990		1990 to 2000	
				Absolute Change	Percent Change	Absolute Change	Percent Change
<b>Northern Boroughs</b>							
Haines Borough	23,114	33,843	31,757	10,729	46	-2,086	-6
Juneau Borough	33,709	33,904	34,230	195	1	326	1
Sitka Borough	25,384	28,774	28,630	3,390	13	-144	-1
Northern Complex	19,825	26,896	27,674	7,071	36	778	3
<b>Southern Boroughs</b>							
Ketchikan Gateway Borough	28,899	35,711	33,211	6,812	24	-2,500	-7
Prince of Wales-Outer Ketchikan CA	20,865	23,688	20,914	2,823	14	-2,774	-12
Wrangell-Petersburg CA	25,619	30,480	28,414	4,861	19	-2,066	-7
<b>Southeast Alaska</b>	<b>28,421</b>	<b>31,911</b>	<b>31,243</b>	<b>3,490</b>	<b>12</b>	<b>-668</b>	<b>-2</b>
Alaska	26,060	28,844	29,642	2,784	11	798	3
<b>United States</b>	<b>21,282</b>	<b>25,835</b>	<b>29,469</b>	<b>4,553</b>	<b>21</b>	<b>3,634</b>	<b>14</b>

1 Per capita income figures for 1980 and 1990 were converted to Year 2000 dollars using the Anchorage Municipality Consumer Price Index developed by the U.S. DOL, Bureau of Labor Statistics.

2 1980 and 1990 data are for the Skagway-Yakutat-Angoon Census Area. 2000 data combine the Skagway-Hoonah-Angoon Census Area and Yakutat Borough. Yakutat Borough was incorporated in 1992.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2002.

It may be noted that relatively slow growth in per capita income is a statewide phenomenon that likely owes much to the growth and diversification of the state economy and lower inflation. In the past Alaska could be generally characterized as

a place where younger people came to work in high wage resource industries. More recently, the state has begun to resemble the lower 48 states, with more retirees and children and a greater concentration of population in cities.

Earnings as a share of personal income decreased in the Southeast Alaska boroughs between 1990 and 2000, with decreases ranging from a low of 4.4 percent in Juneau to around 13 percent in Northern Complex and Prince of Wales-Outer Ketchikan (Table 3.4-32). Earnings comprised relatively high shares of total personal income in Juneau and Ketchikan Gateway Borough. Non-job related earnings include dividends, interest and rent, and transfer payments.

Changes in the relative share of income in Southeast Alaska over the 1990s were very similar to the statewide average, but notably different to the United States as whole (Table 3.4-32). As noted above, these changes suggest that the regional economies of Southeast Alaska and Alaska are beginning to more closely resemble the national economy.

**Table 3.4-32**  
**Components of Personal Income, 1990 to 2000 (Percent of Total)**

	Earnings		Dividends, Interest, & Rent		Transfer Payments	
	2000	Change 1990-2000	2000	Change 1990-2000	2000	Change 1990-2000
	<b>Northern Boroughs</b>					
Haines Borough	61.1	-9.4	21.3	3.5	17.5	5.9
Juneau Borough	67.6	-4.4	19.8	0.7	12.6	3.7
Sitka Borough	62.0	-8.4	22.6	3.9	15.4	4.5
Northern Complex	60.7	-12.6	19.8	5.6	19.4	7.0
<b>Southern Boroughs</b>						
Ketchikan Gateway Borough	65.2	-7.4	18.9	1.0	15.9	6.4
Prince of Wales-Outer Ketchikan CA	59.8	-12.7	16.5	1.6	23.7	11.1
Wrangell-Petersburg CA	60.7	-7.5	19.6	-1.0	19.8	8.6
Southeast Alaska	64.9	-6.8	19.8	1.4	15.3	5.3
Alaska	67.0	-6.9	16.8	1.5	16.2	5.4
<b>United States</b>	<b>68.8</b>	<b>1.2</b>	<b>18.3</b>	<b>-1.9</b>	<b>12.9</b>	<b>0.7</b>

4 Earnings includes wages and salaries, other labor income, and proprietors' income.

5 Transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, and veterans benefit payments.

Government payments to individuals in Alaska include Alaska Permanent Fund benefits, which are derived from oil revenues and paid to every resident.

6 Percent of total income.

7 1990 data are for the Skagway-Yakutat-Angoon Census Area. 2000 data combine the Skagway-Hoonah-Angoon Census Area and Yakutat Borough. Yakutat Borough was incorporated in 1992.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, 2002.

### Alaska DOL Community Groups

In this portion of the document, the employment data provided by Alaska DOL is analyzed using the community groups defined by that agency—the most detailed level available for this data. At this level of disaggregation there is a much greater potential for substantial errors in the data. Changes in reporting jurisdictions or industry definitions, for example, may result in large and abrupt changes in reported employment for a given community or industry with no underlying change in actual employment patterns. It is also important to remember that Alaska DOL community groups are not necessarily synonymous with actual communities. The individual communities included in each community group are identified in Table 3.4-33. The following discussion focuses on the wood products and recreation and tourism industries.

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**Table 3.4-33  
Alaska DOL Community Groups Defined**

Boroughs and Census Areas	Community Groups	Communities/Places
City & Borough of Juneau	Juneau	Auke Bay, Berners Bay, Douglas, Dupont, Fritz Cove, Hawk Inlet, <b>Juneau</b> , Lemon Creek, Lena Cove, Lynn Canal, Mendenhall Valley, North Douglas, Salmon Creek, Snettisham, Switzer Creek, Taku Harbor, Taku Lodge, Tee Harbor, Thane, and West Juneau.
Ketchikan Gateway Borough	Ketchikan	Carlanna, Charcoal Point, Clover Pass, Herring Cove, <b>Ketchikan</b> , Mountain Point, Mud Bay, North Tongass Highway, Peninsula Point, Pennock Island, Point Higgins, Refuge Cove, <b>Saxman</b> , Shoreline Drive, Thomas Basin, Totem Bight, Upper Nickeyville, Wacker, and Ward Cove.
	Revillagigedo	Fire Cove, Gedney Pass, George Inlet, Gravina Island, Guard Island, Hassler Pass, Loring, Neets Bay, Princess Bay, Shoal Cove, and Twin Peaks.
Haines Borough	Haines	Eldred Rock, Excursion Inlet, <b>Haines</b> , Letnikof Cove, Moose Valley, Mosquito Lake, Pleasant Camp, Porcupine, Port Chilkoot, and Saint James Bay.
Sitka Borough	Baranof	Baranof, Big Port Walker, Chatham, Corner Bay, False Island, Lake Eva, Little Port Walter, Port Armstrong, Port Conclusion, Rodman Bay, Saook Bay, Todd, and Warm Spring Bay.
	Sitka	Biorka Island, Chichagof, Cobol, Deep Bay, Goddard, Halibut Point, Jamestown Bay, Japonski Island (Mt. Edgecumbe), Katlian Bay, Klag Bay, Nakwasina Cove, Redfish Cape, Saint John Baptist Bay, Schulze Cove, <b>Sitka</b> , and Sitka Logging Camp.
Yakutat Borough	Yakutat	Situk and <b>Yakutat</b>
Angoon-Hoonah-Skagway Census Area	Chatham Strait	<b>Angoon</b> , Catherine Island, Cube Cove, Hanus Bay, <b>Tenakee Springs</b> , Tye, and Whitewater Bay.
	Gustavus	Bartlett Cove, Cape Spencer, and <b>Gustavus</b> (Strawberry Point).
	North Chichagof	<b>Elfin Cove</b> , Gull Cove, <b>Hoonah</b> , Idaho Inlet, Lisianski, <b>Pelican</b> , Port Althorp, Port Frederick, and Yakobi Island.
	Stephens Passage	Cape Fanshaw, Five Fingers, Freshwater, Bay, Funter Bay, Hobart Bay, Point Retreat, Port Houghton, Sawyers Landing, Sumdum, and Windham Bay.
Prince of Wales Outer Ketchikan	Skagway	Clifton, and <b>Skagway</b> .
	Central Prince of Wales	<b>Craig</b> , <b>Hollis</b> , and <b>Klawock</b> .
	Southeast Prince of Wales	Bokan Mountain, Campbell, Dall Island, Dora Bay, Kendrick Bay, Klakas Inlet, Rose Inlet, Twelvemile Arm, View Cove and Waterfall.
	Hydaburg	<b>Hydaburg</b>
	North Prince of Wales	Cape Pole, Coal Bay, <b>Coffman Cove</b> , <b>Edna Bay</b> , El Capitan, <b>Kasaan</b> , Labouchere Bay, Little Naukati Bay, <b>Naukati Bay</b> , Noyes Island, <b>Point Baker</b> , Port Alice, <b>Port Protection</b> , Ratz Harbor, Red Bay, Salt Chuck, Shakan, Steamboat Bay, <b>Thorne Bay</b> , Thorne Island, Token, Warren Cove, and <b>Whale Pass</b> .
Wrangell Petersburg Census Area	Metlakatla	Annette, Mary Island, and <b>Metlakatla</b> .
	Hyder	Hidden Inlet, <b>Hyder</b> , Smeaton Bay, Tongass, and Tree Point
	Cleveland Pen.	Bell Island, <b>Meyers Chuck</b> , Union Bay and Yes Bay.
	Kake	<b>Kake</b> .
Wrangell Petersburg Census Area	Kuiu Island	Alvin Bay, Cape Decision, Coronation Island, Duncan Canal, Fairway Island, Hamilton Bay, Kah Sheets Bay, <b>Port Alexander</b> , Rowan Bay, Saginaw Bay, Security Bay, Tebenkof Bay, and Washington Bay.
	Petersburg	Kupreanof, Mitkof Island, <b>Petersburg</b> , Scow Bay, and Vank Island.
	Thomas Bay	Thomas Bay.
	Wrangell City	<b>Wrangell</b> .
Wrangell Island	Bradfield River, Burnette Inlet, Deer Island, Ernest Sound, Etoin Island, Kakwan Point, Roosevelt Harbor, Saint John Harbor, Tyler Logging Camp, and Zarembo Island.	

<sup>1</sup> Some of these community groups have been renamed to more clearly represent the communities/places included.

<sup>2</sup> The listing of communities/places included in each community group identifies named places in these areas. Some of these places are presently uninhabited.

<sup>3</sup> Communities identified in bold are discussed in the Communities section of this document.

Source: USDA Forest Service, 1997a (Table 3-155).

The following tables and figures provide some insight into which areas are more likely to be affected by the alternatives, as well as those that are likely to have been affected by changes in the economy since 1990.

Employment information, presented by community group in Table 3.4-34, shows an extremely high variation in the rate of job creation (or loss) experienced by the different community groups. The highest positive or negative changes are, not surprisingly, concentrated in those groups with the smallest total employment numbers. This highlights an important aspect of community level impacts—the most severe impacts (relative to total local employment) are often experienced in smaller communities, where even small job losses may be large relative to total employment.

Smaller communities also often exhibit higher concentrations of employment in a single industry, such as logging camps or resorts and fishing lodges.

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**Table 3.4-34  
Employment by Community Group, 1990 to 1999**

Community Group	Wage & Salary <sup>1</sup>		Wood Products <sup>2</sup>			Lodging, Rest., & Rec. <sup>3</sup>		
	1999 Jobs	1990-1999 Change (%)	1999 Jobs	1990-1999 Change (%)	% of Local Total	1999 Jobs	1990-1999 Change (%)	% of Local Total
<b>Haines Borough</b>								
Haines	865	- 3	0	- 100	0	192	+ 90	22
<b>City and Borough of Juneau</b>								
Juneau	16,284	15	55	--	0	1,783	52	11
<b>Ketchikan Gateway Borough</b>								
Ketchikan City	7,014	- 10	404	- 72	6	682	1	10
Revillagigedo	31	--	0	--	0	0	--	0
<b>Subtotal</b>	<b>7,045</b>	<b>- 11</b>	<b>404</b>	<b>- 72</b>	<b>6</b>	<b>682</b>	<b>1</b>	<b>10</b>
<b>Northern Complex</b>								
Chatham Strait	223	- 33	40	- 55	18	22	17	10
Gustavus Island	189	53	0	--	0	75	27	40
North Chichagof	411	- 31	99	- 29	24	33	11	8
Skagway	578	14	0	--	0	147	101	25
Stephens Passage	14	- 96	0	- 100	0	0	--	0
Yakutat	381	92	13	- 65	3	74	164	19
<b>Subtotal</b>	<b>1,795</b>	<b>- 16</b>	<b>152</b>	<b>- 53</b>	<b>8</b>	<b>352</b>	<b>68</b>	<b>20</b>
<b>Prince of Wales/Outer Ketchikan</b>								
Central Prince of Wales	1,051	8	116	- 63	11	140	--	13
Cleveland Peninsula	195	786	180	--	92	14	- 37	7
Hydaburg	75	- 3	1	--	1	0	--	0
Hyder	54	73	0	--	0	4	- 61	7
Metlakatla	472	- 20	40	- 65	9	0	- 100	0
North Prince of Wales	361	- 29	83	- 69	23	28	368	8
Southeast Prince of Wales	50	528	0	--	0	42	--	84
<b>Subtotal</b>	<b>2,258</b>	<b>2</b>	<b>420</b>	<b>- 40</b>	<b>19</b>	<b>228</b>	<b>406</b>	<b>10</b>
<b>Sitka Borough</b>								
Baranof	13	- 75	1	- 98	8	0	--	0
Sitka	4,000	- 1	0	- 100	0	415	15	10
<b>Subtotal</b>	<b>4,014</b>	<b>- 2</b>	<b>1</b>	<b>- 100</b>	<b>0</b>	<b>415</b>	<b>15</b>	<b>10</b>
<b>Wrangell-Petersburg Census Area</b>								
Kake	257	- 10	53	- 57	21	0	--	0
Kuiu Island	13	- 85	0	- 100	0	0	--	0
Petersburg	1,395	0	5	- 93	0	109	- 16	8
Wrangell City	823	- 7	70	- 57	9	70	- 9	9
<b>Subtotal</b>	<b>2,488</b>	<b>- 6</b>	<b>128</b>	<b>- 70</b>	<b>5</b>	<b>179</b>	<b>- 14</b>	<b>7</b>
<b>Southeast Alaska Total</b>	<b>34,748</b>	<b>2</b>	<b>1,160</b>	<b>- 67</b>	<b>3</b>	<b>3,830</b>	<b>38</b>	<b>11</b>

<sup>1</sup> Full and part-time average annual employment. Self-employed people and proprietors are not included in this data-set.

<sup>2</sup> Wood products includes both mill and logging employment.

<sup>3</sup> Lodging, Restaurants and Recreational and Entertainment Services. This measure does not directly reflect recreation and tourism-related employment, but is included as an indicator of trends and relative concentration of recreation and tourism-dependent employment.

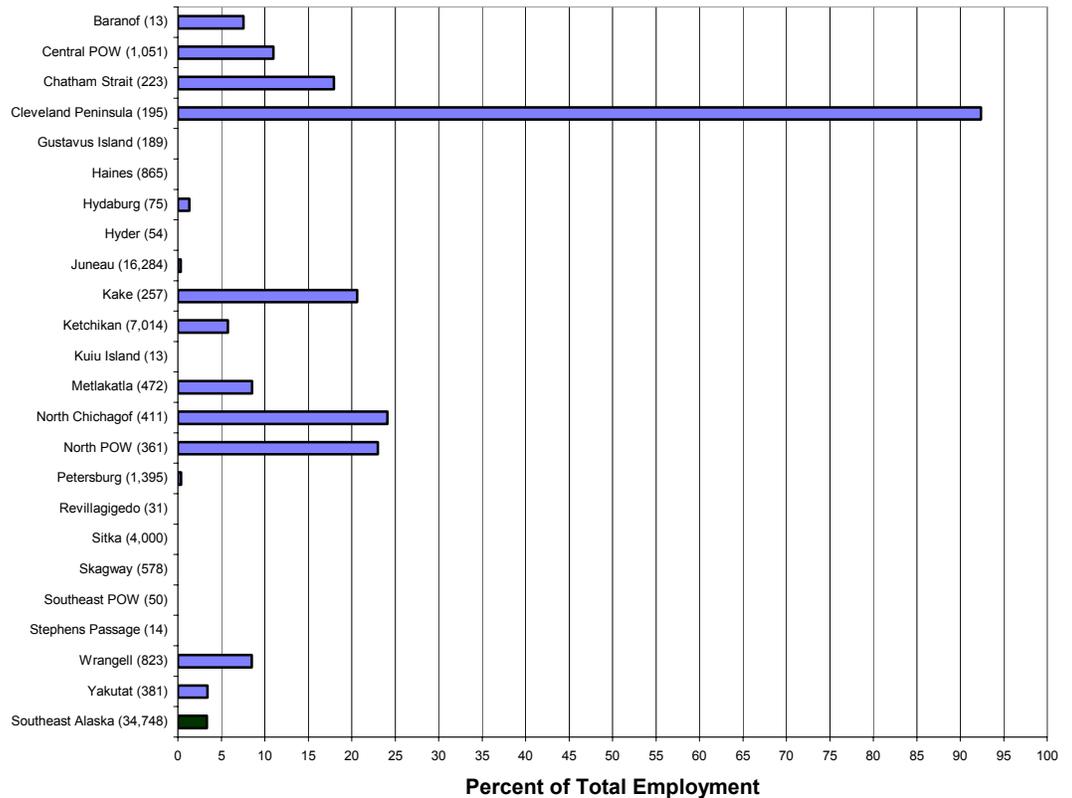
Source: Alaska DOL, 2002c.

**Wood Products Industry**

Employment in the Southeast Alaska wood products sector has declined significantly since the peak of 1990 (see Figure 3.4-6) with the closure of pulp mills in Sitka (1993) and Ketchikan (1997), and the closure or idling of sawmills in communities throughout the region. Overall employment in this sector declined by 2,550 jobs or 72 percent between 1990 and 2000. While this total includes the entire pulpmill labor force, which accounted for 899 jobs in 1990, a larger absolute loss occurred in the logging sector with a loss of 1,433 jobs. Employment in the wood products sector had declined to a total of just 782 jobs by 2001. It should be noted here that employment decreases tend to lag behind decreases in production, and further declines in employment levels are possible even if there are no further reductions in harvest levels.

Wood products employment as a share of total local employment in 1999 is shown in Figure 3.4-18 for all Alaska DOL community groups. High concentrations of wood products employment are apparent in the Cleveland Peninsula, North Chichagof, North Prince of Wales, and Kake community groups, where timber employment shares exceeded 20 percent of total nonagricultural wage and salary employment. Wood products also comprised 18 and 11 percent of total employment in the Chatham Strait and Central Prince of Wales community groups, respectively.

**Figure 3.4-18**  
**Wood Products Share of Total Employment by Community Group, 1999**  
**(Percent)**



Note: The total number of jobs within each community group is given in parentheses. Self-employed people are not included in this data set.  
 Source: Alaska DOL, 2002c.

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The 1997 Forest Plan Revision Final EIS analysis examined the effects that mill closures in Haines (May, 1991), Sitka (September, 1993), and Wrangell (December, 1994) had on those communities (USDA Forest Service, 1997a; p. 3-517 to 3-520). The direct effects of the mill closures were evident in the elimination of almost all wood products employment in each community and substantial reductions in total employment. Indirect effects were less clear, with each community showing a positive increase in other employment over the period reviewed (1990 to 1995). Earnings figures were not available at the community level, but it is likely that impacts to earnings were higher than impacts to employment because earnings in the wood products sector are significantly higher than the regional average.

The Ketchikan pulp mill has closed since completion of the 1997 Forest Plan Revision Final EIS analysis. Closure of the mill, the community's largest employer, resulted in the loss of 500 direct jobs, many of which were high paying and year round. Employment data compiled by the Alaska DOL indicate that employment in the lumber and wood products sector declined from 11.8 percent of total wage and salary employment in Ketchikan Gateway Borough in 1996 to 5.7 percent in 1999 (Baker, 2001b). A study by the Alaska DOL found that 3 years after the mill closure about 45 percent of the laid-off workers were employed in other jobs in the Ketchikan/Prince of Wales area, about 15 percent were employed elsewhere in Alaska, and about 40 percent had left the state altogether (Landry, 2001).

### Recreation and Tourism Industry

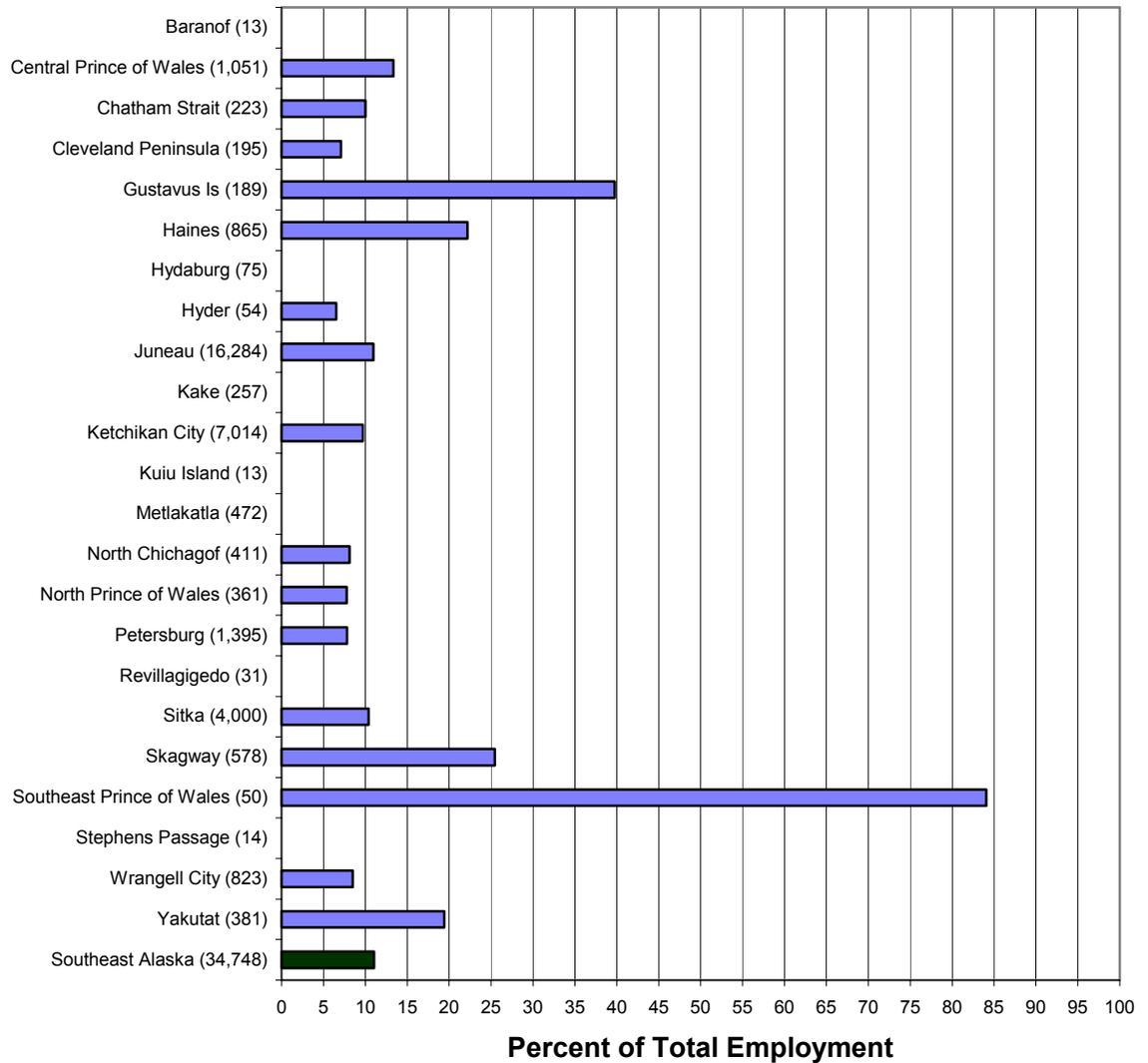
The recreation and tourism industry in Southeast Alaska includes cruise ships, larger hotels, and resorts, as well as numerous smaller businesses. Smaller operators often use recreation and tourism-related income to augment other small businesses that primarily serve the needs of local residents.

A recent survey of commercial recreation businesses in Southeast Alaska indicated that the majority of surveyed businesses were small, with 86 percent earning gross revenues of less than \$100,000 (Alaska DCBD, 2001). Six firms did, however, report revenues over \$1 million, including one firm with revenues exceeding \$10 million. A similar distribution is evident in terms of clients served, with the majority of firms serving less than 100 clients, a smaller number of firms serving considerably larger numbers, and one firm serving more than 100,000 clients in 1999 (Alaska DCBD, 2001). Recreation and tourism has become a major source of growth for the economy of Southeast Alaska, which has sometimes resulted in explosive growth at the local level (see Tables 3.4-30 and 3.4-34). A number of communities in the region now have relatively high concentrations of employment in the recreation and tourism sector.

Lodging, restaurant, and recreation services employment as a share of total local employment in 1996 is shown in Figure 3.4-19 for all Alaska DOL community groups. High concentrations of lodging, restaurant, and recreation services employment are apparent in the Southeast Prince of Wales, Gustavus Island, Skagway, and Haines community groups, where this type of employment exceeded 20 percent of total nonagricultural wage and salary employment. Wood products also comprised 19 and 11 percent of total employment in the Yakutat and Juneau community groups, respectively.

The largest and fastest growing element of recreation and tourism in Southeast Alaska is the cruise ship industry. An estimated 632,000 cruise ship passengers visited Juneau in 2000, approximately eight visitors for every Southeast Alaska resident. Shore excursions have become an integral part of the cruise ship experience, providing increased revenues for ship operators and opportunities for local entrepreneurs. Much of this activity has been concentrated at major ports of call, such as Ketchikan, Juneau, or Skagway. Alongside the international cruise lines, however, several mid-size cruise operators are now active in the region, often taking their customers to places bypassed by the larger ships. The decision of a

**Figure 3.4-19**  
**Lodging, Restaurant, and Recreation Services Percent Share of Total Employment by Community Group**



Note: The total number of jobs within each community group is given in parentheses. Self-employed people are not included in this data set.  
 Source: Alaska DOL, 2002c.

cruise ship company to dock or not dock in a community can have a profound effect on the local economy.

### Communities

Community is a concept with multiple dimensions and definitions. Basic definitions of community include: 1) a geographic/political entity, such as a town or village; 2) a network of people with shared values, world views, or identities (sometimes called a community of meaning), such as an ethnic or racial group (e.g., Native Alaskans) or an occupational group (e.g., loggers); 3) a working social system; 4) a rural social

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landscape, which would include the first three definitions in a rural setting; 5) a community of interest, or people with a common stake, profession, interest, activity, or set of values, who may live far apart (e.g., anglers, environmentalists, off-road-vehicle operators).

This section uses the geographic/political community—towns and villages—as its basis for several reasons. There are relatively few communities in Southeast Alaska, they are typically isolated geographically, most are recognized as being unique, and data are more commonly available at this level (although some local economic data is compiled by the State for groups of communities).

Geographic/political communities represent an aggregate of individuals and it is important to remember that there may be a diversity of effects felt within a community. Potential effects that do not appear that significant when viewed at a community level may be very significant for the individuals that are directly affected.

### Community Assessments

The 1997 Forest Plan Revision Final EIS included discussions of 32 Southeast Alaska communities with a state land selection base. These discussions provided brief descriptions of each community, including aspects of their histories, population trends, economic bases, and the subsistence resources used by each community. Each community discussion also included a summary of the public comments and testimony received by the Forest Service on the 1990 Draft EIS, 1991 SDEIS, and the 1996 Revised Supplement. Much of the baseline community information provided in those discussions was taken from the Alaska Department of Community and Regional Affairs (Alaska DCRA) *Community Profiles* (1996) and 1990 U.S. Census data. Subsistence information was mainly based on the findings of the 1989 Tongass Resource Use Cooperative Survey (TRUCS). Updated summary data are presented by community in Table 3.4-35. These data suggest that these communities are diverse in terms of population, income, and subsistence use. There is also a good deal of variation within many of the communities, as reflected by the range of public comments received during preparation of the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a).

This document provides brief updates of the affected environment sections of the community discussions, where applicable. The reader is referred to the 1997 Tongass Forest Plan Revision Final EIS for additional more detailed information on community history, economic base, and subsistence resources. The 1987 TRUCS data used in the 1997 Forest Plan Revision Final EIS discussions is still the most current consistent source of subsistence information available, although the ADF&G, Subsistence Community Profile Database provides some updated information where it is available.

Data from the 2000 Census has been incorporated in the community discussions, as appropriate. This includes estimates of the number of people who work in different industries. These estimates are generally extrapolated from a sample of each community's population with the sample size varying by community. In cases where the community is small, the extrapolation may not be exact but should in most cases provide a general indication of distribution of employment. Employment data are presented by community group for 1990, 1995, and 1999 in Appendix E of this SEIS.

**Table 3.4-35  
Southeast Alaska Community Statistics**

	Population			2000 Median Household Income	Percent of Households Below Poverty Line in 2000	Percent of Labor Force Unemployed in 2000	1987 Median Subsistence Use <sup>1</sup>
	2000	Percent Change 1990 to 2000	Percent Native in 2000				
Angoon	572	-10	82	29,861	27	13	242
Coffman Cove	199	28	3	43,750	7	10	186
Craig	1,397	11	22	45,298	8	9	185
Edna Bay	49	-43	0	44,583	15	0	517
Elfin Cove	32	-44	0	33,750	0	23	264
Gustavus	429	66	44	34,766	10	14	257
Haines	1,811	46	15	39,926	6	14	104
Hollis	139	25	5	43,750	6	3	164
Hoonah	860	8	61	39,028	14	21	404
Hydaburg	382	-1	85	31,625	21	31	337
Hyder	97	-2	0	11,719	44	47	401
Juneau	30,711	15	11	62,034	4	5	N/A
Take	710	1	67	39,643	13	25	159
Kasaan	39	-28	38	43,500	0	20	186
Ketchikan	7,922	-4	18	45,802	5	8	N/A
Klawock <sup>2</sup>	854	18	51	35,000	14	16	830
Metlakatla	1,375	-2	82	43,516	8	21	71
Meyers Chuck	21	-43	0	64,375	0	0	414
Naukati Bay	135	41	10	na	na	na	na
Pelican	163	-27	21	48,750	0	0	355
Petersburg	3,224	1	7	49,028	3	3	200
Point Baker	35	-10	3	28,000	0	0	344
Port Alexander	81	-32	5	31,563	25	25	306
Port Protection	63	2	0	10,938	44	44	311
Saxman	431	17	66	44,375	7	7	89
Sitka	8,835	3	19	51,901	4	4	146
Skagway	862	25	3	49,375	1	1	52
Tenakee Springs	104	11	3	33,125	9	9	250
Thorne Bay	557	-4	3	45,625	6	6	97
Whale Pass	58	-23	2	62,083	0	0	186
Wrangell	2,308	-7	16	43,250	7	7	164
Yakutat	680	27	47	47,054	12	12	398

<sup>1</sup> This is the 1987 per capita household subsistence harvest of edible pounds as reported by the ADF&G.

<sup>2</sup> The subsistence use figure presented for Klawock represents mean household subsistence harvest in edible pounds, per capita harvest information was unavailable.

N/A – not applicable

na – not available

Source: USDA Forest Service, 1997a (Table 3-158); U.S. Census Bureau, 2001b.

The effects of the alternatives considered in the 1997 Forest Plan Revision Final EIS were evaluated in terms of community use area effects. Community use areas depict the approximate extent of each community's day-to-day use area. Potential community effects were also estimated with the help of a Socioeconomic Panel and Subsistence Workshop, which were convened to assess the potential effects of the planning alternatives for the 1997 Forest Plan Revision Final EIS. The Socioeconomic Panel assessed these potential effects in terms of timber employment; tourism/recreation employment; mining employment; economic structure/diversity; community stability; quality of life; recreation opportunities; and access to traditional lifestyles. The Subsistence Workshop involved a group of subsistence specialists who met to offer professional judgement regarding the potential effects of planning alternatives on 30

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selected subsistence communities (Juneau and Ketchikan do not meet the definition of subsistence community). In addition, the Sitka black-tailed deer habitat capability model output was analyzed for the Wildlife Analysis Areas (WAAs) where each community obtained approximately 75 percent of their average annual deer harvest. This analysis is discussed further in the 1997 Forest Plan Revision Final EIS.

The analysis presented here draws upon these information sources to assess the effects of the eight alternatives under consideration by community. Each community discussion includes a map of that community's use area, as defined by the 1997 Forest Plan Revision Final EIS. These maps are accompanied by tables that provide summary information about how the alternatives being evaluated in this SEIS vary within these community use areas. The community use area maps and tables are intended to help community residents (and other readers) gain a better understanding of what management direction is proposed for their immediate surroundings under each alternative. The information in the tables, which is based on information already presented in the SEIS alternatives, provides a localized accounting of how LUD allocations vary within each community use area under each alternative. Variations in the amount of National Forest System land allocated to each of the LUD groups under each alternative show what land use opportunities would be available during the next 10 to 15 years within each community use area.

The summary tables for each alternative compare the acres allocated to types of LUD group by alternative. The variations in how many suitable acres are programmed for timber management under each alternative provide additional information indicating how much of the local forest environment (that is allocated to LUDs in the Moderate and Intensive Development LUD groups) could potentially be harvested over rotation-length time frames. The tables also present summary information on total suitable acres by alternative, which indicate how much of the community use area's forest land remains available for possible future harvesting. Whether any timber harvesting would actually take place on the suitable lands within the community use area within the next decade would depend on whether any timber sales are actually carried out during plan implementation.

### Analyzing Impacts to Communities

Small, rural communities are seldom self-contained economic units. Although it is possible to describe a community's economic structure, complex social and economic forces, many of which are outside the control of community residents, have great influence on community economics. This makes it difficult to precisely predict the effects of forest-wide management alternatives on individual communities. Forest Service activities provide economic opportunities to the private sector; how that sector and the various industries that comprise it respond depends on many variables in addition to Forest Service management.

Forest plans are programmatic, meaning that they establish direction and allowable activities for broad land areas, rather than schedule specific activities on specific patches of land. This also makes it difficult to predict effects on individual communities. This is a common source of frustration to local residents, who want to know exactly how they and the places they care about could be affected. While many outputs of forest management, such as scheduled timber harvest, generally translate into social and economic activity, such as employment in the timber industry, it is difficult to predict which communities would benefit the most from that activity. Communities may even compete with each other in many instances. Communities that rely on a given resource-related industry would, however, be expected to be the first to benefit or lose from significant changes in planned output levels affecting that industry.

Another factor affecting the accuracy of predicting specific impacts at the community scale is that people and businesses have proven themselves highly adaptable. Researchers have used the term community resiliency (Harris, 1996) or community capacity (FEMAT, 1993) to describe a community's ability to weather significant

changes. Some of the factors judged important for small, rural communities in the Pacific Northwest include community infrastructure, the presence of amenities, social cohesion and effective community leadership, and economic diversity. Some communities will be more effective than others in coping with changes that do result. While information such as population size can be used as a rough proxy for resiliency (generally, larger communities tend to be more resilient than smaller ones), this is not always the case. However, analyses have not been conducted regarding the resiliency of Southeast Alaska communities, and we do not know how well information gained elsewhere applies to understanding Southeast communities. It is also worth noting that while a community as a whole may be resilient to change, individuals within that community will still be negatively affected.

Given these considerations, it is more accurate to identify areas of concern for which the risks of effects from a given alternative are higher or lower, rather than say, "Here is what we know will happen to each and every community." One of the hazards associated with such attempts to assess impacts is that analyses tend to view social and economic conditions as static, failing to consider that economies are dynamic, and adjust to different impacts in different ways. Other important considerations include the findings that short-term effects may not be the same as long term ones, a community's resiliency and leadership can contribute to mitigating the effects of economic blows, that impacts must be viewed in the context of a dynamic economy, and that forecasts of social and economic devastation can be misleading and inaccurate. Recognizing these difficulties, it is more accurate and less potentially misleading to simply describe the communities, their relationships to forest management alternatives, and the resulting areas of socioeconomic risk that decision makers need to consider.

### **Potential Effects by Resource Area**

The alternatives have implications for specific places on the Forest and particular parts of the community use areas of various communities. They also have potential implications in terms of employment in resource dependent industries and the availability of subsistence resources. The following paragraphs discuss the potential implications for wood products, recreation and tourism, and subsistence in general terms to provide some background to the reasoning employed in the community effects discussions presented in the following sections.

#### **Wood Products**

Based on the analysis presented in the preceding section, projected direct wood products employment would be similar to or higher than current levels (782 jobs) under Alternatives 1 through 5 (Table 3.4-18). Employment levels would be lower under the other alternatives, with total direct employment reduced by 53 percent and 47 percent under Alternatives 6 and 8, respectively. As noted in the preceding section, while forest management activities can generally translate into social and economic activity, it is difficult to predict where this activity will actually occur. It is, however, apparent that reducing employment by around 50 percent would have important implications for a number of communities historically dependent on the wood products industry. These effects are likely to be greater for smaller communities with fewer economic opportunities and residents than for larger, more diversified economies. Maintaining wood products employment around the current level also represents a significant reduction in employment from the early 1990s that has likely affected a number of communities.

#### **Recreation and Tourism**

Designating areas wilderness would have little immediate effect on resident recreationists, but could limit the types of recreation that may be pursued in the future. Wilderness designation would limit types of facility and trail development. This could

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affect the type of future recreation opportunities available to those communities located in close proximity to wilderness areas. It would limit the development of commercial recreation facilities and restrict use by outfitter/guides that serve large groups of clients. Conversely, designating areas wilderness would retain their natural and wild character, thus, creating a major attraction to the region for residents and visitors. This designation would also protect areas from being developed and benefit certain groups of recreationists and outfitter/guides. The potential effects by community are likely to vary by community and also within the community itself.

### Subsistence

The analysis presented in the 1997 Forest Plan Revision Final EIS used deer as an indicator for potential subsistence resource consequences concerning the abundance and distribution of the resources. Timber harvest tends to affect deer-related subsistence activities in two ways. In the short run, approximately 20 to 30 years following harvest, deer populations tend to increase in harvested areas. In the long-run populations tend to decline with the loss of habitat as even aged stands grow up, resulting in lower populations. Deer populations in unharvested areas are likely to remain at fairly constant levels that are typically lower for a comparable harvested area in the short run, but higher in the long run. Road construction also affects subsistence by providing subsistence hunters with ready access to areas that may have been previously inaccessible. This effect may be perceived as either positive or negative depending on the parties involved, as increased access may lead to increased competition for resources. Potential effects are likely to vary by community and may be perceived differently by members of the same or neighboring communities.

The subsistence analysis presented for each community in the following sections draws upon the findings of the 1997 Forest Plan Revision Final EIS (USDA Forest Service, 1997a). The deer habitat capability model that formed much of the basis of the 1997 analysis, addresses hunting in the Wildlife Analysis Areas (WAAs) that comprise each community's community use area. Hunters were divided into three groups: residents of the community in question, all rural hunters, and all hunters. Projected harvest levels for these groups were compared with estimated deer habitat capability by alternative in the short term (2005) and long term (2095). This analysis assumed that a deer population at carrying capacity should be able to support a hunter harvest of approximately 10 percent that is both sustainable and provides a reasonably high level of hunter success for their effort. At 20 percent it was assumed that the hunter success for their effort may decrease, and, if the population is at carrying capacity, 20 percent may approach a rate that is not sustainable.

Alternative 1 in this analysis is similar to the selected alternative in the 1997 analysis (Alternative 11). Alternatives 2 through 8 would result in the same or an improved level of deer habitat over time, as they would involve the same or less land allocated to development LUDs. The analysis presented in the following sections summarize and evaluate the findings of the 1997 analysis from this perspective.

### Individual Community Assessments

#### Angoon

The following sections present socioeconomic descriptions and assessments of impact for 32 Southeast Alaska communities with a state land selection base. These are presented in alphabetical order.

Angoon, located on the west coast of Admiralty Island at the mouth of Kootznahoo Inlet, has been there so long that no precise date can be established for its original occupation. As the only permanent community on Admiralty Island, Angoon had a population of about 572 in 2000. It remains a traditional Tlingit Alaska Native village

with 82 percent of its population identified as Alaska Native in the 2000 Census (U.S. Census Bureau, 2001b).

The lands immediately adjacent to Angoon are part of Admiralty Island National Monument-Kootznoowoo Wilderness and would not be affected by any of the proposed alternatives. Other areas within Angoon's community use area would, however, be affected. Angoon's population increased 37 percent between the 1970 and 1990 census. Population was, however, approximately 10 percent below the 1990 level in 2000.

Year	1970	1980	1990	2000
Population	400	465	638	572

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The Chatham School District and commercial fishing provide the majority of employment for Angoon. Approximately 10 percent of Angoon residents hold commercial fishing permits, primarily used for hand-trolling for king and coho salmon. State and Federal grants recently funded a new shellfish farm in the area. Logging on Prince of Wales Island provides occasional jobs (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 13 percent of the labor force in Angoon was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$29,861, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	10	5
Construction	14	7
Manufacturing	3	2
Wholesale Trade	0	0
Retail Trade	22	11
Transportation, Warehousing & Utilities	10	5
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	10	5
Professional, Scientific, Management, Administrative & Waste Mgmt	2	1
Education, Health & Social Services	77	39
Arts, Entertainment, Recreation, Accommodation & Food Services	30	15
Other Services (Except Public Admin)	1	1
Public Administration	16	8
<b>Total Employment</b>	<b>195</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community. Angoon is part of the Chatham Strait community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. The non-federal government, wood products, and services sectors were the major employers in the Chatham Strait community group in 1999, accounting for 49, 18, and 17 percent of total employment, respectively. The wood products employment was entirely in the logging sector.

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Angoon in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-20. This area contains 1,083,900 acres of National Forest System land (among other land ownerships). Table 3.4-36 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3 of this document.

Development LUDs presently account for 32 percent of the total acreage within the Angoon community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because much of the acreage presently allocated to development LUDs (68 and 65 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 5 and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage (20 and 22 percent, respectively) re-allocated as Wilderness.

#### ***Economy***

Angoon is a traditional native community. Commercial fishing and subsistence use are the primary factors influencing Angoon. For subsistence use, Admiralty and Catherine Islands are especially important to Angoon. All of the National Forest System land within the Angoon community use area on Admiralty Island would be maintained in their current condition under all alternatives. Commercial fishing would not be affected under any of the alternatives.

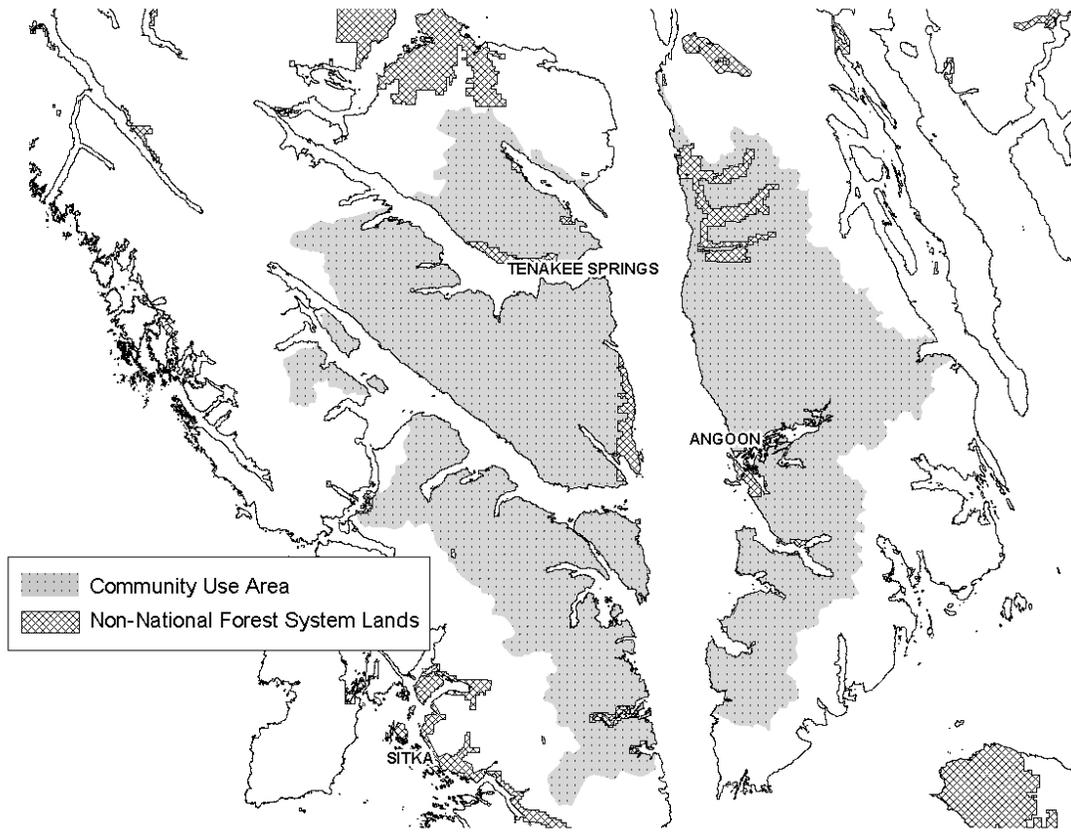
#### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Angoon households (Kruse and Frazier, 1988).

Deer account for 30 percent of the total edible pounds of subsistence resources harvested by Angoon households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide habitat capability for deer hunted by Angoon residents, all rural hunters, and all hunters within the WAAs that comprise Angoon's community use area.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Because Alternatives 2 through 8 would result in the same or an improved level of deer habitat, they should also be able to provide sufficient habitat.

**Figure 3.4-20**  
**Angoon's Community Use Area**



**Table 3.4-36**  
**LUD Groups in Angoon's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	441,601	520,547	441,644	441,601	600,746	488,468	608,883	941,779
Mostly Natural	294,838	215,892	294,826	294,838	205,239	484,789	203,270	21,384
Moderate Development	33,807	33,807	33,784	33,807	31,469	16,931	31,121	19,191
Intensive Development	313,636	313,635	313,627	313,636	246,429	93,704	240,610	101,539
<b>Suitable National Forest System Acres for Timber Management<sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>37,038</b>	<b>37,038</b>	<b>37,038</b>	<b>37,038</b>	<b>31,506</b>	<b>18,421</b>	<b>31,239</b>	<b>19,245</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

### Coffman Cove

Coffman Cove is located on northeast Prince of Wales Island. Settlement of Coffman Cove began in 1956 with development of a logging camp. A road connecting Coffman Cove to the larger community of Craig was built in the 1980s. Two scheduled airlines serve the community from Ketchikan. The population of Coffman Cove shows little change between 1980 and 2000. According to the 2000 Census, Coffman Cove had a 2000 population of 199, with Alaska Natives comprising 3 percent of the total (U.S. Census Bureau, 2001b).

Year	1980	1990	2000
Population	193	186	199

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The logging industry and the local school system provide the majority of employment for Coffman Cove. Area logging for Ketchikan Pulp Co., a small lumber mill, logging support services, and a log transfer site for Prince of Wales Island employ Coffman Cove residents. Oyster farming and commercial fishing also occur in the area. The city is conducting a study of the feasibility of creating a commercial/industrial complex (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 11 percent of the labor force in Coffman Cove was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$43,750, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	56	50
Construction	19	17
Manufacturing	0	0
Wholesale Trade	2	2
Retail Trade	4	4
Transportation, Warehousing & Utilities	0	0
Information	7	6
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	5	5
Education, Health & Social Services	7	6
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	3	3
Public Administration	8	7
<b>Total Employment</b>	<b>111</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Coffman Cove is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Coffman Cove in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-21. This area contains 1,235,000 acres of National Forest System land (among other land ownerships). Table 3.4-37 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 51 percent of the total acreage within the Coffman Cove community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because just over 40 percent of the development LUDs would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would have less effect since less acreage, approximately 4, 9, and 14 percent of the development LUDs, respectively, would be re-allocated as Recommended Wilderness.

#### **Economy**

Coffman Cove is primarily a logging community and would, therefore, be directly affected by the amount of logging opportunities on northern Prince of Wales Island and elsewhere on the Tongass. Approximately 18.4 MMBF is presently under contract in the North Prince of Wales community group area. Alternatives 6 and 8 would likely prevent 11.3 MMBF, about 61 percent, of this volume from being harvested. The alternatives would also affect approximately 207.7 and 189.4 MMBF Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging communities throughout Southeast Alaska, including Coffman Cove. Alternatives 6 and 8 would also reduce the land available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

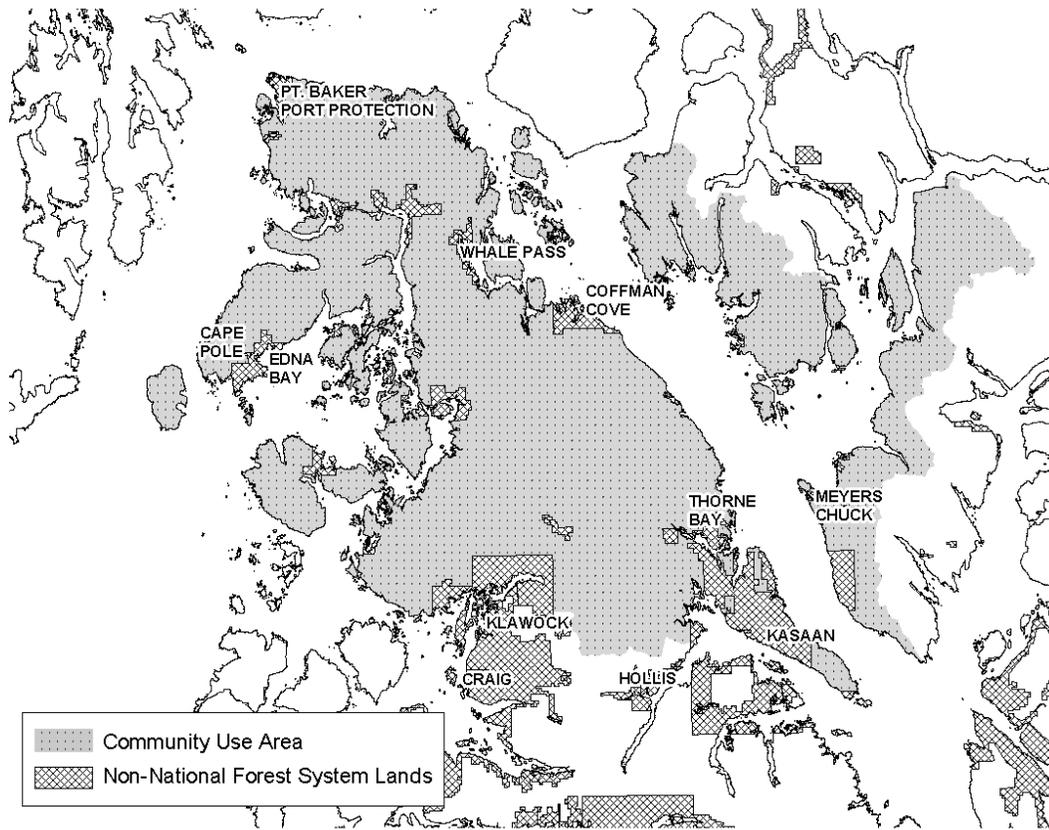
The 1999 Southeast Alaska Transportation Plan (Alaska Department of Transportation and Public Facilities, 1999) identifies plans for a new ferry terminal at Coffman Cove that would be served by the Inter-Island Ferry Authority (IFA) operating a seasonal run between South Mitkof Island, Wrangell, and Coffman Cove. This additional access to Coffman Cove could provide opportunities for recreation and tourism and help diversify the local economy.

#### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 65 percent of the total edible pounds of subsistence resources harvested by Coffman Cove households (Kruse and Frazier, 1988).

Deer account for 32 percent of the total edible pounds of subsistence resources harvested by Coffman Cove households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide

**Figure 3.4-21  
Coffman Cove’s Community Use Area**



**Table 3.4-37  
LUD Groups in Coffman Cove’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	122,764	229,497	196,738	160,382	420,919	178,160	476,315	757,893
Mostly Natural	488,400	381,667	438,298	450,785	246,140	689,223	220,760	102,854
Moderate Development	213,611	213,611	207,226	213,611	190,089	103,671	166,357	107,897
Intensive Development	410,351	410,351	392,867	410,351	377,984	264,224	371,700	266,571
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>186,524</b>	<b>186,524</b>	<b>181,880</b>	<b>186,524</b>	<b>175,128</b>	<b>143,129</b>	<b>169,693</b>	<b>144,736</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

sufficient habitat capability over the long term for deer hunted by Coffman Cove residents. Under the 1997 selected alternative, the projected deer harvest in the WAAs that comprise the Coffman Cove community use area is estimated to be sustainable in the short term for all rural hunters, but would exceed the level of effort that is both sustainable and provides a reasonably high level of hunter success relative to effort in the long term. Projected deer harvest for all hunters combined in the Coffman Cove community use area is estimated to exceed the level that is both sustainable and provides a reasonably high level of hunter success relative to effort, by a short margin in the short term (5 to 10 years) and by a wide margin over the long term. It was concluded that at some point a restriction in hunting may be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Alternatives 2 through 8 would result in the same or an improved level of deer habitat over time. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1, with one exception. Under Alternatives 5, 6, 7, and 8, the point when the projected deer harvest for all hunters is estimated to exceed the sustainable level is less likely to occur in the short term, but is still likely to occur in the long term.

**Craig**

Craig is situated on a small island connected to the west coast of Prince of Wales Island by a causeway. Craig is located approximately 56 air miles northwest of Ketchikan and 6 and 23 road miles from Klawock and Hydaburg, respectively. A floatplane dock and heliport are maintained in Craig, and the State ferry serves Hollis 30 miles away enabling transportation of passengers, cargo, and vehicles.

Tlingit fish camps and seasonal villages originally occupied the present location of Craig. It was named for its contemporary founder, Craig Miller, who in 1907, with the help of local Haidas, established a saltery at Fish Egg Island.

The Forest Service established a permanent ranger station here around 1919. The city of Craig was incorporated in 1922 as a second-class city under the laws of the territory of Alaska and became a first-class city in 1973. Shaan-Seet Inc. (the village corporation established under the Alaska Native Claims Settlement Act of 1971) received an interim conveyance of 20,852 acres in 1979 (ADF&G, 1994).

The population of Craig more than tripled between 1970 and 1990. According to the 2000 Census, Craig had a 2000 population of 1,397, with Alaska Natives comprising 22 percent of the total (U.S. Census Bureau, 2001b). The total population was 10 percent higher in 2000 than in 1990.

Year	1970	1980	1990	2000
Population	272	527	1,260	1,397

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The Craig economy is primarily based on the fishing and timber industry with commercial fishing, fish processing, logging, sawmill operations, government and commercial services providing the majority of employment. Estimated gross fishing earnings of local residents exceeded \$2.6 million in 2000. Columbia Ward Fisheries, a fish buying station, and a major cold storage plant are located in Craig and 200 residents hold commercial fishing permits. Shan-Seet Village Corporation timber operations is a major employer of local residents. Craig's increased role as a service and transportation center for the Prince of Wales Island communities has largely been responsible for its growth (Alaska DCED, 2002).

## Environment and Effects 3

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 9 percent of the labor force in Craig was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$45,298, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	174	24
Construction	57	8
Manufacturing	34	5
Wholesale Trade	18	3
Retail Trade	90	13
Transportation, Warehousing & Utilities	41	6
Information	12	2
Finance, Insurance, Real Estate, Rental & Leasing	11	2
Professional, Scientific, Management, Administrative & Waste Mgmt	7	1
Education, Health & Social Services	127	18
Arts, Entertainment, Recreation, Accommodation & Food Services	65	9
Other Services (Except Public Admin)	46	6
Public Administration	37	5
<b>Total Employment</b>	<b>719</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Craig is part of the Central Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Craig in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-22. This area contains approximately 770,000 acres of National Forest System land (among other land ownerships). Table 3.4-38 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 54 percent of the total acreage within the Craig community use area. Alternatives 1, 2, 3, 4, 5, and 7 would not have a significant effect on LUD allocations in the Craig community use area because the acreage in development LUD groups would remain virtually the same as under the current Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 45 percent of the development LUDs would be re-allocated as Recommended Wilderness or LUD II.

#### **Economy**

Craig is primarily a commercial fishing and retail trade community. It is most likely to be affected by changes in timber employment, commercial fishing, and retail services. Viking Lumber one of the larger remaining sawmills in the region is located between Craig and Klawock.

Viking Lumber presently has 55.4 MMBF under contract. Alternatives 3, 5, 6, 7, and 8 would all potentially reduce this volume, with the greatest reductions occurring under Alternatives 6 and 8, 52 and 31 percent, respectively (Table 3.4-11). Reductions in volume would likely affect short-term employment in the mill. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills may temporarily or permanently close partly as a result of short-term supply restrictions. Viking Lumber employs approximately 33 people, who mostly reside in Craig, Klawock, or Hollis. Logging employment in the community and surrounding area, as well as employment at the Forest Service's Craig Ranger Station, would also be affected under the more restrictive alternatives. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

Declines in timber employment in Craig and surrounding communities could also reduce retail trade and services employment. Reductions in retail and services employment would be most keenly felt during September through May when recreation and tourism use is lower. Commercial fisheries employment is not likely to be affected any of the alternatives.

Several small timber operators produce value-added products in Craig. These value added products include music wood, cabinets, and other products. They need relatively low volumes of timber, but they need specific species and grades to meet their needs. All alternatives should meet their needs.

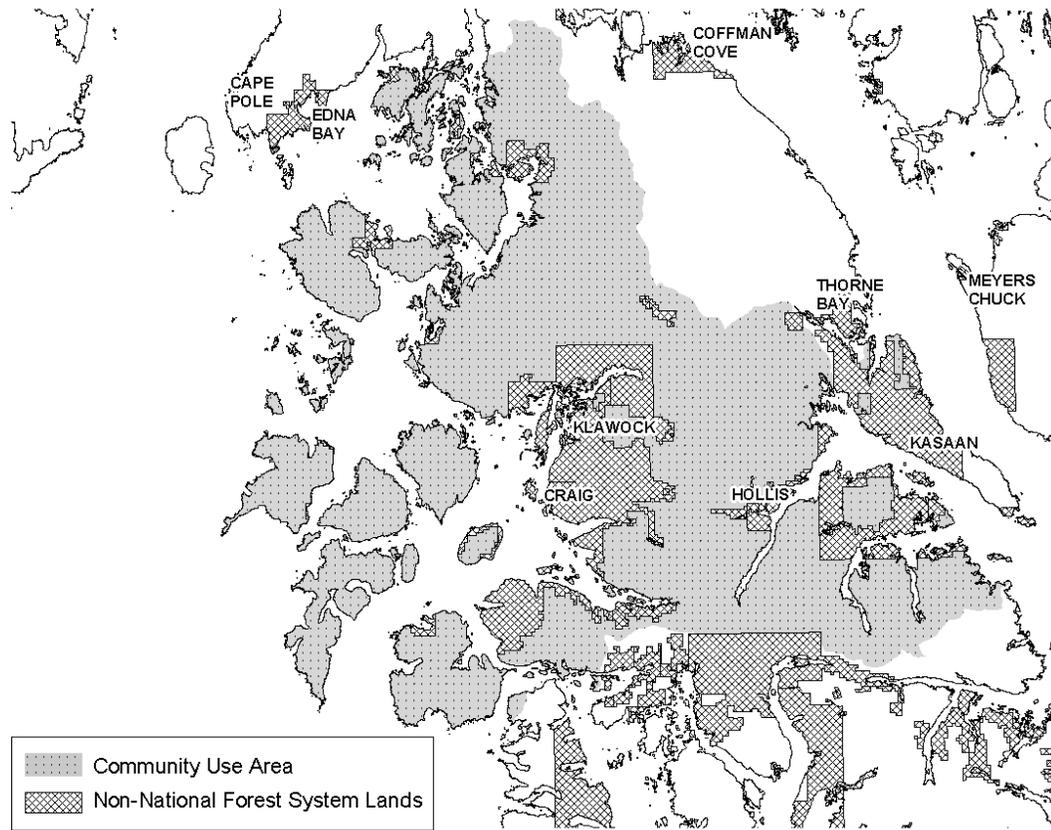
### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 70 percent of the total edible pounds of subsistence resources harvested by Craig households (Kruse and Frazier, 1988).

Deer account for 22 percent of the total edible pounds of subsistence resources harvested by Craig households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability over the long term for deer hunted by Craig residents. In this alternative, the projected deer harvest for all rural hunters in the WAAs that comprise the Craig community use area is estimated to be sustainable in the short term. In the long term, projected harvest for all rural hunters is expected to exceed the level that is both sustainable and provides a reasonably high level of hunter success relative to effort. Projected deer harvest for all hunters combined in the Craig community use area is estimated to exceed this level in both the short (5 to 10 years) and long term. The 1997 Forest Plan Revision Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Alternatives 2 through 8 would result in the same or an improved level of deer habitat over time. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-22**  
**Craig's Community Use Area**



**Table 3.4-38**  
**LUD Groups in Craig's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	45,502	119,707	45,502	45,502	181,103	45,502	181,103	485,156
Mostly Natural	301,138	226,933	301,138	301,138	170,629	492,631	170,629	47,435
Moderate Development	78,545	78,545	78,545	78,545	75,069	36,312	75,069	41,488
Intensive Development	345,106	345,106	345,106	345,106	343,509	196,024	343,509	196,394
<b>Suitable National Forest System Acres for Timber Management<sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>114,185</b>	<b>114,185</b>	<b>114,185</b>	<b>114,185</b>	<b>113,333</b>	<b>83,948</b>	<b>113,333</b>	<b>85,171</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Edna Bay**

Edna Bay is located on southeast Kosciusko Island, west of Prince of Wales Island, and north of Sea Otter Sound. Originally, Tlingit Indians from west Prince of Wales Island used Edna Bay on a seasonal basis. In 1943, a logging camp was established when the demand for aircraft-quality spruce was high. The camp closed in the late 1960s and the buildings were burned and the site cleaned. In 1977, the State selected part of the Tongass National Forest at Edna Bay, with the U.S. Forest Service reserving two administrative sites. In 1982, the State sold several lots around Edna Bay to private landowners. A small community developed as families, mainly those involved in commercial fishing, moved to Edna Bay. A school was constructed and a road connecting dispersed segments of the community was completed (ADF&G, 1994).

Edna Bay remains an unincorporated city. The community has a local Fish and Game Advisory Committee and has shown a strong commitment to protecting local commercial fishing and subsistence resources (ADF&G, 1994). Edna Bay is accessible by water or by float plane from Ketchikan. Most households own skiffs for transportation around the bay and to other near shore areas not accessible by road (ADF&G, 1994).

Edna Bay’s population fluctuated a great deal between 1970 and 1990. The population in 2000 was very similar to that identified in 1990. According to the 2000 Census, Edna Bay had a 2000 population of 79, with no Alaska Native population (U.S. Census Bureau, 2001b).

Year	1970	1980	1990	2000
Population	112	6	86	79

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The majority of employment in Edna Bay is provided by a local sawmill, commercial fishing, and the local school district. Thirteen residents hold commercial fishing licenses, primarily used for power trolling. During the summer, a fish buyer is also located in the bay (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. This data is an extrapolation based on information from a sample of residents. Because the sample size was small, the extrapolation may not be exact, but it should provide a general indication of distribution of employment. The potential work force was estimated to be 35 people and total employment estimated to be 18. While no adults in Edna Bay were identified as unemployed and seeking work in 2000, 49 percent of the population was identified as not employed and not seeking work. Median household income was \$44,583, compared to a regional median of \$44,118 (Alaska DCED, 2002).

## Environment and Effects 3

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	4	22
Construction	0	0
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	2	11
Transportation, Warehousing & Utilities	4	22
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	8	44
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	0	0
<b>Total Employment</b>	<b>18</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community. Edna Bay is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### **Community Use Area**

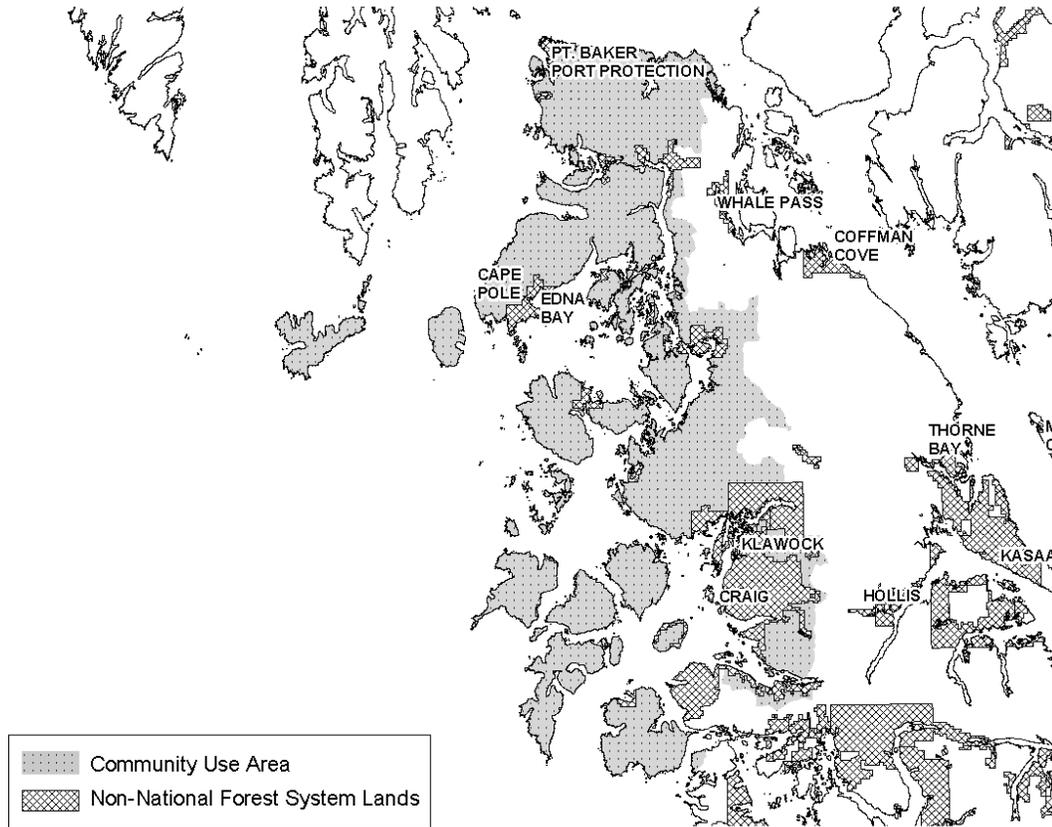
The general area commonly used or related to by many of the residents of Edna Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-23. This area contains approximately 667,000 acres of National Forest System land (among other land ownerships). Development LUDs presently account for 49 percent of the total acreage within the Edna Bay community use area. Table 3.4-39 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would, in contrast, re-allocate just over 40 percent of the acreage in the development LUDs as Recommended Wilderness or LUD II.

#### **Economy**

Edna Bay is primarily a commercial fishing and subsistence community. Commercial fishing is not expected to be significantly affected under any of the alternatives.

**Figure 3.4-23**  
**Edna Bay's Community Use Area**



**Table 3.4-39**  
**LUD Groups in Edna Bay's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	36,103	178,491	36,103	36,103	227,587	36,103	227,587	415,209
Mostly Natural	304,765	162,377	304,765	304,765	134,492	439,795	134,492	56,379
Moderate Development	66,198	66,198	66,198	66,198	58,341	35,254	58,341	38,530
Intensive Development	259,931	259,931	259,931	259,931	246,599	155,935	246,599	156,987
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>100,825</b>	<b>100,825</b>	<b>100,825</b>	<b>100,825</b>	<b>96,682</b>	<b>77,477</b>	<b>96,682</b>	<b>78,411</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 59 percent of the total edible pounds of subsistence resources harvested by Edna Bay households (Kruse and Frazier, 1988).

Deer account for 21 percent of the total edible pounds of subsistence resources harvested by Edna Bay households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Edna Bay community use area by Edna Bay residents, all rural hunters, and all hunters in both the short term and long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that Alternatives 2 through 8 would not change the overall conclusions for Alternative 1.

**Elfin Cove**

Elfin Cove is a small fishing town located on northwest Chichagof Island. Prior to its development as a community, Native Tlingit groups, now based largely in Hoonah, used the Elfin Cove area for hunting, fishing, and gathering, as well as a safe harbor. According to the 2000 Census, Elfin Cove had a 2000 population of 32, none of whom were Alaska Natives (U.S. Census Bureau, 2001b).

A fish buyer established a business here in 1927. The opening of a cold storage plant at Pelican, less than 20 miles from Elfin Cove in Lisianski Inlet, meant that fish no longer had to be hauled all the way to Juneau. Today, the cove still serves as a key stopover and supply center for fishermen and the year-round community is made up largely of fishing households. In the 1980s, a school was completed that also functions as a community center.

Elfin Cove is an unincorporated community. The community has a local Fish and Game Advisory Committee and is accessible by floatplane from Juneau. Elfin Cove's population, which fluctuated between 1970 and 1990, was 25 people or 44 percent lower than it was in 1990.

Year	1970	1980	1990	2000
Population	49	28	57	32

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The economy of Elfin Cove is highly seasonal and primarily based on the fishing industry. It is a fish buying and supply center for fishermen and residents participate in commercial fishing, sport fishing and charter services. Eighty percent of the population holds commercial fishing permits. Summer lodges and the local retail businesses also provide employment (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. This data is an extrapolation based on information from a sample of residents. Because the sample size was small, the extrapolation may not be exact, but it should provide a general indication of distribution of employment. Approximately 23 percent of the labor force in Elfin Cove was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$33,750, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	3	30
Construction	0	0
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	0	0
Transportation, Warehousing & Utilities	5	50
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	0	0
Arts, Entertainment, Recreation, Accommodation & Food Services	2	20
Other Services (Except Public Admin)	0	0
Public Administration	0	0
<b>Total Employment</b>	<b>10</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Elfin Cove is part of the North Chichagof community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Manufacturing and non-federal government were the major employers in the North Chichagof community group in 1999, accounting for 34 and 30 percent of total employment, respectively. Logging and seafood processing accounted for 24 and 10 percent of total employment, respectively (see Appendix E).

### **Potential Effects**

#### ***Community Use Area***

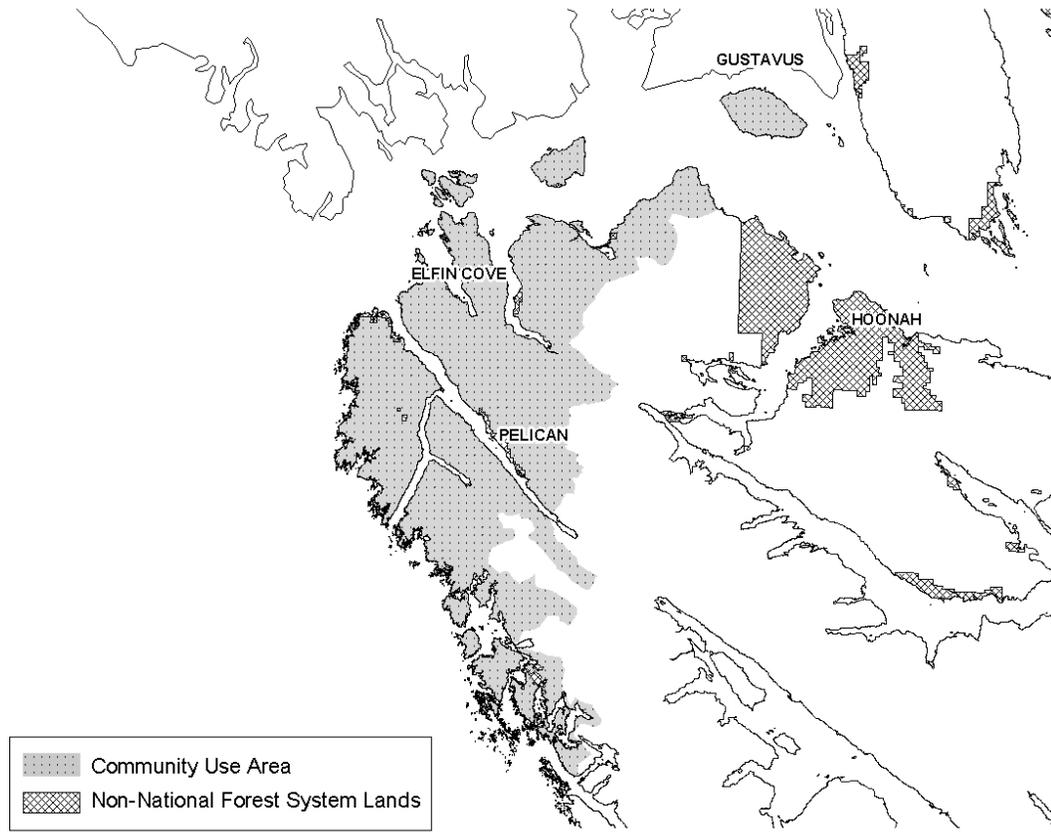
The general area commonly used or related to by many of the residents of Elfin Cove in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-24. This area contains approximately 358,000 acres of National Forest System land (among other land ownerships). Table 3.4-40 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

The proposed alternatives would not have a significant effect on existing LUD allocations in the Elfin Cove community use area because the acreage in development LUDs would remain essentially the same as under the existing Forest Plan under all of the alternatives.

#### ***Economy***

Commercial fishing, recreation and tourism, and subsistence use are important to Elfin Cove. The acreage in the Elfin Cove community use area is either Wilderness or Mostly Natural LUD allocations. Local timber production is not a significant part of the local economy. Commercial fishing is not expected to be significantly affected

**Figure 3.4-24**  
**Elfin Cove's Community Use Area**



**Table 3.4-40**  
**LUD Groups in Elfin Cove's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	161,164	311,541	161,164	161,164	282,545	161,164	282,545	356,732
Mostly Natural	196,724	46,347	196,724	196,724	75,360	196,743	75,360	1,174
Moderate Development	0	0	0	0	0	0	0	0
Intensive Development	18	18	18	18	0	0	0	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

under any of the alternatives. Tourism, especially sportfishing, has recently become more important to Elfin Cove. A number of lodges operate out of the community. Recreation and tourism based on sportfishing is expected to increase by the same amount under all of the alternatives.

Icy Strait, northwest Chichagof Island, and Yakobi Island are the most important areas in terms of subsistence use to Elfin Cove. Portions of these areas are legislatively withdrawn from timber harvest as either Wilderness or LUD II and would be maintained in their current condition under all alternatives. The remaining area is allocated to Mostly Natural LUDs and would continue to be either mostly natural or further restricted by re-allocation as Recommended Wilderness or LUD II.

**Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 63 percent of the total edible pounds of subsistence resources harvested by Elfin Cove households (Kruse and Frazier, 1988).

Deer account for 27 percent of the total edible pounds of subsistence resources harvested by Elfin Cove households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Elfin Cove community use area by Elfin Cove residents and all rural hunters in both the short term and long term. In the long term, projected harvest for all hunters in the Elfin Cove community use area would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Gustavus**

Gustavus is located in northern Southeast Alaska on the north shore of Icy Straits, east of the entrance to Glacier Bay. Prior to the founding of the present community, Huna Tlingit used the land and resources in the immediate vicinity of the community site. Use of a salmon camp near the mouth of the Salmon River was noted by early Gustavus settlers; however, after a short period of settlement by the new community, the Huna Tlingit generally discontinued use of the camp (ADF&G, 1994). According to the 2000 Census, Gustavus had a 2000 population of 429, with Alaska Natives comprising 44 percent of the total (U.S. Census Bureau, 2001b).

Gustavus was settled and named “Strawberry Point” in 1914 by a small group of immigrants from the lower 48 planning to develop the land as agricultural homesteads. World War II brought development to Gustavus in the form of an airstrip and Federal Aviation Administration communications facilities. Nearby Glacier Bay National Monument was established in 1925 (ADF&G, 1994).

The population of Gustavus, which increased considerably between 1970 and 1990, increased by 66 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	64	98	258	429

Source: USDA Forest Service, 1997a, U.S. Census Bureau, 2001b

## Environment and Effects 3

The economy of Gustavus is seasonal, at least partly due to its proximity to Glacier Bay National Park. The park and its lodge attract tourists and recreation enthusiasts during the summer months and there is also a commercial fishing industry. The lodge, airport, school, small businesses, and the Park Service are primary employers of local residents (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 14 percent of the labor force in Gustavus was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$34,766, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	7	4
Construction	23	12
Manufacturing	7	4
Wholesale Trade	0	0
Retail Trade	7	4
Transportation, Warehousing & Utilities	19	10
Information	2	1
Finance, Insurance, Real Estate, Rental & Leasing	2	1
Professional, Scientific, Management, Administrative & Waste Mgmt	10	5
Education, Health & Social Services	26	14
Arts, Entertainment, Recreation, Accommodation & Food Services	60	32
Other Services (Except Public Admin)	10	5
Public Administration	17	9
<b>Total Employment</b>	<b>190</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Gustavus is part of the Gustavus community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

The services and Federal government sectors were the largest employers in the Gustavus community group in 1999, accounting for 40 and 36 percent of total employment, respectively. There is no wood products employment in this community. Recreation and tourism-related activities (lodging, restaurants, and recreation services) accounted for 40 percent of total employment in 1999 (see Appendix E).

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Gustavus in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-25. This area contains approximately 481,000 acres of National Forest System land (among other land ownerships). Table 3.4-41 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 36 percent of the total acreage within the Gustavus community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 78 percent of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. There are less restrictions on activities in Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives 5 and 7 would fall between those two alternative groupings with 21 and 30 percent, respectively, of the existing development LUD acreage re-allocated as Wilderness.

### ***Economy***

Gustavus is a small community located near Glacier Bay National Park. Recreation and tourism are important to Gustavus, especially in relation to use of the National Park. Commercial fishing and subsistence use are also important to the community.

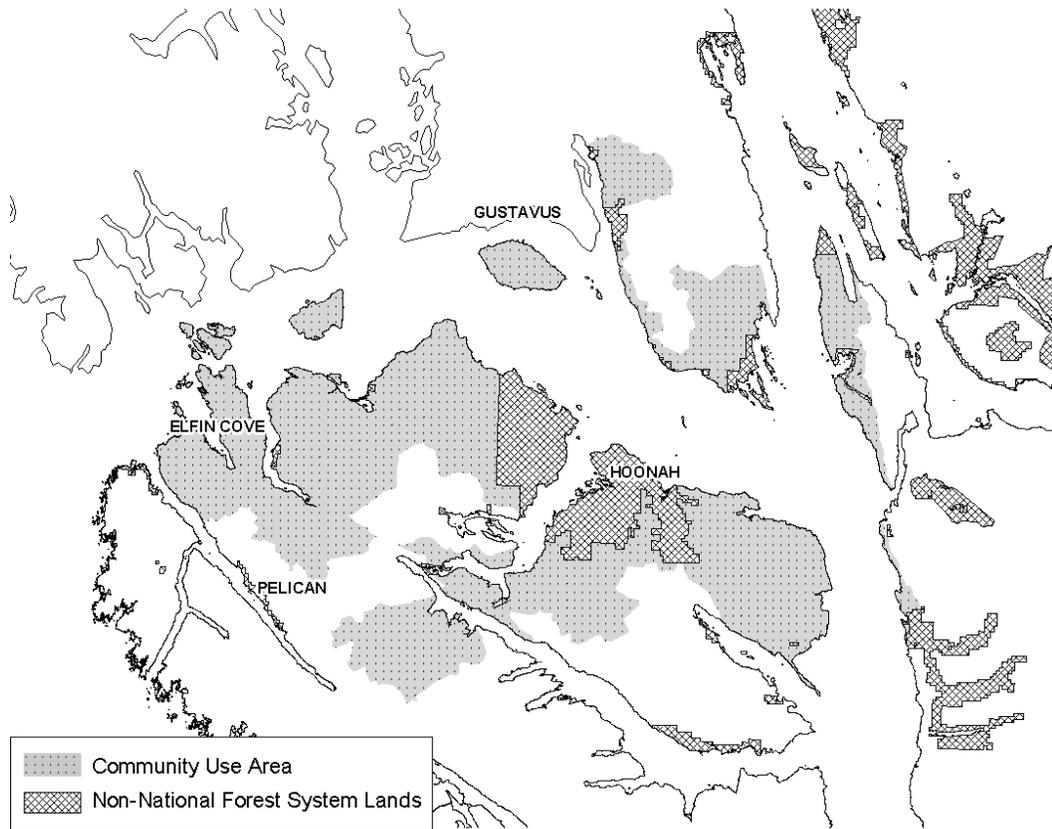
In Alternatives 6 and 8 approximately 81 percent of the land currently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II. This is not expected to have a significant effect on the community economy since timber production is not a major basis of the economy. Commercial fishing is not expected to be significantly affected by Forest Service activities under any of the alternatives.

### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. Deer account for 70 percent of the total edible pounds of subsistence resources harvested by Gustavus households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Gustavus community use area by Gustavus residents and all rural hunters in both the short term and long term. In the long term, projected harvest for all hunters in the Gustavus community use area would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-25  
Gustavus' Community Use Area**



**Table 3.4-41  
LUD Groups in Gustavus' Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	26,740	142,928	26,740	26,740	205,149	98,749	277,158	424,123
Mostly Natural	283,177	166,989	283,177	283,177	141,078	343,912	83,579	18,525
Moderate Development	13,160	13,160	13,160	13,160	12,031	5,026	6,977	5,038
Intensive Development	158,108	158,108	158,108	158,108	122,927	33,506	113,474	33,506
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>16,577</b>	<b>16,577</b>	<b>16,577</b>	<b>16,577</b>	<b>15,614</b>	<b>7,335</b>	<b>13,315</b>	<b>7,335</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Haines**

Haines is located in the northern portion of Southeast Alaska, near the north end of Lynn Canal on the Chilkat Peninsula. Haines is one of three Southeast communities connected by road to Canada. According to the 2000 Census, Haines had a 2000 population of 2,292, with Alaska Natives comprising 11 percent of the total (U.S. Census Bureau, 2001b). Haines Borough includes the city of Haines, which had a 2000 population of 1,811, and several surrounding communities. These communities include Lutak, just north of Haines, which had a population of 39 in 2000 and Mosquito Lake, historically Chilkat Tlingit territory, which was home to 221 residents in 2000, 5 percent identified as Alaska Natives. Covenant Life, a religious community, had 102 residents in 2000.

The Haines area was originally settled by the Chilkat Tlingits. The Chilkat Tlingits are now considered as two groups: the Chilkats of the Chilkat River, with Klukwan being the major population center, and the Chilkoots living in and near Haines. Haines itself was a trade center and mission site (ADF&G, 1994). Klukwan, a Chilkat Indian Village near the Chilkat River and 22 miles north of Haines, had a population of 139 in 2000. The village is known for its woven artwork of cedar bark and mountain goat hair. The area is host to the largest concentration of bald eagles in the world during the fall and winter at the nearby Chilkat Bald Eagle Reserve.

Settlement did not concentrate in Haines until the late 1800s. The commercial fishing industry located several canneries in the Chilkat Inlet area near Haines beginning in 1882; the Klondike gold rush brought thousands of prospectors to the town in the late 1890s; and the Dalton Trail was established as an open access route into the interior in the 1890s. Haines incorporated as a city in 1910 and as a third class borough in 1968 (ADF&G, 1994).

Haines is a major trans-shipment point because of its ice-free, deep-water port and dock, and year-round road access to Canada and Interior Alaska on the Alaska Highway. It is a northern terminus of the Alaska Marine Highway System and a hub for transportation to and from Southeast Alaska (Alaska DCRA, 1994).

The population of Haines has increased steadily since 1970. In the last decade, between 1990 and 2000, it increased 46 percent (U.S. Census Bureau, 2001b).

Year	1970	1980	1990	2000
Population	463	993	1,238	1,811

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The economy of Haines is highly seasonal. Commercial fishing, tourism, timber, government, and transportation are the primary employers. Estimated gross fishing earnings of local residents neared \$3 million in 2000 and 129 residents hold commercial fishing permits. Haines' road connection to the State Ferry has become increasingly important to the tourism businesses. An estimated 90,000 cruise ship passengers were expected to visit Haines in 2002, with an additional 100,000 independent travelers arrive by car, ferry, or air (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 14 percent of the labor force in Haines was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$39,926, compared to a regional median of \$44,118 (Alaska DCED, 2002).

## Environment and Effects 3

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	46	6
Construction	92	12
Manufacturing	19	2
Wholesale Trade	7	1
Retail Trade	96	12
Transportation, Warehousing & Utilities	54	7
Information	20	3
Finance, Insurance, Real Estate, Rental & Leasing	28	4
Professional, Scientific, Management, Administrative & Waste Mgmt	52	7
Education, Health & Social Services	125	16
Arts, Entertainment, Recreation, Accommodation & Food Services	108	14
Other Services (Except Public Admin)	72	9
Public Administration	53	7
<b>Total Employment</b>	<b>772</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Haines is part of the Haines community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

Retail trade, services, and non-federal government were the main employers in the Haines community group in 1999, accounting for 26, 26, and 20 percent of total employment, respectively. Recreation and tourism-related activities (lodging, restaurants, and recreation services) accounted for 22 percent of total employment in 1999. Approximately 140 sawmill jobs were lost with the closure of the mill in 1991. There was no wood products employment identified in the Haines community group in 1999.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of the Haines Borough in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-26. This area contains approximately 233,000 acres of National Forest System land (among other land ownerships). Table 3.4-42 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 16 percent of the total acreage within the Haines community use area. Alternatives 1, 2, 3, 4, and 5 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6, 7, and 8 would result in changes because 88 percent of the acreage in the Moderate Development LUDs would be allocated to Recommended Wilderness or LUD II. This acreage is approximately 16 percent of the total acreage in the community use area.

### ***Economy***

Commercial fishing, recreation and tourism, and subsistence use are important to Haines. Haines has an Alaska Marine Highway System ferry terminal and provides road access into Interior Alaska. Timber harvest on State land and wood processing were historically a major sector of the Haines economy, but there was no wood products employment in Haines in 2000 (see Table 3.4-34). Mining at the Kensington Mine southeast of Haines may become a more significant employer in the future. Although the major mine support is anticipated to be located in Juneau, it is likely that some benefits would accrue to Haines.

Commercial fishing is not expected to be significantly affected under any of the alternatives. Mining, and the potential opening of the Kensington Mine, is not anticipated to be affected differently by any alternative.

Alternative 8 could, however, restrict the potential development of electric transmission lines from the Otter Creek Hydropower Project. The purpose of the Otter Creek Hydroelectric Project, located 3 miles south of Skagway on Kasidaya Creek, is to provide electrical power to Skagway and Haines.

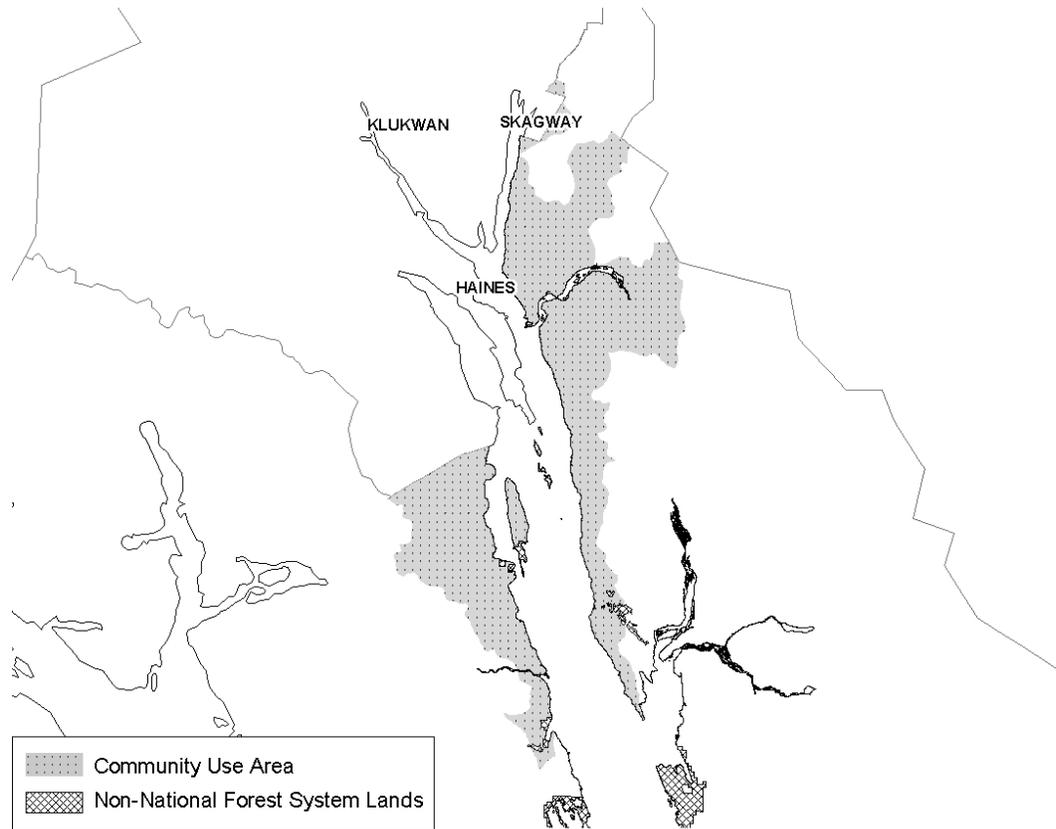
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 68 percent of the total edible pounds of subsistence resources harvested by Haines' households (Kruse and Frazier, 1988).

Deer account for 15 percent of the total edible pounds of subsistence resources harvested by Haines households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Haines community use area by Haines residents, all rural hunters, and all hunters in the short term. The selected alternative should also provide sufficient habitat capability for Haines residents in the long term. Projected harvest for all rural hunters and all hunters in the Haines community use area would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-26**  
**Haines' Community Use Area**



**Table 3.4-42**  
**LUD Groups in Haines' Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	253	253	253	253	4,229	89,905	93,881	228,083
Mostly Natural	195,844	195,844	195,844	195,844	191,868	138,523	134,547	345
Moderate Development	36,610	36,610	36,610	36,610	36,610	4,278	4,278	4,278
Intensive Development	0	0	0	0	0	0	0	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>2,463</b>	<b>2,463</b>	<b>2,463</b>	<b>2,463</b>	<b>2,463</b>	<b>582</b>	<b>582</b>	<b>582</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Hollis**

Hollis is located on east Prince of Wales Island, 19 miles east of Craig. According to the 2000 Census, Hollis had a 2000 population of 139, with Alaska Natives comprising 5 percent of the total (U.S. Census Bureau, 2001b).

Hollis, initially settled as a mining camp at the turn of the century, developed into a logging camp in the mid-1950s. In 1960, when Thorne Bay became center of the logging industry on central Prince of Wales Island, most Hollis residents moved to Thorne Bay. In recent years, Hollis has grown as a community, due in part to an Alaska Marine Highway terminal there. Roads now connect Hollis with most other communities on Prince of Wales Island. A State land sale at Hollis in 1980 led to its present status as a permanent community (ADF&G, 1994). Viking Lumber, one of the larger sawmills presently operating in the region, is located nearby between Craig and Klawock.

The population of Hollis increased by 28 people or 25 percent between 1990 and 2000.

<b>Year</b>	<b>1990</b>	<b>2000</b>
Population	111	139

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Support services for the timber industry, the State Ferry, and the U.S. Forest Service provide the majority of employment to the residents of Hollis. While the timber industry is prevalent on the Prince of Wales Island, it does not occur directly in the Hollis Community (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 3 percent of the labor force in Hollis was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$43,750, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	12	19
Construction	4	6
Manufacturing	2	3
Wholesale Trade	4	6
Retail Trade	6	10
Transportation, Warehousing & Utilities	11	17
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	3	5
Professional, Scientific, Management, Administrative & Waste Mgmt	2	3
Education, Health & Social Services	13	21
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	6	10
<b>Total Employment</b>	<b>63</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

## Environment and Effects 3

Hollis is part of the Central Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E.

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Hollis in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-27. This area contains approximately 292,000 acres of National Forest System land (among other land ownerships). Table 3.4-43 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 54 percent of the total acreage within the Hollis community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 59 to 61 percent of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. There are fewer restrictions on activities in Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives 3, 5, and 7 would have less effect because less acreage, 15 percent of the development LUDs, would be re-allocated as Recommended Wilderness.

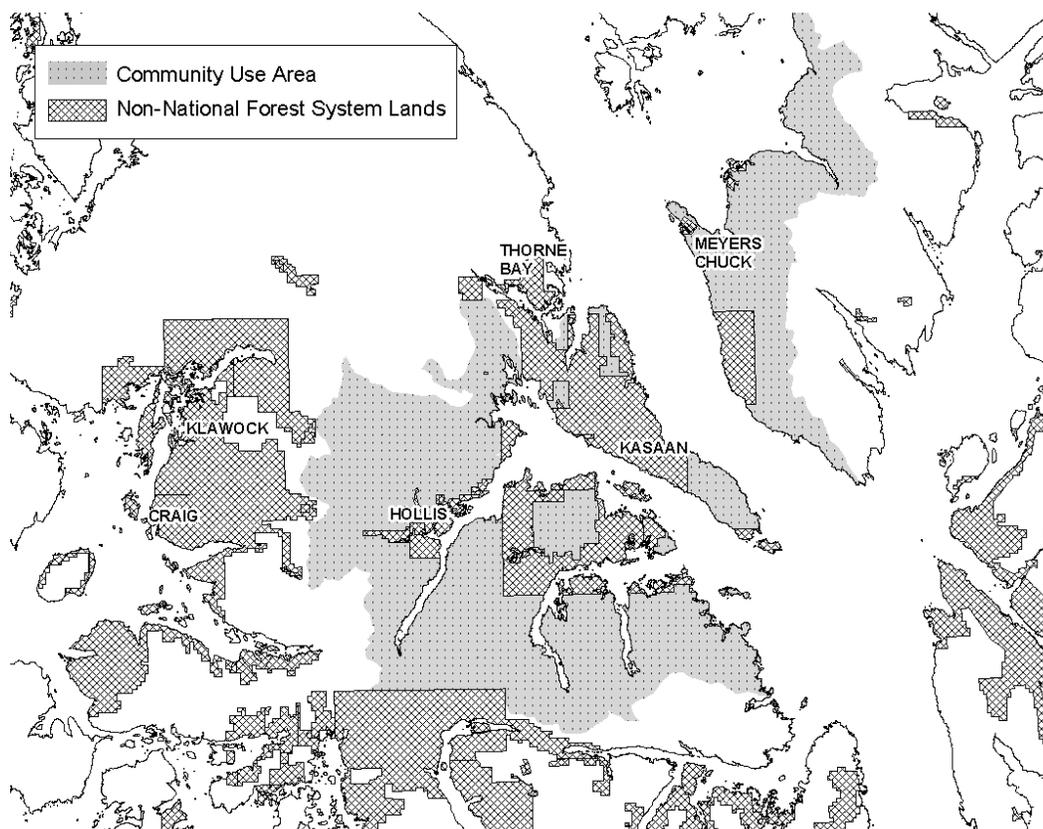
#### ***Economy***

Hollis is the site of the ferry terminal that provides access to the rest of Prince of Wales Island. As such, transportation is a major component of the community's economy. Subsistence and timber also play important roles.

Alternatives 3 through 8 would affect the sale volume under contract with Viking Lumber, with the largest effects occurring under Alternatives 6 and 8. These alternatives would also have a significant effect on the volume available for harvest in the long term. Reductions in timber activity would affect those Hollis residents who work at the Viking sawmill, as well as those working in the logging and other wood products-related sectors. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

The ferry terminal would continue to provide important access to Prince of Wales Island under all alternatives. Ferry access has become increasingly important to Prince of Wales Island as its population continues to grow. Potential reductions in timber harvest under Alternatives 3 and 5 through 8 could reduce use of the ferry

**Figure 3.4-27**  
**Hollis' Community Use Area**



**Table 3.4-43**  
**LUD Groups in Hollis' Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	34,237	34,237	108,199	71,855	108,199	34,237	108,199	221,493
Mostly Natural	100,426	100,426	50,325	62,811	50,325	195,987	50,325	5,401
Moderate Development	36,959	36,959	30,582	36,959	30,582	13,860	30,582	17,177
Intensive Development	120,164	120,164	102,684	120,164	102,684	47,741	102,684	47,741
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>32,286</b>	<b>32,286</b>	<b>27,643</b>	<b>32,286</b>	<b>27,643</b>	<b>18,506</b>	<b>27,643</b>	<b>19,215</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

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system. This would be especially noticeable during September through May when recreation and tourism use is much lower.

### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 65 percent of the total edible pounds of subsistence resources harvested by Hollis households (Kruse and Frazier, 1988).

Deer account for 23 percent of the total edible pounds of subsistence resources harvested by Hollis households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide habitat capability for deer hunted in the Hollis community use area by Hollis residents and all rural hunters in both the short term and long term. Projected harvest by all hunters in the Hollis community use area would exceed 10 percent habitat capability; the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in both the short term and long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### **Hoonah**

Hoonah is located on Port Frederick, along Icy Strait on the northeast shore of Chichagof Island, 40 air miles west of Juneau. Hoonah is predominantly a Native community and has been the principal village for the Hoonah Tlingit Clans since the late 1800s. According to the 2000 Census, Hoonah had a 2000 population of 501, with Alaska Natives comprising 61 percent of the total (U.S. Census Bureau, 2001b). Whitestone Logging Camp, with a population of 116 (U.S. Census Bureau, 2001b), is adjacent to Hoonah. Children from the camp attend school in Hoonah (Alaska DCRA, 1996). The community of Game Creek, a religious ministry, is located 2.6 miles southwest of Hoonah.

The village of Hoonah has been occupied since prehistoric times by the Tlingit people. Groups of Huna Tlingit lived all or part of the year at seasonal camps and small winter settlements throughout the Huna territory. Dozens of camps and settlements have been documented through archaeological surveys. The Hoonah Tlingit have very close ties to the Glacier Bay area across Icy Strait.

In 1880, the Northwest Trading Company built a store in Hoonah. The following year, missionaries settled in the town and established the Presbyterian Home Mission church and school. By 1887, about 500 people were wintering in the village. When the post office was established in 1901, the village was officially named Hoonah, which means "village by the cliff" in Tlingit. In 1944, fire burned many homes in Hoonah and destroyed the traditional ceremonial costumes and keepsakes of the villagers. The town has since been rebuilt and has become a center for logging operations on northern Chichagof Island (ADF&G, 1994). A sort yard and log transfer facility are located at Long Island. The community has a local Fish and Game Advisory Committee (ADF&G, 1994).

The population of Hoonah increased by 65 people or 8 percent between 1990 and 2000.

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Year	1970	1980	1990	2000
Population	748	680	795	860

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Hoonah has a diverse economy with nearly full employment during the summer season. Fishing, logging, and local government are the main employers. Estimated gross fishing earnings of local residents exceeded \$1.5 million in 2000. Fish processing occurs at plants in Hoonah and nearby Excursion Inlet. Sealaska Timber Corporation employs a number of local residents through contracts with Whitestone Logging, Inc. and Southeast Stevedoring. The Huna Totem Corporation owns and operates a sort yard and timber transfer facility. The City of Hoonah and the school district are the major public sector employers (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 21 percent of the labor force in Hoonah was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$39,028, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	75	24
Construction	10	3
Manufacturing	36	11
Wholesale Trade	2	1
Retail Trade	20	6
Transportation, Warehousing & Utilities	42	13
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	6	2
Professional, Scientific, Management, Administrative & Waste Mgmt	6	2
Education, Health & Social Services	74	23
Arts, Entertainment, Recreation, Accommodation & Food Services	15	5
Other Services (Except Public Admin)	2	1
Public Administration	29	9
<b>Total Employment</b>	<b>317</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Hoonah is part of the North Chichagof community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Manufacturing and non-federal government were the major employers in the North Chichagof community group in 1999, accounting for 34 and 30 percent of total employment, respectively. Logging and seafood processing accounted for 24 and 10 percent of total employment, respectively (see Appendix E).

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Hoonah in their local day-to-day work, recreational, and subsistence activities is shown on

## Environment and Effects 3

Figure 3.4-28. This area contains approximately 585,000 acres of National Forest System land (among other land ownerships). Table 3.4-44 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 46 percent of the total acreage within the Hoonah community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 73 percent of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. There are less restrictions on activities in Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, would, for example, be allowed under LUD II designation. Alternatives 5 and 7 would have less effect because less acreage, 40 and 19 percent, respectively, of the development LUDs would be reallocated as wilderness.

### ***Economy***

Commercial fishing, logging, and subsistence use are important to Hoonah. The Icy Straits sawmill, which is located in Hoonah, employed 18 people in 2000. Commercial fishing is not expected to be significantly affected under any of the alternatives.

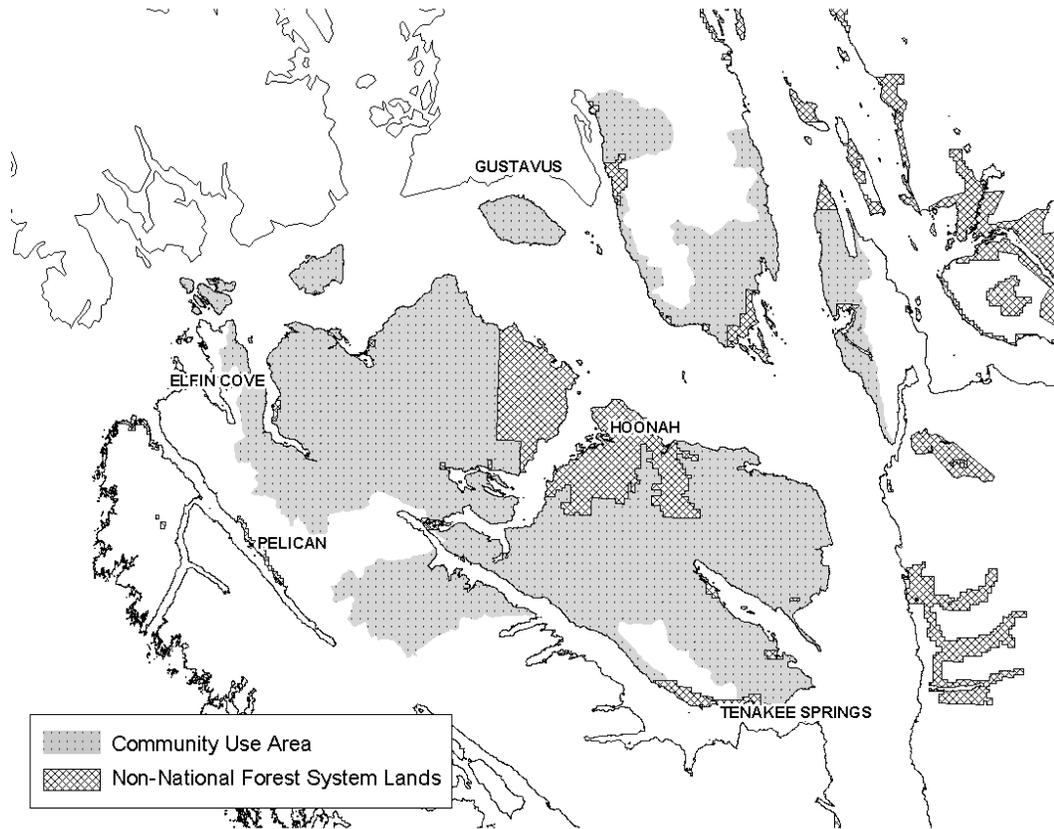
Alternatives 6 and 8 would reduce the land available for timber harvest Forest-wide, as well as in the Hoonah community use area, and would likely affect employment in the Icy Straits sawmill (see the Wood Products effects discussion in the Regional Economy section). Icy Straits (Whitestone SE Logging Co.) presently has 11.3 MMBF under contract. Eighty percent of this volume would be in Recommended Wilderness or LUD II areas under Alternatives 6 and 8. Alternatives 6 and 8 would also affect short-term logging employment in Hoonah's community use area and Forest-wide (see Table 3.4-14). As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 59 percent of the total edible pounds of subsistence resources harvested by Hoonah households (Kruse and Frazier, 1988).

Deer account for 23 percent of the total edible pounds of subsistence resources harvested by Hoonah households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Hoonah residents in the short term. Projected deer harvest in the Hoonah community use area for all rural hunters and all hunters would exceed 10 percent

**Figure 3.4-28**  
**Hoonah's Community Use Area**



**Table 3.4-44**  
**LUD Groups in Hoonah's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	23,113	124,073	23,113	23,113	186,295	104,137	267,319	485,825
Mostly Natural	294,876	193,916	294,876	294,876	168,003	409,626	101,489	27,637
Moderate Development	19,247	19,247	19,247	19,247	18,118	8,729	13,064	8,995
Intensive Development	247,393	247,393	247,393	247,393	212,212	62,144	202,759	62,179
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>26,272</b>	<b>26,272</b>	<b>26,272</b>	<b>26,272</b>	<b>25,309</b>	<b>13,081</b>	<b>23,010</b>	<b>13,092</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

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habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the short term. Projected harvest for Hoonah residents was estimated to exceed this level in the long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### Hydaburg

Hydaburg is located on the southwest side of Prince of Wales Island, 45 air miles northwest of Ketchikan. According to the 2000 Census, Hydaburg had a 2000 population of 382, with Alaska Natives comprising 85 percent of the total (U.S. Census Bureau, 2001b).

The Haida Indians migrated to Prince of Wales Island, a predominantly Tlingit area, from Graham Island, Canada. After combining three villages, the present site was chosen initially as the Hydaburg Indian Reservation in 1912. It became a fishing village with the first fish processing plant opening in 1927, and three other canneries operating through the 1930s. Seafood processing was active until 1984 when a fire destroyed the cannery (ADF&G, 1994). Hydaburg is connected by road to Craig, Klawock, Hollis, and northern parts of the Island.

In 1936, Hydaburg became the first Alaskan Native village to form an Indian Reorganization Act Council. In 1972, Hydaburg incorporated as a first class city. The community has a local Fish and Game Advisory Committee (ADF&G, 1994).

Hydaburg's population increased by 79 percent between 1970 and 1990, but remained fairly constant between 1990 and 2000.

Year	1970	1980	1990	2000
Population	214	298	384	382

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Hydaburg's economy is based primarily on the timber and fishing industries. The Haida Corporation has a substantial timber holding, a log storage facility, and a sort yard. It suspended logging in 1985 due to a decline in the timber market and leases the storage facility and sort yard to Sealaska Corporation. The city of Hydaburg, Sealaska Corporation, Haida Corporation, and SEARHC are the leading employers. The community is interested in developing a fish processing facility, a U.S. Forest Service Visitor Center, specialty woodworking, and a mini-mall/retail center (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 31 percent of the labor force in Hydaburg was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$31,625, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	5	6
Construction	11	12
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	8	9
Transportation, Warehousing & Utilities	7	8
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	3	3
Professional, Scientific, Management, Administrative & Waste Mgmt	4	4
Education, Health & Social Services	40	44
Arts, Entertainment, Recreation, Accommodation & Food Services	2	2
Other Services (Except Public Admin)	3	3
Public Administration	7	8
<b>Total Employment</b>	<b>90</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Hydaburg is part of the Hydaburg community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Non-federal government and services were the main employers in the Hydaburg community group in 1999, accounting for 48 and 19 percent of total employment, respectively.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Hydaburg in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-29. This area contains approximately 766,000 acres of National Forest System land (among other land ownerships). Table 3.4-45 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 45 percent of the total acreage within the Hydaburg community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 75 percent of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. There would be less restrictions on activities under Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives 5 and 7 would fall between those two alternative groupings with 11 and 25 percent of the existing development LUD acreage re-allocated as Wilderness, respectively.

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### ***Economy***

Subsistence use and commercial fishing are the primary elements of Hydaburg's economy. Commercial fisheries employment is not likely to be affected under any of the alternatives.

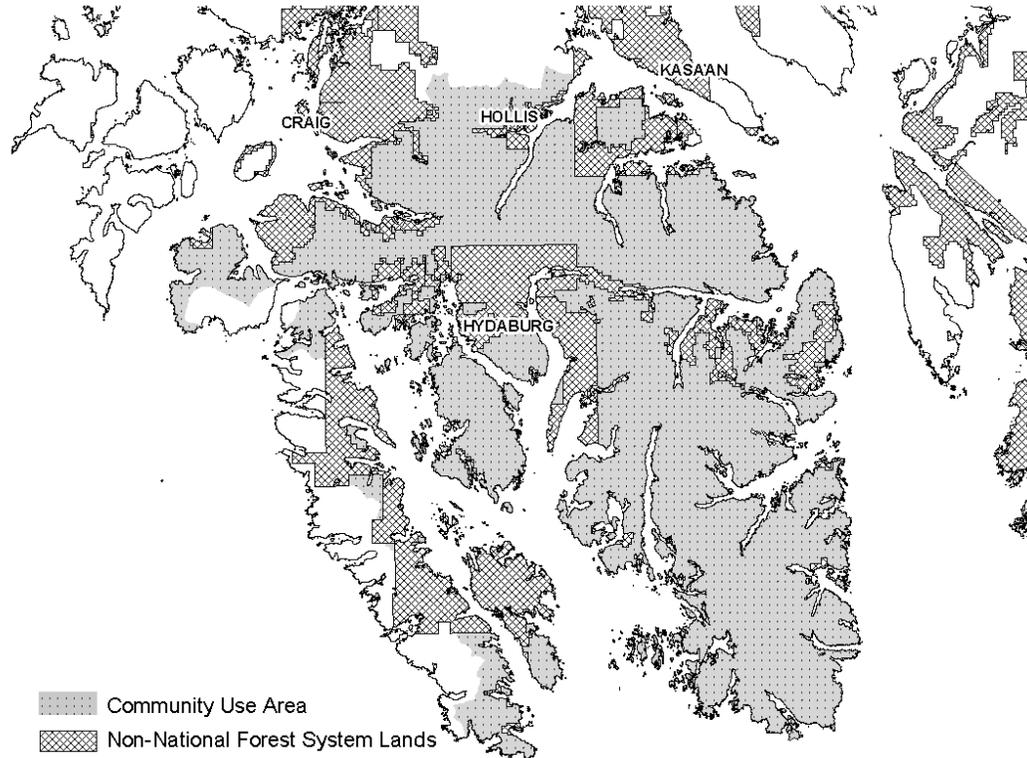
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Hydaburg households (Kruse and Frazier, 1988).

Deer account for 13 percent of the total edible pounds of subsistence resources harvested by Hydaburg households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Hydaburg residents, as well as for all deer hunted within the WAAs of the Hydaburg community use area in the long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-29**  
**Hydaburg's Community Use Area**



**Table 3.4-45**  
**LUD Groups in Hydaburg's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	87,555	109,009	87,555	87,555	214,619	268,551	340,732	660,088
Mostly Natural	334,554	313,099	334,554	334,554	246,302	415,117	167,211	19,364
Moderate Development	70,659	70,659	70,659	70,659	62,421	23,104	62,421	24,962
Intensive Development	273,727	273,727	273,727	273,727	243,161	60,325	196,141	62,682
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>63,664</b>	<b>63,664</b>	<b>63,664</b>	<b>63,664</b>	<b>56,678</b>	<b>26,008</b>	<b>48,572</b>	<b>26,787</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

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### Hyder

Hyder is a small community located at the head of Portland Canal, a 70-mile-long fjord that forms part of the United States/Canadian border. Hyder is just 2 miles from Stewart, British Columbia, and 75 air miles from Ketchikan. Hyder is one of three Alaskan communities connected by road to Canada. According to the 2000 Census, Hyder had a 2000 population of 97, with no Alaska Native population (U.S. Census Bureau, 2001b).

Nass River Tsimshians inhabited the area, which they called Skam-a-Kounst, “a safe place,” prior to the coming of white prospectors in the late 1890s. The first official exploration and building at the town site occurred in 1896 by the U.S. Army Corps of Engineers. Stewart also became settled at this time, as gold, silver, and other mineral mining operations developed. The two towns grew together with an initial economic base in mining (ADF&G, 1994).

The population of Hyder, which slightly more than doubled between 1970 and 1990, remained fairly constant between 1990 and 2000.

Year	1970	1980	1990	2000
Population	49	77	99	97

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Hyder’s economy is primarily based on tourism and, as such, is seasonal. Four of the five largest employers are tourist related. Many tourists enter Hyder from Canada. Stewart, British Columbia and Hyder are only 2 miles apart and share visitor services. A bottled water business, opened in 1998, employs several local residents (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 47 percent of the labor force in Hyder was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$11,719 compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	0	0
Construction	10	42
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	2	8
Transportation, Warehousing & Utilities	4	17
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	4	17
Arts, Entertainment, Recreation, Accommodation & Food Services	4	17
Other Services (Except Public Admin)	0	0
Public Administration	0	0
<b>Total Employment</b>	<b>24</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Hyder is part of the Hyder community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. The Federal government and services sectors were the main employers in the Hyder community group in 1999, accounting for 69 and 25 percent of total employment, respectively.

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Hyder in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-30. This area contains approximately 109,000 acres of National Forest System land (among other land ownerships). Table 3.4-46 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 10 percent of the total acreage within the Hyder community use area. Alternatives 1, 2, 3, 4, 5, and 7 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 72 and 12 percent, respectively, of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. While a large proportion of development LUD acres would be affected under Alternatives 6 and 8, it should be noted that the entire existing development LUD acreage comprises just 10 percent of the Hyder community use area.

#### ***Economy***

Hyder is a small former mining town that now relies upon tourism and commercial fishing for the majority of its income. Tourism (especially bear viewing) has become increasingly important to the economy of Hyder.

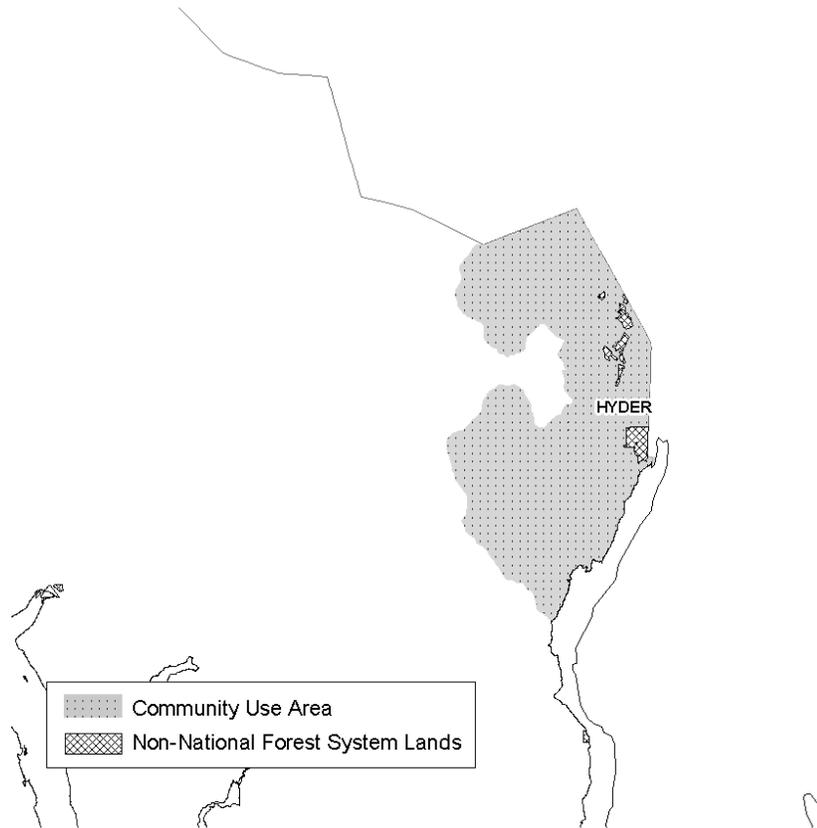
Alternative 8 would re-allocate the majority of the existing Moderate Development and Mostly Natural LUD acres in Hyder's community use area to Recommended Wilderness. This could potentially affect tourism in the Hyder area by limiting the scale of future tourism-related facilities and outfitter/guide operations that serve large numbers of clients. Commercial fisheries employment is not likely to be affected by any of the activities.

#### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Hyder households (Kruse and Frazier, 1988).

Deer account for only a fraction of the total edible pounds of subsistence resources harvested by Hyder households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted in Hyder's community use area by Hyder residents, all rural hunters, and all hunters in the short term. In the long term projected harvest for all rural hunters and all hunters in the Hyder community use area would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort.

**Figure 3.4-30**  
**Hyder's Community Use Area**



**Table 3.4-46**  
**LUD Groups in Hyder's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	71	71	71	71	71	71	71	96,274
Mostly Natural	98,419	98,419	98,419	98,419	98,419	105,917	98,419	3,479
Moderate Development	10,463	10,463	10,463	10,463	10,463	2,964	10,463	9,199
Intensive Development	0	0	0	0	0	0	0	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>2,373</b>	<b>2,373</b>	<b>2,373</b>	<b>2,373</b>	<b>2,373</b>	<b>917</b>	<b>2,373</b>	<b>2,319</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

### Juneau and Vicinity

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

The city and Borough of Juneau surrounds the Gastineau Channel in Southeast Alaska. Juneau lies approximately 900 air miles northwest of Seattle and 600 air miles southeast of Anchorage. The City and Borough is comprised of three communities: Juneau, Auke Bay, and Douglas. According to the 2000 Census, the City and Borough of Juneau had a 2000 population of 30,711, accounting for 42 percent of the population in Southeast Alaska. Alaska Natives comprised almost 11 percent of the total population (U.S. Census Bureau, 2001b).

Originally, Tlingit Indians made seasonal and permanent villages along the north and south coast near the present site of Juneau. Gold discovered in the Juneau area started the mining town in 1880 and the settlement grew rapidly. Two of the world's largest lode gold mines produced over \$180 million in gold before finally closing in 1944. The state capital was moved from Sitka to Juneau in 1906 while Alaska was still a territory. Alaska became the 49th State in 1959. Juneau has developed as a government and regional services center, with added economic contributions from fishing and tourism.

The population of Juneau has grown steadily since 1970, almost doubling between 1970 and 1990 and increasing a further 15 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	13,556	19,528	26,751	30,711

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The Juneau economy is primarily based on government, tourism, support services for logging, fish processing and mining. The State, city and Borough of Juneau, and federal agencies provide nearly 45% of the employment in the community. Juneau is the State capital and is the home of the State legislators and their staff during the legislative season (January to May). Tourism is a significant part of the economy during the summer months providing \$130 million in income. Juneau is an important cruise ship docking location due to the local attractions: Mendenhall Glacier, Juneau Icefield, Tracy Arm Fjord Glacier, and the new Mount Roberts Tram. Estimated gross fishing earnings of local residents exceeded \$10.4 million in 2000. Cold storage facilities in Juneau process over 2 million pounds of seafood annually and DIPAC, a private non-profit organization, operates a salmon hatchery. The Kennecott Green's Creek Mine, the largest silver mine in North America, produces gold, silver, lead and zinc and the Kensington Gold Mine is being developed (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 5 percent of the labor force in Juneau was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$62,034, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	854	5
Construction	1,035	6
Manufacturing	199	1
Wholesale Trade	174	1
Retail Trade	1,689	10
Transportation, Warehousing & Utilities	1,072	6
Information	417	3
Finance, Insurance, Real Estate, Rental & Leasing	723	4
Professional, Scientific, Management, Administrative & Waste Mgmt	1,339	8
Education, Health & Social Services	3,383	20
Arts, Entertainment, Recreation, Accommodation & Food Services	1,162	7
Other Services (Except Public Admin)	755	5
Public Administration	3,735	23
<b>Total Employment</b>	<b>16,537</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Juneau is part of the Juneau community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Non-federal government, services, and retail trade were the main employers in the Juneau community group in 1999, accounting for 37, 21, and 15 percent of total employment, respectively. Recreation-related activities (lodging, restaurants, and recreation services) accounted for 11 percent of total employment.

## Potential Effects

### **Community Use Area**

The general area commonly used or related to by many of the residents of Juneau in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-31. This area contains approximately 2,010,000 acres of National Forest System land (among other land ownerships). Table 3.4-47 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 8 percent of the total acreage within the Juneau community use area. Alternatives 1, 2, 3, 4, and 5 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 94 percent of the acreage in the development LUDs would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated to LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternative 7 would also have a significant effect on areas presently allocated to development LUDs, with 70 percent of the acreage in these LUDs re-allocated to Recommended

Wilderness. While a large proportion of development LUD acres would be affected under Alternatives 6, 7, and 8, it should be noted that the entire existing development LUD acreage comprises just 7.5 percent of the Juneau community use area.

### ***Economy***

As the State capital, government is important to Juneau. Besides changes in government employment, Juneau is most likely to be affected by changes in mining, recreation and tourism, and commercial fishing, as well as potential restrictions on transportation and utility projects.

Mining has again become important to the community of Juneau. Greens Creek Mine restarted operations in 1996 and the Kensington Mine is expected to open in the near future. These developments would not be affected under any of the alternatives. Recreation and tourism could be potentially affected by Alternative 8, which would re-allocate a large part of the Juneau's community use area to Recommended Wilderness. This could potentially affect the tourism industry by limiting outfitter/guide uses that serve large volumes of clients, restricting future recreation developments, and possibly restricting helicopter landing tours on the Juneau Icefields. Alternative 8 would also recommend preservation of the undeveloped parts of the Juneau community use area as wilderness into the foreseeable future. Commercial fishing is not expected to be significantly affected under any of the alternatives.

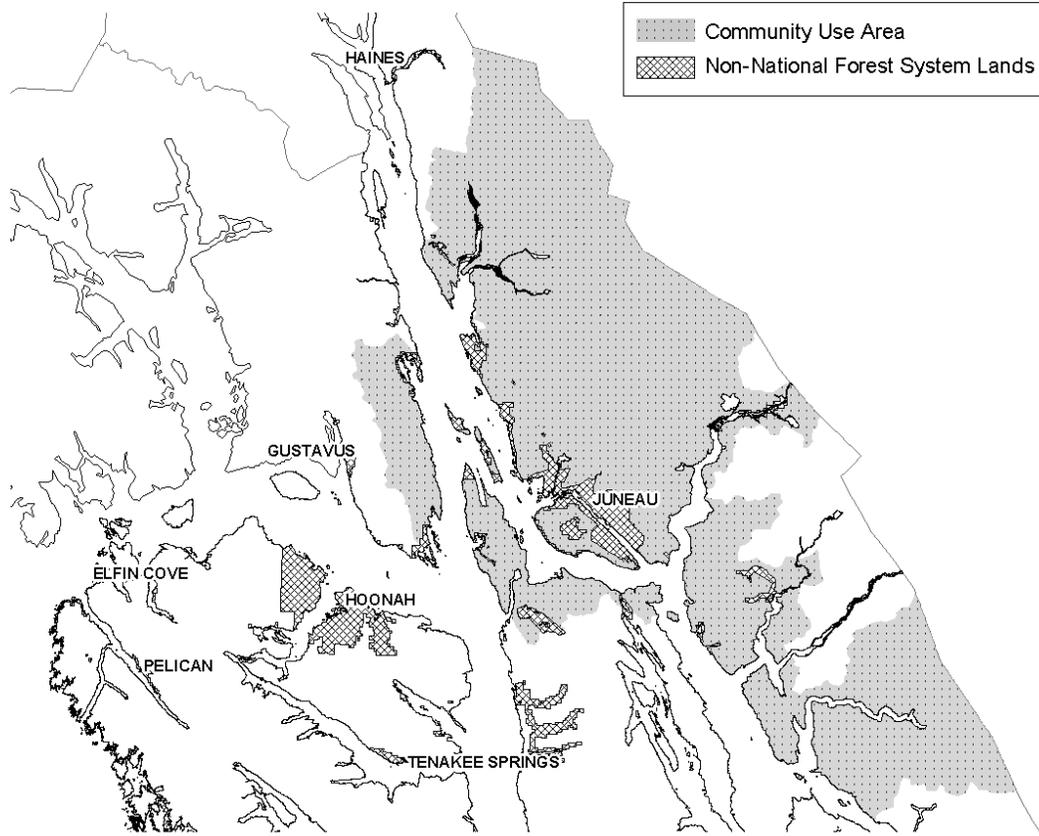
Juneau could also be affected by potential restrictions on transportation and utility projects. The potential for developing a road corridor along the east side of Lynn Canal would be affected under Alternatives 2 and 5. Alternatives 6, 7, and 8 would restrict the potential for roads leading to Skagway or Haines along both sides of Lynn Canal. Alternatives 2, 5, 6, 7, and 8 would restrict the potential for development of a transmission line that would connect Juneau and Skagway. Alternative 8 would also restrict the potential development of transmission lines from the Lake Dorothy Hydroelectric Project.

### ***Subsistence***

Juneau is not classified as a subsistence community; however, many residents use the surrounding Tongass for sport hunting and fishing. The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted all rural hunters in the long term. Projected deer harvest in the Juneau community use area by all rural hunters and Juneau residents and all hunters was estimated to exceed 10 percent habitat capability; the level that the analysis assumed would provide a reasonably high level of hunter success for their effort in the short term and long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-31  
Juneau’s Community Use Area**



**Table 3.4-47  
LUD Groups in Juneau’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	382,413	424,390	382,413	382,413	432,081	979,031	979,031	1,985,782
Mostly Natural	1,470,777	1,428,800	1,470,777	1,470,777	1,421,109	1,021,949	984,559	15,077
Moderate Development	134,118	134,118	134,118	134,118	134,118	8,839	46,220	8,960
Intensive Development	22,921	22,921	22,921	22,921	22,921	422	422	422
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>12,848</b>	<b>898</b>	<b>3,341</b>	<b>901</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Kake**

Kake is located on west Kupreanof Island, along Keku Strait, 38 air miles northwest of Petersburg. According to the 2000 Census, Kake had a 2000 population of 710, with Alaska Natives comprising 67 percent of the total (U.S. Census Bureau, 2001b).

Tlingit Alaska Natives villages and fishing camps in the Kake area pre-date non-Alaska Native explorations of Southeast Alaska. During the 1800s these villages were consolidated at the present site of Kake. In the years following the American purchase of Alaska from Russia in 1867, there were several confrontations between the Keex' Tlingit and the Russian and American military administrations culminating in the destruction of three Kake villages. For many years, the Keex' people did not rebuild their villages. Eventually, they concentrated on Kupreanof Island at the present townsite along Keku Strait (ADF&G, 1994).

The period of 1880 through 1915 brought a territorial government, missionary activity, economic innovations, and a larger white population into Keex' Tlingit territory. By the 1920s, Kake had become self-governing, with a mayor and police chief. In 1949, Kake formed an IRA Council under the Indian Reorganization Act of 1936. In 1952, Kake became incorporated as a first class city. In 1971, the passage of ANCSA resulted in the incorporation of the village and the selection of corporation lands (ADF&G, 1994).

The population of Kake, which increased by 56 percent between 1970 and 1990, remained fairly constant between 1990 and 2000.

Year	1970	1980	1990	2000
Population	448	555	700	710

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

The Kake economy is primarily based on timber and fishing industries. The city, including the school district, and the timber industry are the largest employers. Turn Mountain Timber, a joint venture between Whitestone logging and Kake Tribal Logging, and the log sort yard and transfer facility at Point McCarny employ a number of local residents. Kake Tribal Corporation, which owns a local cold storage plant and Ocean Fresh Seafoods, is the largest individual employer. The Gunnock Creek Hatchery, a non-profit organization, operates a salmon hatchery to assist in sustaining the salmon fishery in the area (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 25 percent of the labor force in Kake was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$39,643, compared to a regional median of \$44,118 (Alaska DCED, 2002).

## Environment and Effects 3

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	34	14
Construction	34	14
Manufacturing	10	4
Wholesale Trade	0	0
Retail Trade	22	9
Transportation, Warehousing & Utilities	19	8
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	3	1
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	57	23
Arts, Entertainment, Recreation, Accommodation & Food Services	17	7
Other Services (Except Public Admin)	20	8
Public Administration	32	13
<b>Total Employment</b>	<b>248</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Kake is part of the Kake community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

The non-federal government, finance, insurance, and real estate (F.I.R.E), and manufacturing sector were the major employers in the Kake community group in 1999, accounting for 28, 22, and 21 percent of total employment, respectively. Wood products (logging) employment decreased by 57 percent between 1990 and 1999, declining from 123 to 53 jobs. Wood products employment accounted for 21 percent of total employment in the Kake community group in 1999 (see Appendix E).

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Kake in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-32. This area contains approximately 457,000 acres of National Forest System land (among other land ownerships). Table 3.4-48 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 44 percent of the total acreage within the Kake community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because most of the acreage in the development LUDs (60 and 56 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated to LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives

3, 5, and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage, 12, 10, and 22 percent, respectively, re-allocated as Wilderness.

### **Economy**

Kake is a traditional native community where commercial fishing, timber harvesting, and subsistence use are important. For subsistence use, west Kupreanof and north Kuiu Islands are some of the most important areas.

Timber harvest has been an important contributor to the Kake economy for approximately 20 years. During that period, both private and National Forest System land have been harvested. Recently, timber harvest has diminished on both ownerships. Logging employment in the Kake community group declined by 70 jobs or 57 percent between 1990 and 1999, but still comprised 21 percent of total employment in 1999 (Table 3.4-16). Reductions in timber harvest on Federal land could further affect logging employment in Kake. In the short term, Alternatives 6 and 8 would likely prevent approximately 207.7 and 189.4 MMBF from being harvested Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging employment throughout the Forest. Alternatives 6 and 8 would also reduce the land available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

Alternative 8 may also have effects on potential road and utility projects. Development of the proposed South Wrangell ferry terminal and road connection could be restricted, as well as the ultimate development of the road connection between Kake and Petersburg. Restriction on the possible development of the road corridor between Kake and Petersburg could also occur under Alternatives 3, 5, 6, and 7. Proposed and potential transmission line corridors could also be affected, including a potential intertie with Kake. Alternatives 3, 5, 6, 7, and 8 could all restrict the potential development of a transmission line between Petersburg and Kake (see the *Transportation and Utilities* section). The city of Kake has expressed interest in exploring options for modifications to Alternative 6 that would allow the construction of a powerline corridor between Kake and Petersburg.

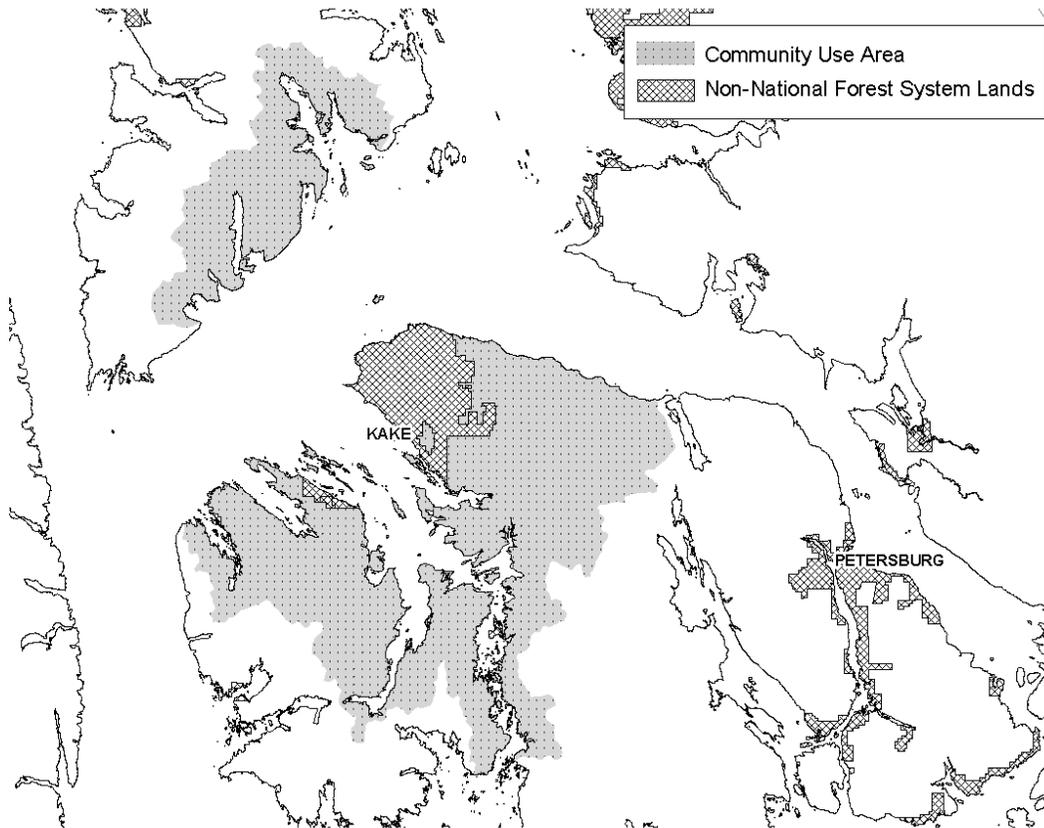
Commercial fishing is not expected to be significantly affected under any of the alternatives.

### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Kake households (Kruse and Frazier, 1988).

Deer account for 24 percent of the total edible pounds of subsistence resources harvested by Kake households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Kake community use area by Kake residents, all rural hunters, and all hunters in the short term. In the long term, the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Kake community use area by Kake residents and all rural hunters. Projected harvest for all hunters in the Kake community use area would, however, exceed 10 percent habitat capability; the level that the analysis assumed would provide a reasonably high level of hunter success for their effort.

**Figure 3.4-32**  
**Kake's Community Use Area**



**Table 3.4-48**  
**LUD Groups in Kake's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	105,149	105,149	201,594	175,362	197,135	137,890	230,018	351,962
Mostly Natural	150,236	150,236	77,879	80,023	79,059	233,246	69,192	11,712
Moderate Development	15,480	15,480	9,062	15,480	11,333	6,872	8,936	6,872
Intensive Development	186,059	186,059	168,389	186,059	169,396	78,916	148,779	86,377
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>50,414</b>	<b>50,414</b>	<b>46,437</b>	<b>50,414</b>	<b>46,649</b>	<b>32,753</b>	<b>44,096</b>	<b>35,422</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### Kasaan

Kasaan is a small village located on the eastern side of Prince of Wales Island 30 miles northwest of Ketchikan. According to the 2000 Census, Kasaan had a 2000 population of 39, with Alaska Natives comprising 38 percent of the total (U.S. Census Bureau, 2001b).

Originally Tlingit territory, Kasaan gets its name from the Tlingit word meaning “pretty town.” Haidas migrated north from the Queen Charlotte Islands in the early 1700s to the Island and established the village known as “Old Kasaan.” In 1898 the Copper Queen mine, camp, sawmill, post office, and store were built on Kasaan Bay, and the Haida people relocated to this new village (Alaska DCRA, 1994). The Haida village of Kasaan was settled at its present site in 1904 (ADF&G, 1994).

Kasaan’s population grew by 80 percent between 1970 and 1990. The population declined between 1990 and 2000, decreasing by 15 people or 28 percent.

Year	1970	1980	1990	2000
Population	30	25	54	39

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Unemployment in Kasaan is high at this time because there are relatively few income opportunities. Most villagers participate in subsistence for supplemental food sources (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. This data is an extrapolation based on information from a sample of residents. Extrapolation of a small sample may have inaccuracies but should provide a general indication of distribution of employment. Approximately 20 percent of the labor force in Kasaan was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$43,500, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	2	13
Construction	2	13
Manufacturing	3	19
Wholesale Trade	0	0
Retail Trade	0	0
Transportation, Warehousing & Utilities	2	13
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	2	13
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	5	31
<b>Total Employment</b>	<b>16</b>	<b>100</b>

Source: Alaska DCED, 2002

## Environment and Effects 3

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Kasaan is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Kasaan in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-33. This area contains approximately 543,000 acres of National Forest System land (among other land ownerships). Table 3.4-49 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for about 49 percent of the total acreage within the Kasaan community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because most of the acreage in the development LUDs (73 and 71 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated to LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives 3, 5, and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage re-allocated as Wilderness.

#### **Economy**

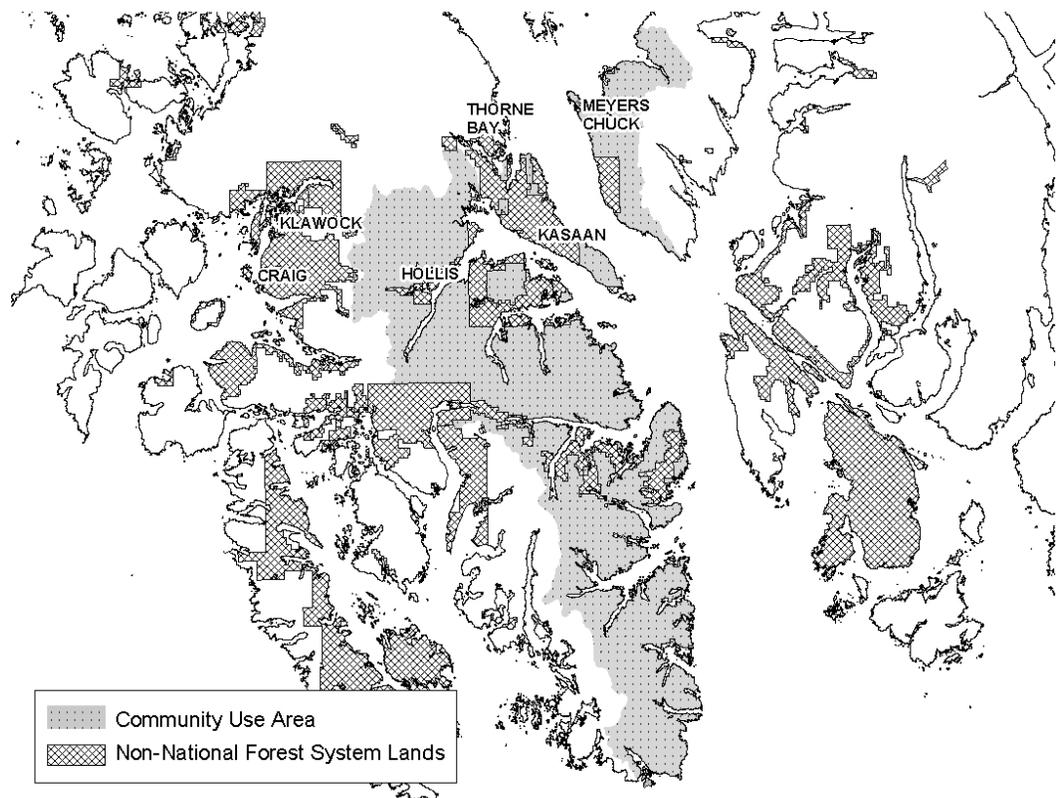
Subsistence use and commercial fishing are the primary elements of Kasaan's economy. Commercial fisheries employment is not likely to be affected under any of the alternatives. Much of the timber harvest in the vicinity of Kasaan is on private land owned by the Kasaan Native Corporation. This land would not be affected under any of the alternatives.

Kasaan is currently competing with other communities in their subsistence use areas and this is likely to continue under all alternatives. Alternatives increasing access by road due to harvest activity may increase competition from other communities on Prince of Wales Island indirectly impacting Kasaan's use. An increase in access may also allow Kasaan households to increase the range of their use.

#### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 74 percent of the total edible pounds of subsistence resources harvested by Kasaan households (Kruse and Frazier, 1988).

**Figure 3.4-33**  
**Kasaan's Community Use Area**



**Table 3.4-49**  
**LUD Groups in Kasaan's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	42,327	42,334	108,447	79,945	132,880	192,403	258,523	458,602
Mostly Natural	236,347	236,340	191,507	198,732	167,074	279,026	88,344	7,141
Moderate Development	56,492	56,492	50,116	56,492	50,116	14,457	50,116	17,773
Intensive Development	207,431	207,431	192,532	207,431	192,531	56,829	145,620	59,186
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>49,004</b>	<b>49,004</b>	<b>44,973</b>	<b>49,004</b>	<b>44,973</b>	<b>21,755</b>	<b>36,867</b>	<b>22,872</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

Deer account for 22 percent of the total edible pounds of subsistence resources harvested by Kasaan households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Kasaan community use area by Kasaan residents in the short term and long term. This alternative was also estimated to provide sufficient habitat for all rural hunters in the short term. Projected deer harvest for all hunters in the Kasaan community use area exceeds the level that is both sustainable and provides a reasonably high level of hunter success for their effort in the short term and long term. Projected deer harvest for all rural hunters also exceeds this level in the long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### Ketchikan

Ketchikan is located on Revillagigedo Island near the southernmost boundary of Alaska. Ketchikan lies approximately 679 miles north of Seattle and 235 miles south of Juneau. It is the first Alaska port-of-call for northbound ships. Ketchikan Gateway Borough includes Ketchikan, Saxman, Mountain Point, Clover Pass, Ward Cove and Herring Cove, which are located on the Ketchikan road system, and Pennock Island. According to the 2000 Census, Ketchikan Gateway Borough had a 2000 population of 14,070, with 56 percent of the population living in the city of Ketchikan. Alaska Natives make up 18 percent of the borough population (U.S. Census Bureau, 2001b). Native populations in 1990 varied from a high of 80 percent in Saxman to a low of less than 8 percent in the Ketchikan suburbs. Alaska Natives accounted for 66 percent of total population in Saxman in 2000. Refer to the section on Saxman for information directly relating to that community.

The Ketchikan area was a summer fishing camp for the Tlingit Alaska Natives. Their name for the area, "kitschk-him," meant "thundering wings of an eagle." Its abundant fish and timber resources eventually attracted non-Natives, with the first cannery opening in Ketchikan in 1886 and four more by 1912. Nearby gold and copper discoveries briefly brought activity to Ketchikan during the late 1890s, but timber and fishing became the chief economic forces at the turn of the century and have remained important. The 1954 construction of a pulp mill in Ward Cove continued a tradition begun by the 1903 opening of Ketchikan Spruce Mills, which operated for more than 70 years. Ketchikan has also remained an important hub for fishing, both for fish processing and as home to those with fishing permits.

The population of Ketchikan increased by 14 percent between 1980 and 1990 and then decreased by 4 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	6,994	7,198	8,263	7,922

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Ketchikan is an industrial center and a major port of entry in Southeast Alaska. It has a diverse economy, supported by a large fishing fleet, fish processing facilities, timber and tourism. The estimated gross fishing earnings of local residents neared \$10 million in 2000. Four canneries, three cold storage facilities, and a fish processing plant support the fishing industry in summer months. Ketchikan is a cruise ship stop and brings in over 500,000 annual visitors. While the timber industry

is important to the economy with the home base for several timber companies, the Ketchikan Pulp Corporation's pulp mill closed in March 1997 laying off a number of people. Mining may play a larger role in the future as U.S. Borax is studying construction of a molybdenum mine at Quartz Hill (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 8 percent of the labor force in Ketchikan was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$45,802, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	170	4
Construction	276	7
Manufacturing	219	6
Wholesale Trade	85	2
Retail Trade	427	11
Transportation, Warehousing & Utilities	430	11
Information	93	2
Finance, Insurance, Real Estate, Rental & Leasing	229	6
Professional, Scientific, Management, Administrative & Waste Mgmt	238	6
Education, Health & Social Services	731	19
Arts, Entertainment, Recreation, Accommodation & Food Services	414	11
Other Services (Except Public Admin)	183	5
Public Administration	393	10
<b>Total Employment</b>	<b>3,888</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Ketchikan Gateway Borough is comprised of the Ketchikan and Revillagideo community groups (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

Since completion of the 1997 Forest Plan Revision Final EIS analysis, the Ketchikan pulp mill has closed. Closure of the mill, the community's largest employer, resulted in the loss of 500 direct jobs, many of which were high paying and year round. Employment data compiled by the Alaska DOL indicate that employment in the lumber and wood products sector declined from 11.8 percent of total wage and salary employment in 1996 to 5.7 percent in 1999 (Baker, 2001b). A study by the Alaska DOL found that 3 years after the mill closure about 45 percent of the laid-off workers were employed in other jobs in the Ketchikan/Prince of Wales area, about 15 percent were employed elsewhere in Alaska, and about 40 percent had left the state altogether (Landry, 2001).

A recent development in Ketchikan was the opening of the Gateway Forest Products lumber and veneer facilities on the former site of the KPC Pulp Mill in Ketchikan. Gateway Forest Products filed for bankruptcy protection in February 2002. This application was dismissed by the U.S. Bankruptcy Court in April 2002. The sawmill was sold and dismantled. The city of Ketchikan purchased the veneer mill and is presently looking for an operator. The Pacific Log and Lumber sawmill, one of the larger remaining sawmills in Southeast Alaska is also located in Ketchikan.

## Environment and Effects 3

Approximately 21 percent of employment in the Ketchikan community group was in non-federal government. Services and retail trade accounted for 21 and 17 percent of total employment, respectively, with recreation-related activities comprising 10 percent of total employment (see Appendix E).

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Ketchikan in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-34. This area contains approximately 1,976,000 acres of National Forest System land (among other land ownerships). Table 3.4-50 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for about 22 percent of the total acreage within the Ketchikan community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because most of the acreage in the development LUDs (75 and 73 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation. Alternatives 3, 5, and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage (12, 13, and 23 percent, respectively) re-allocated as Wilderness.

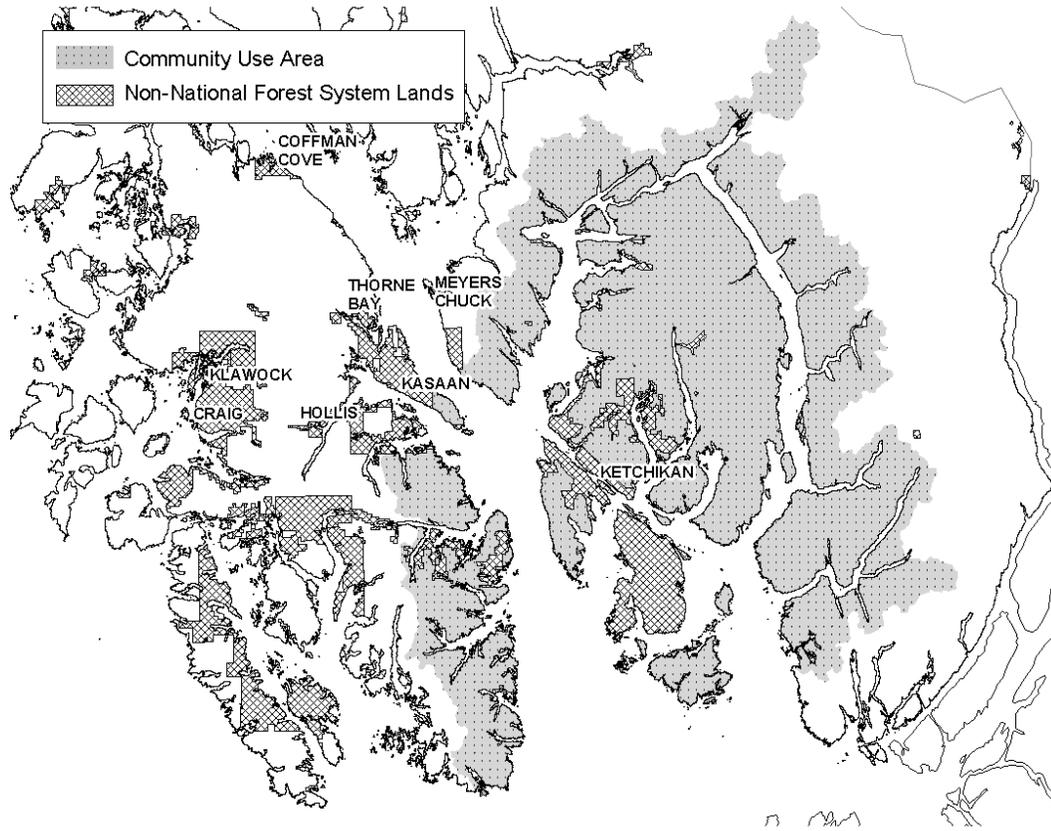
#### ***Economy***

Ketchikan would be primarily influenced by changes in timber processing, recreation and tourism use, commercial fishing, and recreation opportunities, as well as potential restrictions on transportation and utility projects.

Wood products employment in Ketchikan could be affected in the short term and long term under the alternatives. In the short term, Alternatives 6 and 8 could significantly reduce the sale volumes that Gateway Forest Products and Pacific Log and Lumber presently have under contract (see Table 3.4-11). Reductions in available volume could lead to the temporary or permanent closure of these facilities (see the Wood Products short-term effects discussion in the Regional Economy section of this document). Reductions in long-term supply under Alternatives 6 and 8 could also have potentially significant effects on these facilities, as well as logging employment in the community. Although the wood products sector (logging and sawmill employment) only accounted for 6 percent of total employment in the Ketchikan community group in 1999, this translated into 404 jobs. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

Recreation and tourism have become increasingly important to the economy of Ketchikan. A total of 665,221 cruise ship passengers visited Ketchikan in 2001, a 56 percent increase in passenger volume since 1996 (Alaska DCED, 2002). Ketchikan is also the stopover point for visitors traveling to Misty Fiords and Prince of Wales

**Figure 3.4-34**  
**Ketchikan's Community Use Area**



**Table 3.4-50**  
**LUD Groups in Ketchikan's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	934,998	966,493	1,061,856	987,603	1,117,660	1,084,403	1,243,287	1,845,720
Mostly Natural	612,678	581,183	539,269	560,073	483,610	783,718	404,880	13,758
Moderate Development	102,341	102,341	94,737	102,341	94,633	39,633	94,633	43,463
Intensive Development	325,981	325,981	280,135	325,981	280,095	68,674	233,200	73,488
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>76,457</b>	<b>76,457</b>	<b>65,546</b>	<b>76,457</b>	<b>65,524</b>	<b>31,151</b>	<b>57,418</b>	<b>32,629</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

Island. Recreation and tourism could be potentially affected by Alternative 8, which would re-allocate a large part of Ketchikan's community use area as Recommended Wilderness. This could potentially affect the tourism industry by restricting future recreation developments and limiting outfitter/guide uses that serve large numbers of clients. Alternative 8 would also recommend preservation of the undeveloped parts of the Ketchikan community use area as wilderness into the foreseeable future.

Commercial fisheries employment is not likely to be affected under any of the alternatives.

Alternative 8 would affect the development of the Swan Lake-Lake Tyee Intertie, a proposed 138-kV electric transmission line that would connect the existing Swan Lake and Lake Tyee hydroelectric projects. This transmission line would allow Ketchikan to meet its energy needs by accessing surplus energy at the Lake Tyee project. The Forest Service issued a Record of Decision on this project in 1997. Further details of this project are provided in the Swan Lake-Lake Tyee Intertie FEIS (USDA Forest Service, 1997c), which is incorporated here by reference.

### **Subsistence**

Ketchikan is not classified as a subsistence community; however, many residents use the surrounding Tongass for hunting and fishing. The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted by all hunters in the short term. However, projected deer harvest in the long term by rural hunters and Ketchikan residents and all hunters exceeds the level that is both sustainable and provides a reasonably high level of hunter success for their effort. If a restriction were necessary, sport hunting by Ketchikan residents would be restricted before subsistence hunting by rural hunters is restricted.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### **Klawock**

Klawock is located on the west coast of Prince of Wales Island, across from Klawock Island, approximately 56 air miles from Ketchikan. It is connected by road to Craig and to other communities on the Prince of Wales Island road system. According to the 2000 Census, Klawock had a 2000 population of 854, with Alaska Natives comprising 51 percent of the total (U.S. Census Bureau, 2001b).

The mouth of the Klawock River, where the village of Klawock is now located, has been the site of Tlingit occupation for at least the past 600 years. According to oral history, some members of the Kuiu *kwaan* of Kuiu Island moved to Klawock as well (ADF&G, 1994). Klawock is now the center of the Tlingit population on west Prince of Wales Island.

The history of Klawock is closely tied to the fishing industry. A trading post and salmon saltery were established in 1868, and the first cannery in Alaska was built here by a San Francisco firm in 1878. A hatchery for red salmon operated at Klawock Lake between 1897 and 1917 (Alaska DCRA, 1994). In 1929, Klawock incorporated as a first class city. The community has a local Fish and Game Advisory Committee (ADF&G, 1994).

## Environment and Effects 3

The community has been historically dependent on fishing and cannery operations. The timber industry increased in importance in recent years with a relatively large number of residents employed in logging and ship loading in the Klawock and Craig area (Alaska Department of Community and Economic Development [DCED], 2002). Viking Lumber, one of the larger sawmills presently operating in the region, is located between Klawock and Craig.

Retail trade and services have become increasingly important to the economy of Klawock. Many residents of communities on northern Prince Wales, as well as recreationists and tourists shop at the shopping center located in Klawock. Klawock has a new airport that has the capacity to accommodate large jet aircraft. The new airport is currently not in commercial operation.

Klawock's population, which more than tripled between 1970 and 1990, increased by 132 people or 18 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	213	318	722	854

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

Historically, the Klawock economy has been dependent on fishing and cannery operations. The cannery operations were closed in the late 1980's and the timber industry has become increasingly important. Sealaska's logging operation, through a contract with Shaan-Seet, Inc., is the largest employer. The City and school district are also significant employers. The state operates a salmon hatchery on Klawock Lake to maintain the local salmon fisheries (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 16 percent of the labor force in Klawock was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$35,000, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	50	13
Construction	41	11
Manufacturing	24	6
Wholesale Trade	13	3
Retail Trade	75	20
Transportation, Warehousing & Utilities	17	5
Information	5	1
Finance, Insurance, Real Estate, Rental & Leasing	6	2
Professional, Scientific, Management, Administrative & Waste Mgmt	4	1
Education, Health & Social Services	53	14
Arts, Entertainment, Recreation, Accommodation & Food Services	28	8
Other Services (Except Public Admin)	32	9
Public Administration	24	6
<b>Total Employment</b>	<b>372</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

## Environment and Effects 3

Klawock is part of the Central Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Klawock in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-35. This area contains approximately 770,000 acres of National Forest System land (among other land ownerships). Table 3.4-51 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for about 55 percent of the total acreage within the Klawock community use area. Alternatives 1, 2, 3, 4, 5, and 7 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain largely the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because a large share of the acreage presently allocated to development LUDs (45 and 44 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. The LUD II designation is less restrictive than the Wilderness designation. Some roadbuilding, transmission lines, and wildlife habitat improvement would, for example, be allowed under LUD II designation.

#### **Economy**

Klawock is a traditional native community. Timber employment, subsistence use, and retail services are most likely to be affected in this community.

Alternatives 3 through 8 would affect the sale volume under contract with Viking Lumber, with the largest effects occurring under Alternatives 6 and 8. These alternatives would also have a significant effect on the volume available for harvest in the long term. Reductions in timber activity would affect those Klawock residents who work at the Viking sawmill, as well as those working in the logging and other wood products-related sectors. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place. Retail services in Klawock would likely be negatively affected by reductions in wood products employment.

#### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Klawock households (Kruse and Frazier, 1988).

Deer account for 19 percent of the total edible pounds of subsistence resources harvested by Klawock households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Klawock residents in the short term and long term. Projected deer harvest

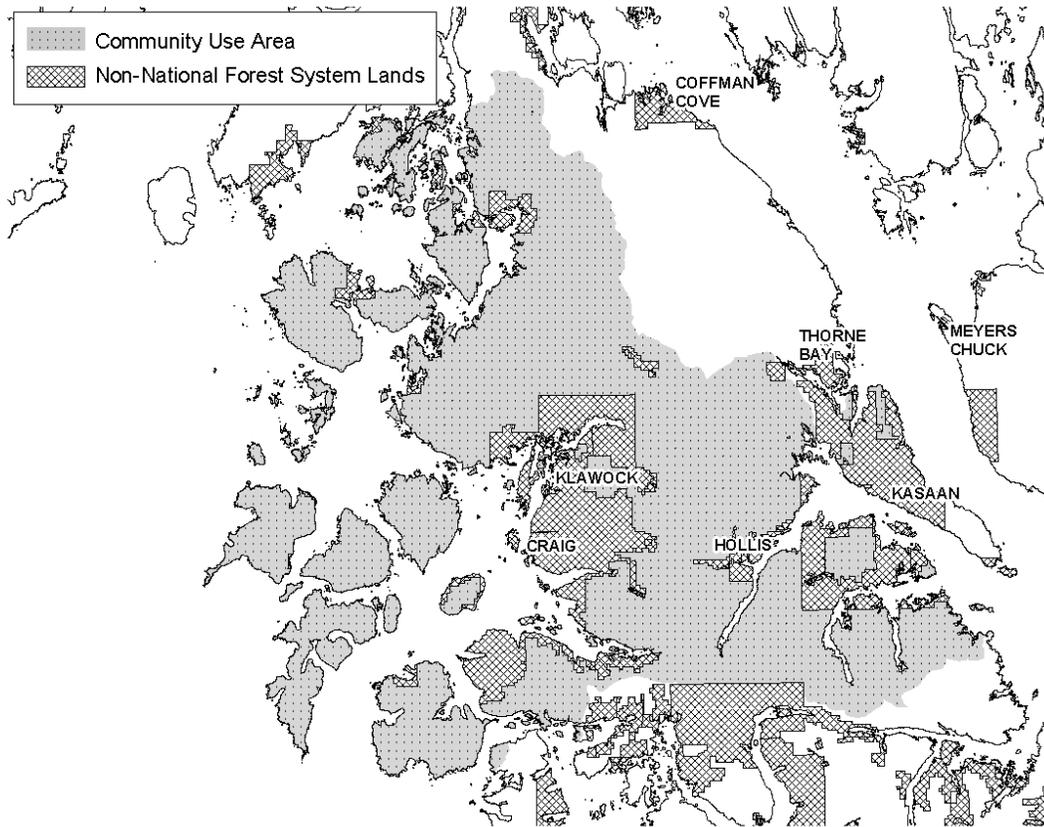
## Environment and Effects 3

for all rural and for all hunters was estimated to exceed the level that the analysis assumed would provide a reasonably high level of hunter success for their effort in both the short term and long term.

At some point a restriction in hunting may be necessary. Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

The 1997 Forest Plan Revision Final EIS noted that Alternative 11, which corresponds with Alternative 1 in this analysis, would likely have a direct effect on Kalwock's subsistence resources, with much of Klawock's subsistence use areas within a development LUD. Alternatives 6 and 8 could reduce this potential effect by allocating more than half of the acres currently in development LUDs to Recommended Wilderness or LUD II.

**Figure 3.4-35  
Klawock's Community Use Area**



**Table 3.4-51  
LUD Groups in Klawock's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	45,502	119,707	45,502	45,502	181,103	45,502	181,103	485,156
Mostly Natural	301,138	226,933	301,138	301,138	170,629	492,631	170,629	47,435
Moderate Development	78,545	78,545	78,545	78,545	75,069	36,312	75,069	41,488
Intensive Development	345,106	345,106	345,106	345,106	343,509	196,024	343,509	196,394
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>114,185</b>	<b>114,185</b>	<b>114,185</b>	<b>114,185</b>	<b>113,333</b>	<b>83,948</b>	<b>113,333</b>	<b>85,171</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

### Metlakatla

Metlakatla is located on Annette Island, 15 miles south of Ketchikan. According to the 2000 Census, Metlakatla had a 2000 population of 1,375, with Alaska Natives comprising 82 percent of the total (U.S. Census Bureau, 2001b).

Metlakatla, which is believed to have been occupied at one time by Tlingit Indians, was settled in 1887 by Church of England minister William Duncan and about 830 Tsimshian followers from northern British Columbia. In 1891, an Act of Congress declared Annette Island an Indian Reservation (the Annette Island Reserve), the only one in Alaska. This action set aside the reservation for the exclusive use and occupancy by “Metlakatla Indians and such other Natives of Alaska who might join them” (ADF&G, 1994).

Metlakatla is a traditional Tsimshian community with a subsistence lifestyle. The community was not part of ANCSA. The 86,000-acre Island reservation and surrounding 3,000 feet of coastal waters are not subject to State jurisdiction. The Annette Island Reserve regulates commercial fishing in these waters, and operates its own tribal court system (Alaska DCRA, 1994). The community participates in regional fish and game management issues (ADF&G, 1994).

Non-federal government was the largest employer in the Metlakatla community group in 1999, accounting for 322 jobs or 68 percent of total employment. Wood products employment, which decreased by 60 percent (56 jobs) between 1990 and 1999, accounted for 40 jobs or 9 percent of total employment in 1999 (see Appendix E). These jobs were all in the sawmill sector. The two sawmills located in Metlakatla, Annette Island Sawmill and Metlakatla Forest Products, were both idle in 2000 and are not expected to reopen.

The population of Metlakatla, which increased by a third between the 1980 and 1990 census, saw a 2 percent decline between 1990 and 2000.

Year	1970	1980	1990	2000
Population	1,050	1,056	1,407	1,375

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b

Metlakatla is a federal Indian reservation with no local taxes. The economy is based primarily on the fishing and wood products industry. Metlakatla Indian Community, the largest employer, operates a salmon hatchery on Tamgas Creek, a sawmill, the tribal court, and all local services. Annette Island Packing Co. is a cold storage facility in Metlakatla owned by the community. The community is interested in developing tourism and achieved their first cruise ship visit in 1999 (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 21 percent of the labor force in Metlakatla was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$43,516, compared to a regional median of \$44,118 (Alaska DCED, 2002).

## Environment and Effects 3

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	36	7
Construction	54	11
Manufacturing	41	8
Wholesale Trade	3	1
Retail Trade	44	9
Transportation, Warehousing & Utilities	42	8
Information	4	1
Finance, Insurance, Real Estate, Rental & Leasing	13	3
Professional, Scientific, Management, Administrative & Waste Mgmt	12	2
Education, Health & Social Services	149	30
Arts, Entertainment, Recreation, Accommodation & Food Services	19	4
Other Services (Except Public Admin)	8	2
Public Administration	76	15
<b>Total Employment</b>	<b>501</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Metlakatla is part of the Metlakatla community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Non-federal government and retail trade were the main employers in the Metlakatla community group in 1999, accounting for 68 and 10 percent of total employment, respectively.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Metlakatla in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-36. This area contains 1,976,000 acres of National Forest System land (among other land ownerships). Table 3.4-52 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for about 22 percent of the total acreage within the Metlakatla community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because much of the acreage presently allocated to development LUDs (75 and 73 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings with a share of the existing development LUD acreage (12, 13, and 23 percent, respectively) re-allocated as Wilderness.

#### **Economy**

Metlakatla could be affected primarily by changes in commercial fishing, timber processing, and subsistence opportunities.

Commercial fisheries employment is not likely to be affected under any of the alternatives. As noted above, the two sawmills in Metlakatla are presently idle and not expected to re-open. A reduction in available public timber supplies of the magnitude likely under Alternatives 6 and 8 would not improve the chances of these facilities re-opening.

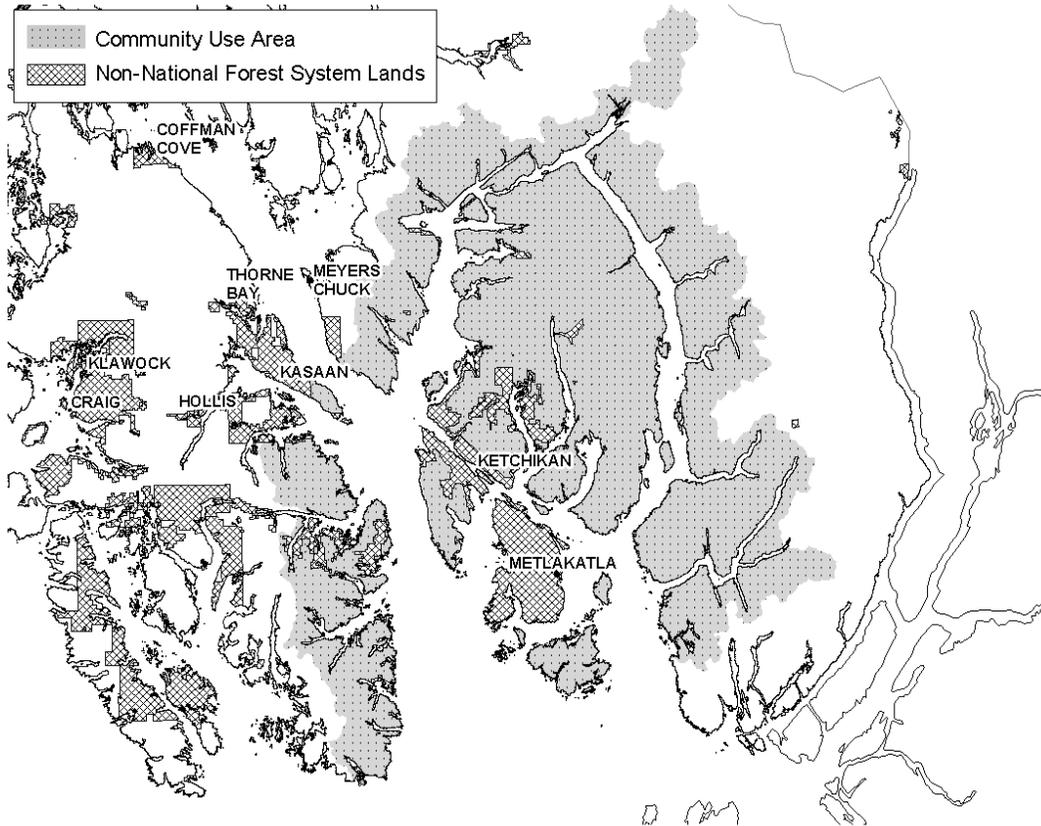
### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Metlakatla households (Kruse and Frazier, 1988).

Deer account for 15 percent of the total edible pounds of subsistence resources harvested by Metlakatla households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted in the Metlakatla community use area by Metlakatla residents, all rural hunters, and all hunters in both the long term and short term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not change the overall conclusions for Alternative 1.

**Figure 3.4-36  
Metlakatla’s Community Use Area**



**Table 3.4-52  
LUD Groups in Metlakatla’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	934,998	966,493	1,061,856	987,603	1,117,660	1,084,403	1,243,287	1,845,720
Mostly Natural	612,678	581,183	539,269	560,073	483,610	783,718	404,880	13,758
Moderate Development	102,341	102,341	94,737	102,341	94,633	39,633	94,633	43,463
Intensive Development	325,981	325,981	280,135	325,981	280,095	68,674	233,200	73,488
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>76,457</b>	<b>76,457</b>	<b>65,546</b>	<b>76,457</b>	<b>65,524</b>	<b>31,151</b>	<b>57,418</b>	<b>32,629</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Meyers Chuck

Meyers Chuck is a small fishing village on the northwest tip of Cleveland Peninsula, 40 miles northwest of Ketchikan. According to the 2000 Census, Meyers Chuck had a 2000 population of 21, none of whom were Alaska Native (U.S. Census Bureau, 2001b).

Beginning as a protected anchorage for fishing vessels, Meyers Chuck grew with the building of a cannery in Union Bay in 1916. Postal service began in 1922. Fishing and fish processing, and support services sustained the community until the mid-1900s. Fishing and fish processing are still the basic sources of income in the community.

Meyers Chuck's population was the same in 1990 as it was in 1970, but declined by 16 residents, or 43 percent, between 1990 and 2000.

Year	1970	1980	1990	2000
Population	37	50	37	21

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Meyers Chuck economy is primarily based on fishing with five residents (25 percent of the population) holding commercial fishing licensees. Due to the relatively few cash opportunities, many residents depend on subsistence activities (Alaska DCED, 2002).

Employment by industry data for Meyers Chuck is not included because it was based on a very small sample size and may not be a good indicator of the economy as a whole. The 2000 U.S. Census identified 3 people as employed in a potential workforce of 13 residents. While no adults in Meyers Chuck were identified as unemployed and seeking work in 2000, 77 percent of the population was identified as unemployed and not seeking work. Median household income was \$64,375 compared to a regional median of \$44,118 (Alaska DCED, 2002).

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Meyers Chuck is part of the Cleveland Peninsula community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

## Potential Effects

### Community Use Area

The general area commonly used or related to by many of the residents of Meyers Chuck in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-37. This area contains approximately 381,000 acres of National Forest System land (among other land ownerships). Table 3.4-53 shows how the land within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 31 percent of the total acreage within the Meyers Chuck community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 95 percent of the acreage presently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II. Approximately 66 percent of the existing development LUD acres would be re-allocated as Recommended Wilderness under Alternatives 3, 5, and 7.

## Environment and Effects 3

### ***Economy***

Meyers Chuck is primarily a fishing community and would be primarily influenced by changes in fishing and how the Cleveland Peninsula is managed for timber harvest. While the southern part of the peninsula (the area immediately surrounding Meyers Chuck) is in Mostly Natural LUDs, a large portion of the Cleveland Peninsula is presently in Intensive Development LUDs. The majority of the Cleveland Peninsula would be re-allocated as Recommended Wilderness or LUD II under Alternatives 8 and 6, respectively. Commercial fishing is not likely to be affected under any of the alternatives.

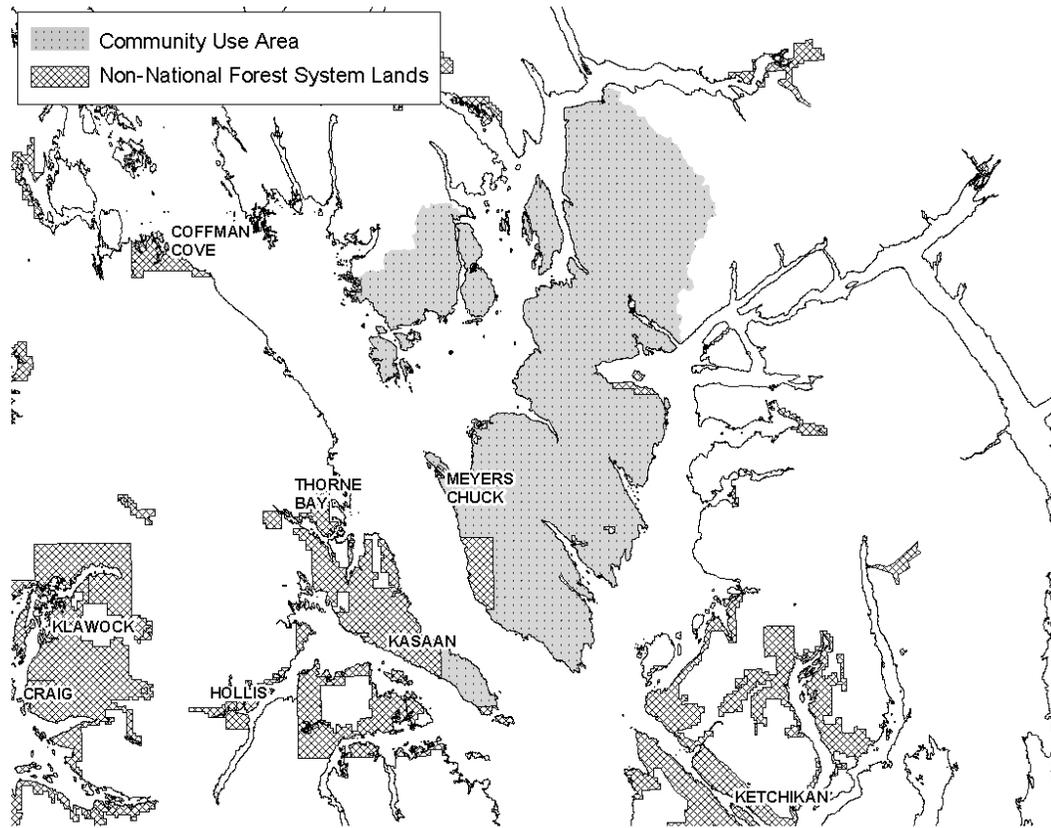
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Meyers Chuck households (Kruse and Frazier, 1988).

Deer account for 5 percent of the total edible pounds of subsistence resources harvested by Meyers Chuck households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted in the Meyers Chuck community use area by Meyers Chuck residents, all rural hunters, and all hunters.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-37  
Meyers Chuck’s Community Use Area**



**Table 3.4-53  
LUD Groups in Meyers Chuck’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	48,612	87,146	240,073	129,464	277,989	48,612	277,989	375,083
Mostly Natural	214,692	176,158	100,552	133,843	62,638	327,078	62,638	609
Moderate Development	34,535	34,535	20,546	34,535	20,546	2,168	20,546	2,167
Intensive Development	83,146	83,146	19,817	83,146	19,815	3,133	19,815	3,132
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>22,105</b>	<b>22,105</b>	<b>6,549</b>	<b>22,105</b>	<b>6,549</b>	<b>1,513</b>	<b>6,549</b>	<b>1,513</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which are as in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

# Environment and Effects 3

## Naukati Bay

Naukati Bay is a town, approximately 6.5 square miles in size, located on the northwest coast of Prince of Wales Island. According to the 2000 Census, Naukati Bay had a 2000 population of 135, with Alaska Natives comprising 10 percent of the total (U.S. Census Bureau, 2001b).

The U.S. Coast and Geodetic Survey named the area “Naukatee Nay” in 1904 after the local Native name. Naukati Bay was first developed as a logging camp, but in 1991 an area approximately a mile from the camp was opened by the State Department of Natural Resources as a land disposal site for homesteaders (Alaska DCRA, 1995).

The population of Naukati Bay increased by 42 people or 45 percent between 1990 and 2000.

Year	1990	2000
Population	93	135

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Naukati Bay economy is heavily dependent on the timber industry and employment is primarily seasonal. The Naukati Logging camp provides log transfer services for several smaller camps on Prince of Wales Island (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 29 percent of the labor force in Naukati Bay was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$27,500, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	17	44
Construction	2	5
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	2	5
Transportation, Warehousing & Utilities	0	0
Information	2	5
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	2	5
Education, Health & Social Services	9	23
Arts, Entertainment, Recreation, Accommodation & Food Services	3	8
Other Services (Except Public Admin)	0	0
Public Administration	2	5
<b>Total Employment</b>	<b>39</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Naukati Bay is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products

employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Naukati Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-38. This area contains approximately 1,113,000 acres of National Forest System land (among other land ownerships). Table 3.4-54 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 49 percent of the total acreage within the Naukati Bay community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because part of the acreage presently allocated to development LUDs (35 and 34 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would have a lesser effect because less of the existing development LUD acreage, 4, 10, and 10 percent, respectively, would be re-allocated as Recommended Wilderness.

#### ***Economy***

Naukati Bay is primarily a logging community and as such will be directly affected by the amount of logging opportunities on north Prince of Wales Island.

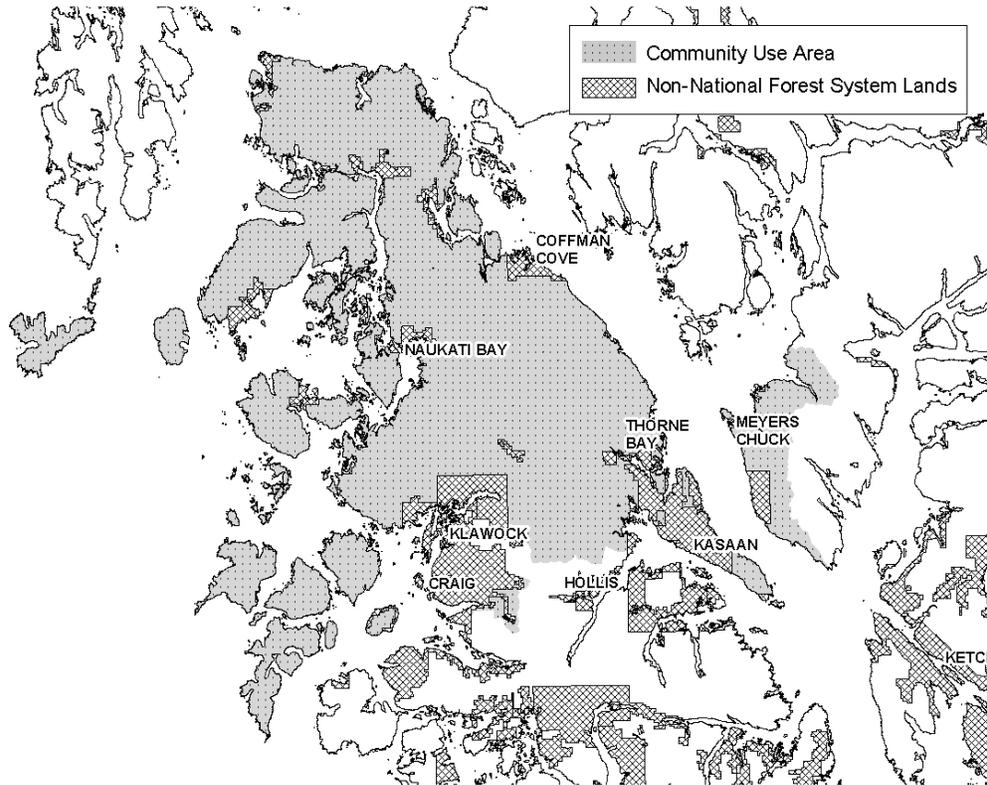
Approximately 18.4 MMBF is presently under contract in the North Prince of Wales community group area. Alternatives 6 and 8 would likely prevent 11.3 MMBF, about 61 percent, of this volume from being harvested. These alternatives would also affect approximately 207.7 and 189.4 MMBF Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging communities throughout Southeast Alaska, including Naukati Bay. Alternatives 6 and 8 would also reduce the lands available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close, partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

#### ***Subsistence***

Naukati Bay was not surveyed by the Tongass Resource Use Cooperative Survey, and there are no baseline subsistence data for this community. No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted in the Naukati Bay community use area by Naukati residents, all rural hunters, and all hunters in the short term. Projected deer harvest for all rural hunters and all hunters would exceed

**Figure 3.4-38  
Naukati Bay’s Community Use Area**



**Table 3.4-54  
LUD Groups in Naukati Bay’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	75,907	218,314	142,026	113,525	424,245	75,907	424,245	657,468
Mostly Natural	499,265	356,858	454,425	461,650	204,246	689,991	204,246	101,810
Moderate Development	164,688	164,688	158,311	164,688	141,174	98,165	141,174	102,392
Intensive Development	373,135	373,135	358,235	373,135	343,354	249,147	343,354	251,495
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>170,605</b>	<b>170,605</b>	<b>166,574</b>	<b>170,605</b>	<b>159,822</b>	<b>137,279</b>	<b>159,822</b>	<b>138,885</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort in the long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### **Pelican**

Pelican is a fishing village along Lisianski Inlet on the northwest corner of Chichagof Island, located approximately 70 air miles north of Sitka and 70 air miles west of Juneau. Part of the community is built on pilings over tideland. A boardwalk serves as the town's main thoroughfare due to lack of flat land for roads. According to the 2000 Census, Pelican had a 2000 population of 199, with Alaska Natives comprising 21 percent of the total (U.S. Census Bureau, 2001b).

Prior to its settlement in 1938, the Pelican area was used as a safe harbor by fishermen and as a hunting, fishing, trapping, and gathering site by Hoonah Tlingit groups, who claimed lands on either side of Cross Sound (ADF&G, 1994).

Pelican was incorporated as a second class city in 1943. Pelican employs a full-time city manager and is governed by a mayor and city council. The community has a local Fish and Game Advisory Committee. The Native community, largely Tlingit, is represented by a local Tlingit and Haida Community Council. No Native land allotments or withdrawals occur in the immediate vicinity of Pelican. Pelican is accessible via the Alaska ferry system, as well as floatplane from Juneau or Sitka (ADF&G, 1994).

The population of Pelican, which grew by 67 percent between 1970 and 1990, decreased by 27 percent between 1990 and 2000.

<b>Year</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Population	133	180	222	163

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Pelican economy is primarily based on commercial fishing and seafood processing. Pelican Seafoods, the largest employer, operates a seafood processing plant, the electric utility, a fuel company, and a store. It was purchased by Kaioh Suisan, a Japanese firm, in 1989 and then closed in 1996. It was subsequently purchased by Kake Tribal Corporation and re-opened during the same year. The plant processes salmon, halibut, sable fish, rockfish, and dungeness crab (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 8 percent of the labor force in Pelican was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$48,750, compared to a regional median of \$44,118 (Alaska DCED, 2002).

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<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	21	26
Construction	2	2
Manufacturing	25	31
Wholesale Trade	0	0
Retail Trade	3	4
Transportation, Warehousing & Utilities	7	9
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	2	2
Education, Health & Social Services	16	20
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	5	6
<b>Total Employment</b>	<b>81</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Pelican is part of the North Chichagof community group, which also includes Elfin Cove and Hoonah (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Manufacturing and non-federal government were the major employers in the North Chichagof community group in 1999, accounting for 34 and 30 percent of total employment, respectively. Logging and seafood processing accounted for 24 and 10 percent of total employment, respectively (see Appendix E).

### Potential Effects

#### **Community Use Area**

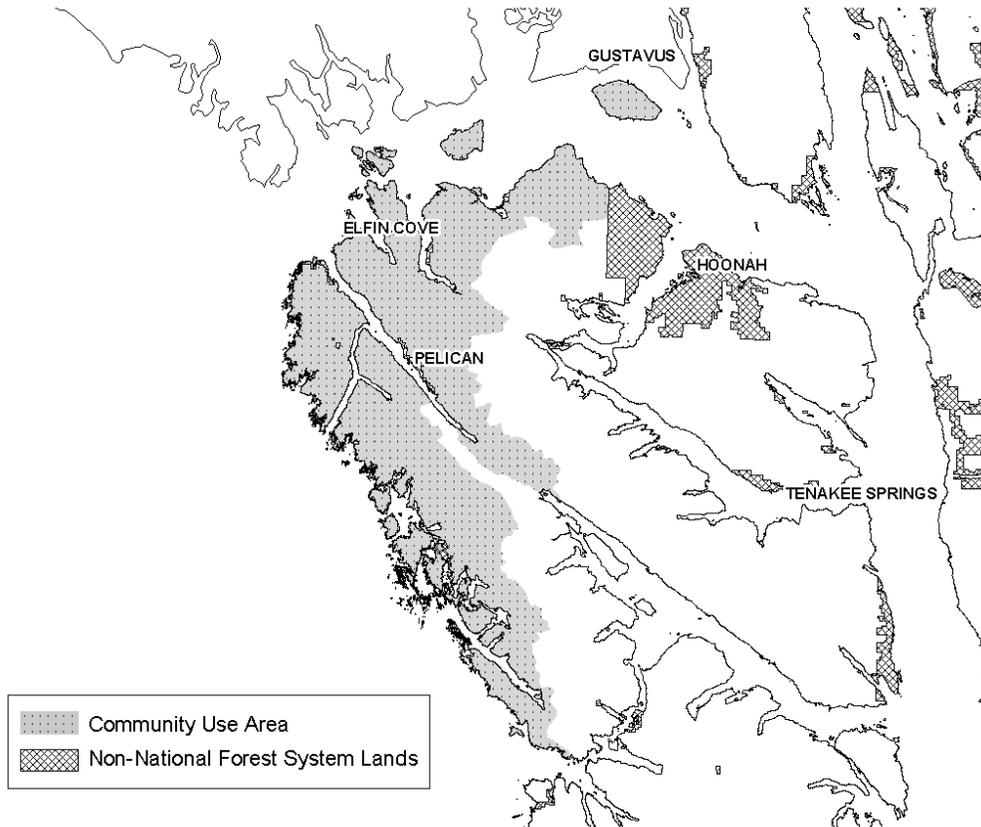
The general area commonly used or related to by many of the residents of Pelican in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-39. This area contains approximately 489,000 acres of National Forest System land (among other land ownerships). Table 3.4-55 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs account for less than one percent of the lands in the Pelican community use area.

#### **Economy**

Pelican is primarily a commercial fishing town. The community recently avoided a major economic blow when the seafood processing plant was purchased and continued operations. The community should remain stable as long as the plant operates. Commercial fishing is not expected to be significantly affected under any of the alternatives.

**Figure 3.4-39  
Pelican’s Community Use Area**



**Table 3.4-55  
LUD Groups in Pelican’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	244,886	424,034	244,886	244,886	410,681	244,886	410,681	488,300
Mostly Natural	241,907	62,760	241,907	241,907	76,139	244,588	76,139	1,174
Moderate Development	0	0	0	0	0	0	0	0
Intensive Development	2,679	2,679	2,679	2,679	2,652	0	2,652	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>383</b>	<b>383</b>	<b>383</b>	<b>383</b>	<b>383</b>	<b>0</b>	<b>383</b>	<b>0</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Subsistence**

In terms of subsistence use, Lisianski Inlet, Icy Strait, northwest Chichagof, and Yakobi Island are the most important areas to Pelican. These areas are presently legislatively withdrawn from timber harvest as either Wilderness or LUD II or allocated to the Mostly Natural LUDs. Therefore, it is unlikely that subsistence use in Pelican would be directly affected under any of the alternatives.

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 63 percent of the total edible pounds of subsistence resources harvested by Pelican households (Kruse and Frazier, 1988).

Deer account for 30 percent of the total edible pounds of subsistence resources harvested by Pelican households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted in the Pelican community use area by Pelican residents, all rural hunters, and all hunters in the short term and long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Petersburg and Kupreanof**

Petersburg is located on the northern tip of Mitkof Island across Wrangell Narrows from Kupreanof Island. It lies midway between Juneau and Ketchikan, about 120 miles from either community. According to the 2000 Census, Petersburg had a 2000 population of 3,224, with Alaska Natives comprising 7 percent of the total (U.S. Census Bureau, 2001b). The community of Kupreanof, with a population of 23 in 2000, is located less than one mile from Petersburg, on Kupreanof Island. This settlement is economically tied to Petersburg, where most residents find employment, purchase goods, and attend school (ADF&G, 1994).

Prior to Petersburg's development by homesteaders and fishermen around 1900, Tlingit use of the area occurred at many small settlements (ADF&G, 1994). The community of Petersburg was founded by Norwegian Peter Buschmann in 1899 and incorporated in 1906. More Norwegians followed and settled into a Scandinavian-style community. Petersburg has a local Fish and Game Advisory Committee, which takes an active interest in resource management issues (ADF&G, 1994).

The population of Petersburg, which increased by 57 percent between 1970 and 1990, increased by less than 1 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	2,042	2,821	3,207	3,224

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Petersburg economy is primarily based on the commercial fishing and timber industries and, unlike the rest of Southeast Alaska, has escaped the severe swings in economic cycles. Estimated gross fishing revenues of local residents was almost \$22 million in 2000. Petersburg is among the top-ranked ports in the United States for quality and value of fish landed. The city includes several processors operating cold storage, canneries, and custom packing services and the state-run Crystal Lake salmon hatchery. Petersburg also provides supplies and services for many of the

area logging camps. While there is no deep water dock suitable for cruise ships, there is independent sportsmen and tourist visitation (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 10 percent of the labor force in Petersburg was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$49,028, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	301	20
Construction	75	5
Manufacturing	136	9
Wholesale Trade	6	0
Retail Trade	165	11
Transportation, Warehousing & Utilities	111	7
Information	60	4
Finance, Insurance, Real Estate, Rental & Leasing	25	2
Professional, Scientific, Management, Administrative & Waste Mgmt	39	3
Education, Health & Social Services	268	18
Arts, Entertainment, Recreation, Accommodation & Food Services	128	8
Other Services (Except Public Admin)	96	6
Public Administration	118	8
<b>Total Employment</b>	<b>1,528</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Petersburg and Kupreanof are part of the Petersburg community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

Non-federal government and seafood processing were the main employers in the Petersburg community group in 1999, accounting for 25 and 24 percent of total employment, respectively. Employment in the wood products sector declined by 93 percent between 1990 and 1999, with just 5 people employed in this sector in 1999 (see Appendix E). Two small sawmills, Alaska Fibre and Southeast Alaska Wood Products, were identified in Petersburg in the mill survey conducted by the Forest Service in 2000.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Petersburg in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-40. This area contains approximately 742,000 acres of National Forest System land (among other land ownerships). Table 3.4-56 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

## Environment and Effects 3

Development LUDs presently account for about 40 percent of the total acreage within the Petersburg community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan.

Alternatives 6 and 8 would result in the most significant effects because much of the acreage presently allocated to development LUDs (68 and 66 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage (10, 7, and 39 percent, respectively) re-allocated as Wilderness.

### ***Economy***

Commercial fishing is particularly important to Petersburg. Commercial fisheries employment is not likely to be affected under any of the alternatives.

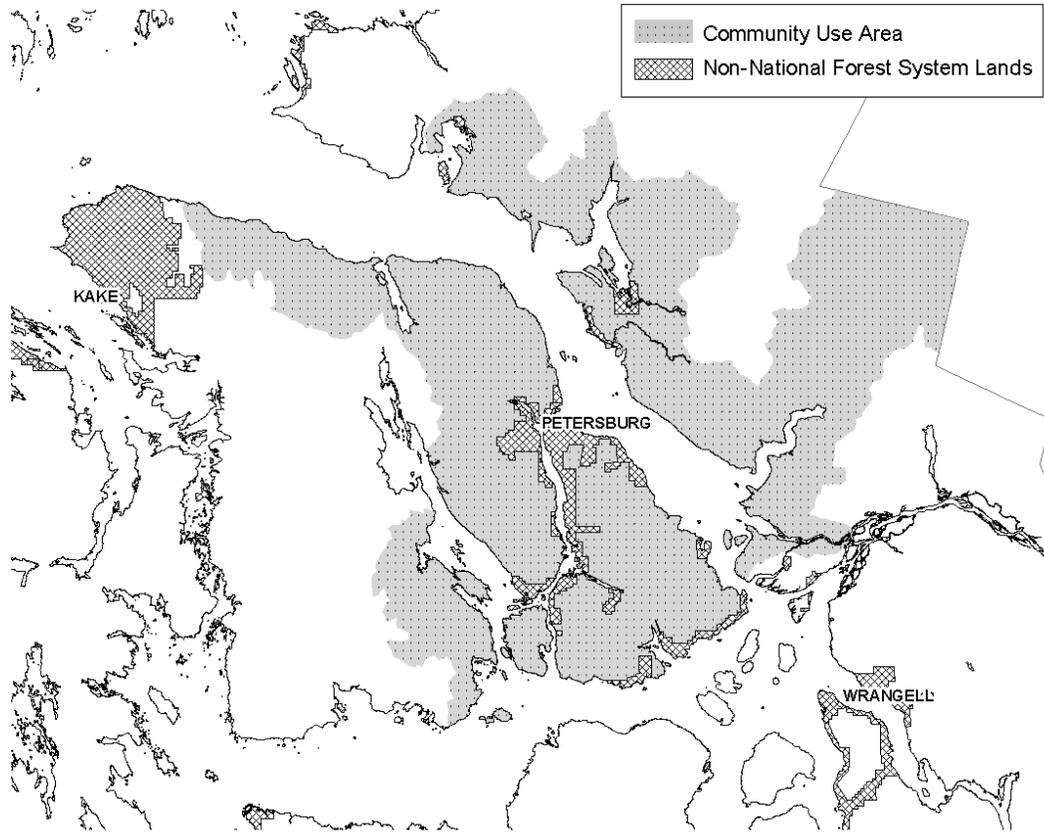
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Petersburg households (Kruse and Frazier, 1988).

Deer account for 21 percent of the total edible pounds of subsistence resources harvested by Petersburg households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Petersburg residents in the short term and long term. There was also sufficient habitat capability for deer hunted in the Petersburg community use area by all rural hunters in both the short term and long term. Projected deer harvest for all hunters would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-40  
Petersburg's Community Use Area**



**Table 3.4-56  
LUD Groups in Petersburg's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	224,607	224,607	362,981	332,176	267,870	461,742	472,808	619,654
Mostly Natural	221,506	221,506	113,483	114,037	200,357	185,066	87,468	20,331
Moderate Development	163,311	163,311	138,511	163,292	150,186	51,848	104,260	56,206
Intensive Development	132,137	132,137	126,610	132,082	123,162	43,013	77,080	45,472
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>61,158</b>	<b>61,158</b>	<b>56,668</b>	<b>61,158</b>	<b>56,157</b>	<b>29,443</b>	<b>42,950</b>	<b>30,346</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

### Point Baker

Point Baker is located on the northern tip of Prince of Wales Island, 101 air miles northwest of Ketchikan. Point Baker received its name in 1793 from Captain George Vancouver. According to the 2000 Census, Point Baker had a 2000 population of 35, with Alaska Natives comprising 3 percent of the total (U.S. Census Bureau, 2001b).

Native settlement of the area was already established during Vancouver's time. Tlingits used fish camps at Point Baker to participate in both customary trade and subsistence fishing. Commercial fishing at Point Baker began in the early 1900s, when the area was used as the site of a floating fish packer. Land sales in Point Baker accounted for part of an increase in year-round residents, the majority being non-Native (ADF&G, 1994).

Point Baker is accessible by floatplane and skiff. Point Baker is not an incorporated city, nor is it within any other local government jurisdiction. It is not part of any Native organization and has no traditional council. The town is not recognized under the Alaska Native Claims Settlement Act. Residents of Point Baker are members of the Sumner Strait Fish and Game Advisory Committee (ADF&G, 1994).

The population of Point Baker, which decreased by about a half between 1970 and 1990, was fairly constant between 1990 and 2000.

Year	1970	1980	1990	2000
Population	80	90	39	35

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Point Baker economy is heavily dependent on the fishing industry, with three quarters of the population holding commercial fishing permits (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. These data are an extrapolation based on information from a sample of residents. An extrapolation of a small sample may have inaccuracies but should provide a general indication of the distribution of employment. The 2000 U.S. Census estimated that 15 residents are employed. While no adults in Point Baker were identified as unemployed and seeking work in 2000, 58 percent of the population was identified as not employed and not seeking work. Median household income was \$28,000, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	6	40
Construction	0	0
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	2	13
Transportation, Warehousing & Utilities	0	0
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	5	33
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	2	13
<b>Total Employment</b>	<b>15</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Point Baker is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Point Baker in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-41. This area contains approximately 844,000 acres of National Forest System land (among other land ownerships). Table 3.4-57 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 43 percent of the total acreage within the Point Baker community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 37 and 36 percent, respectively, of the acreage presently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings, with a portion of the existing development LUD acreage (6, 12, and 12 percent, respectively) re-allocated as Wilderness.

#### ***Economy***

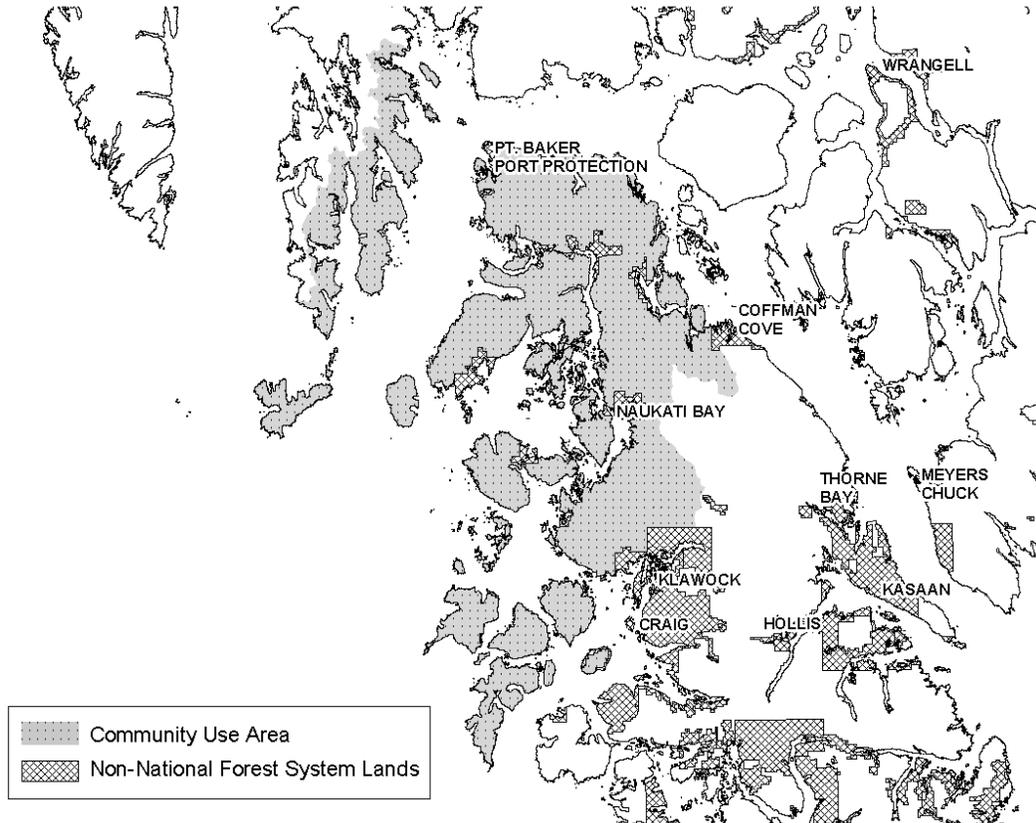
Commercial fisheries and subsistence use are important to Point Baker. Commercial fisheries employment is not likely to be affected under any of the alternatives.

#### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 59 percent of the total edible pounds of subsistence resources harvested by Point Baker households (Kruse and Frazier, 1988).

Deer account for 27 percent of the total edible pounds of subsistence resources harvested by Point Baker households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Point Baker residents in the short term and long term. There was also sufficient habitat capability for deer hunted in the Point Baker community use area by all rural hunters in both the short term and long term. Projected deer harvest for all hunters would exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

**Figure 3.4-41  
Point Baker's Community Use Area**



**Table 3.4-57  
LUD Groups in Point Baker's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	78,815	224,564	158,814	128,789	376,277	155,742	376,283	542,242
Mostly Natural	403,929	258,180	343,942	353,955	148,003	461,024	147,997	70,817
Moderate Development	93,699	93,699	81,413	93,699	73,475	47,057	73,475	48,086
Intensive Development	267,083	267,083	259,357	267,083	245,792	179,779	245,792	182,424
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>118,931</b>	<b>118,931</b>	<b>113,121</b>	<b>118,931</b>	<b>108,487</b>	<b>93,316</b>	<b>108,487</b>	<b>94,161</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Port Alexander**

Port Alexander is located on the southern tip of Baranof Island about 85 miles south of Sitka. According to the 2000 Census, Port Alexander had a 2000 population of 81, with Alaska Natives comprising 4 percent of the total (U.S. Census Bureau, 2001b).

Port Alexander was named in 1849 by the governor of the Russian American colonies. In 1913, salmon trollers discovered the rich fishing grounds in the area, and two floating processors arrived soon after. By 1916, there was a fishing supply store, a shore station, and a bakery at Port Alexander. During the 1920s and 1930s, a prosperous fishing fleet evolved, and houses, stores, restaurants, and a school were constructed. The 1940s and 1950s saw a steep decline in Port Alexander's population. Today, people choose Port Alexander as a home because of its independent, subsistence lifestyle, and commercial fishing opportunities, as well as its remote setting. There are no roads in Port Alexander; travel within the community is by skiff, boardwalks, and footpaths (ADF&G, 1994). The community has a local Fish and Game Advisory Committee.

Port Alexander's population, which was three times larger in 1990 than it was in 1970, decreased by 32 percent (39 residents) between 1990 and 2000.

Year	1970	1980	1990	2000
Population	36	86	119	81

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The economy of Port Alexander is largely based on commercial fishing and subsistence use of marine and forest resources. More than 40 percent of the population hold commercial fishing permits. The City, the school, and post office provide the only full time employment in the area (Alaska DCED, 2002).

Employment by industry data for Port Alexander is not included since it was based on a very small sample size and may not be a good indicator of the economy as a whole. The 2000 U.S. Census identified 29 residents of Port Alexander as being employed out of a potential work force (Age 16+) of 48. Approximately 9 percent of the labor force in Port Alexander was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$31,563 compared to a regional median of \$44,118 (Alaska DCED, 2002).

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Port Alexander is part of the Kuiu Island community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Logging employment accounted for 91 percent of total employment (77 jobs) in this community group in 1990. There was no logging employment in this community group in 1999, and the non-federal government sector accounted for 13 of the 14 recorded jobs (see Appendix E).

## Environment and Effects 3

### Potential Effects

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Port Alexander in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-42. This area contains 87,000 acres of National Forest System land (among other land ownerships). Table 3.4-58 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

None of Port Alexander's community use area is presently allocated to development LUDs.

#### ***Economy***

Port Alexander is primarily a commercial fishing town. Commercial fishing and subsistence use are important to the community. Commercial fishing is not expected to be significantly affected under any of the alternatives.

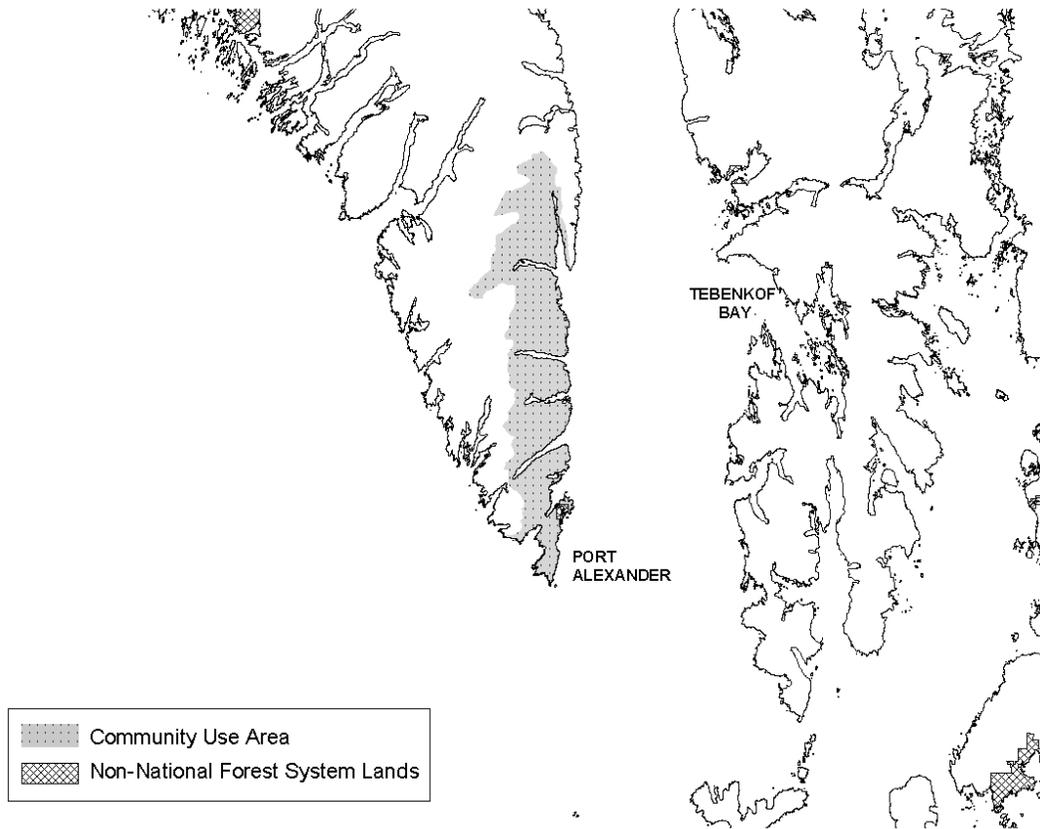
#### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 55 percent of the total edible pounds of subsistence resources harvested by Port Alexander households (Kruse and Frazier, 1988).

Deer account for 36 percent of the total edible pounds of subsistence resources harvested by Port Alexander households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Port Alexander community use area by Port Alexander residents, all rural hunters, and all hunters in the short term and long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not change the overall conclusions for Alternative 1.

**Figure 3.4-42**  
**Port Alexander's Community Use Area**



**Table 3.4-58**  
**LUD Groups in Port Alexander's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	17,974	17,974	17,974	17,974	17,974	63,408	63,408	86,808
Mostly Natural	68,861	68,861	68,861	68,861	68,861	23,428	23,427	27
Moderate Development	0	0	0	0	0	0	0	0
Intensive Development	0	0	0	0	0	0	0	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

### Port Protection

Port Protection, located on the northern end of Prince of Wales Island in a quiet bay facing Sumner Strait, is only accessible by air and water. The nearby logging camp site at Labouchere Bay, however, is a roaded port. The community's setting along the waterfront of the cove requires skiff travel for most purposes (ADF&G, 1994).

Port Protection is not an incorporated city, nor is it within any local government jurisdiction. Residents of Port Protection are members of the Sumner Strait Fish and Game Advisory Committee (ADF&G, 1994). According to the 2000 Census, Port Protection had a 2000 population of 63, none of whom were Alaska Natives (U.S. Census Bureau, 2001b).

Port Protection was first reported to the western world by the English explorer George Vancouver in 1793. Signs of earlier indigenous occupation of the northern shoreline of Prince of Wales Island include stone and wooden stake fish weirs and traps, as well as shell middens of edible marine invertebrates (ADF&G, 1994).

A scow served as a fish-buying station until it was replaced in 1946 by a trading post. A long float dock accommodated many fishing boats at the post (ADF&G, 1994).

The population of Port Protection, which increased by approximately 50 percent between 1980 and 1990, was approximately the same in 2000 as it was in 1990.

Year	1980	1990	2000
Population	40	62	63

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Port Protection economy peaks during the fishing season in summer and fall. Local residents depend on subsistence for year-round support (Alaska DCED, 2002).

The 2000 U.S. Census identified a potential work force of 61 residents and total employment of 34. Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. These data is extrapolated from a sample of the city population. Because the sample size was small, the extrapolation is not accurate in detail, but should provide a general indication of distribution of employment. While no adults in Port Protection were unemployed and seeking work in 2000, 44 percent were unemployed and not seeking work. Median household income was \$10,938, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	5	5
Construction	5	5
Manufacturing	0	0
Wholesale Trade	2	2
Retail Trade	8	9
Transportation, Warehousing & Utilities	5	5
Information	4	4
Finance, Insurance, Real Estate, Rental & Leasing	7	8
Professional, Scientific, Management, Administrative & Waste Mgmt	2	2
Education, Health & Social Services	27	30
Arts, Entertainment, Recreation, Accommodation & Food Services	3	3
Other Services (Except Public Admin)	7	8
Public Administration	16	18
<b>Total Employment</b>	<b>91</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Port Protection is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### **Potential Effects**

#### ***Community Use Area***

The general area commonly used or related to by many of the residents of Port Protection in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-43. This area contains approximately 708,000 acres of National Forest System land (among other land ownerships). Table 3.4-59 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 49 percent of the total acreage within the Port Protection community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 36 percent of the acreage presently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II. Alternatives 5 and 7 would fall between those two alternative groupings, with a small portion of the existing development LUD acreage (6 percent) re-allocated as Wilderness.

#### ***Economy***

Port Protection is primarily a commercial fishing village. Subsistence use is also important in this community. Commercial fisheries employment is not likely to be affected under any of the alternatives.

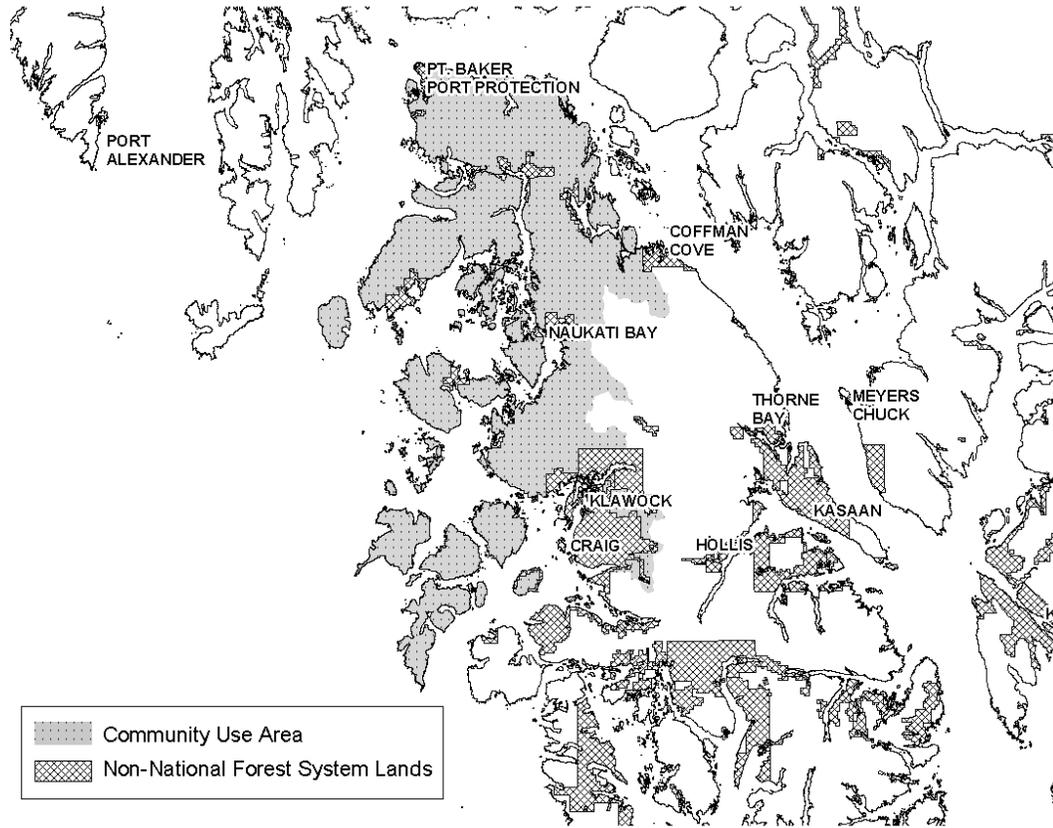
#### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Port Protection residents in the short term and long term. It was estimated that this alternative would also provide sufficient habitat capability for deer hunted in the Port Protection community use area by all rural hunters and all hunters in the short term. The analysis noted that in the long term, the Port Protection community use area may not be able to provide enough deer for all hunters.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-43**  
**Port Protection’s Community Use Area**



**Table 3.4-59**  
**LUD Groups in Port Protection’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	17,019	159,426	17,019	17,019	233,986	17,019	233,986	414,154
Mostly Natural	344,308	201,901	344,308	344,308	148,633	470,029	148,633	69,188
Moderate Development	82,126	82,126	82,126	82,126	74,189	47,720	74,189	48,749
Intensive Development	264,276	264,276	264,276	264,276	250,944	173,106	250,944	175,751
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>111,367</b>	<b>111,367</b>	<b>111,367</b>	<b>111,367</b>	<b>106,820</b>	<b>90,621</b>	<b>106,820</b>	<b>91,467</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Saxman**

Saxman is located on west Revillagigedo Island on the Tongass Highway, about three miles south of Ketchikan. According to the 2000 Census, Saxman had a 2000 population of 431, with Alaska Natives comprising 66 percent of the total (U.S. Census Bureau, 2001b).

In 1894, Tlingits from the old Cape Fox and Tongass villages chose Saxman as the site for a new village in which to locate a government school and a new Presbyterian church. The Saxman people are also known as the Cape Fox people or Sanya in the earlier ethnographies. Saxman was incorporated in 1929 and was certified by the federal government as a second class municipal corporation. Three years later, the federal government issued a patent to 365 acres of land to the townsite trustee for Saxman (ADF&G, 1994).

When the Ketchikan Gateway Borough was formed in 1963, Saxman was included within its boundaries. In 1971 and 1973, respectively, Saxman was recognized and then certified as a Native village under the Alaska Native Claims Settlement Act. An elected mayor and six city council members constitute the governing body of the municipality as organized under state law. The community has a local Fish and Game Advisory Committee (ADF&G, 1994).

When the Tlingits left their old villages to move to Saxman, they abandoned houses, totems, carvings, and other cultural and ceremonial artifacts. In 1938, the Civilian Conservation Corps retrieved and brought to Saxman original totems from the abandoned villages and cemeteries of Tongass, Cat, and Pennock Islands, and Cape Fox. The Totem Park in Saxman has become a major attraction for Ketchikan area visitors (ADF&G, 1994).

The population of Saxman, which more than doubled between 1970 and 1990, increased by 17 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	135	273	369	431

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

Most employment opportunities for Saxman residents are in the city of Ketchikan. The City of Saxman, the Saxman Seaport, and the Cape Fox Corporation provide employment for a number of local residents. The Saxman Totem Park with a tribal house, a carving center, and a cultural hall for traditional Tlingit dance, has become an attraction for Ketchikan area visitors (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 26 percent of the labor force in Saxman was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$44,375, compared to a regional median of \$44,118 (Alaska DCED, 2002).

## Environment and Effects 3

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	8	5
Construction	19	13
Manufacturing	7	5
Wholesale Trade	0	0
Retail Trade	19	13
Transportation, Warehousing & Utilities	13	9
Information	3	2
Finance, Insurance, Real Estate, Rental & Leasing	18	12
Professional, Scientific, Management, Administrative & Waste Mgmt	2	1
Education, Health & Social Services	16	11
Arts, Entertainment, Recreation, Accommodation & Food Services	17	11
Other Services (Except Public Admin)	8	5
Public Administration	21	14
<b>Total Employment</b>	<b>151</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Saxman is part of the Ketchikan community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Saxman in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-44. This area contains approximately 1,976,000 acres of National Forest System land (among other land ownerships). Table 3.4-60 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 22 percent of the total acreage within the Saxman community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because much of the acreage presently allocated to development LUDs (75 and 73 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings, with a portion of the existing development LUD acreage (12, 13, and 23 percent, respectively) re-allocated as Wilderness.

#### **Economy**

Saxman, a traditional native community, could be affected primarily by changes in recreation and tourism use, commercial fishing, timber processing, and subsistence opportunities.

Approximately 79.4 MMBF is presently under contract in the Ketchikan/Revilla area. Alternatives 6 and 8 would likely prevent 46.1 and 45 MMBF of this volume from being harvested, respectively. These alternatives would also affect approximately 207.7 and 189.4 MMBF Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging employment in communities throughout the Forest. Alternatives 6 and 8 would also reduce the lands available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close, partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place. Commercial fisheries employment is not likely to be affected under any of the alternatives. Recreation and tourism in Saxman is also unlikely to be affected under any of the alternatives.

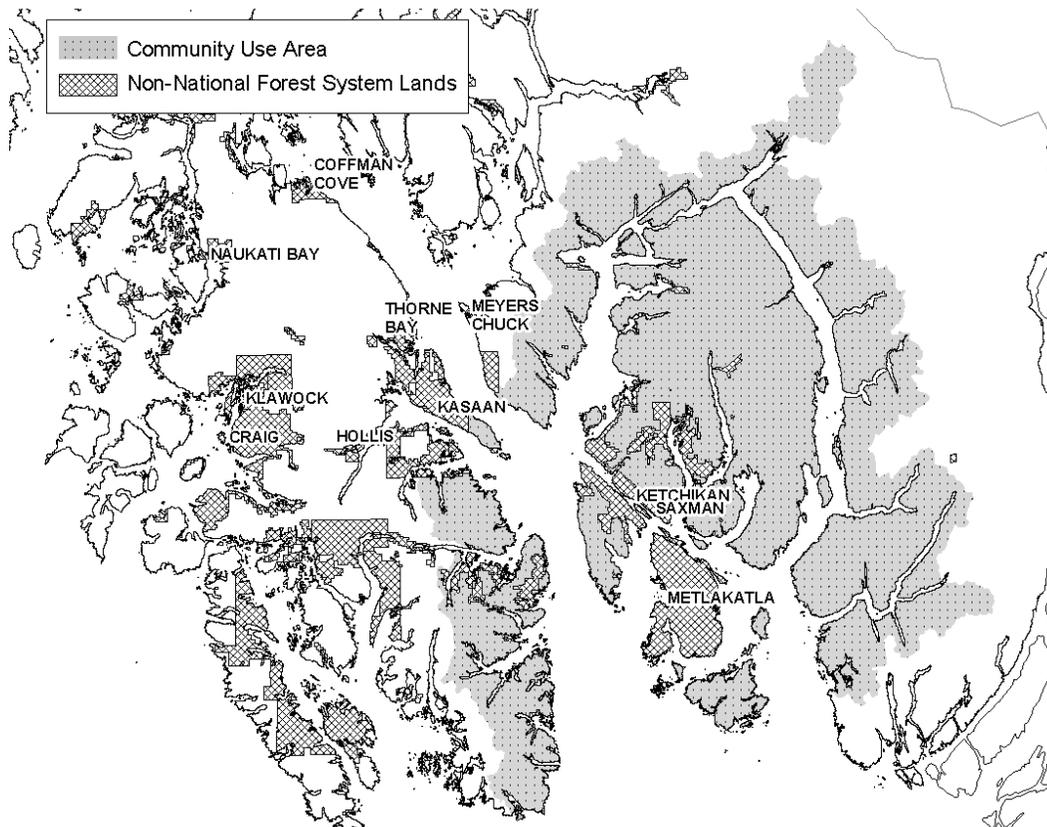
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 68 percent of the total edible pounds of subsistence resources harvested by Saxman households (Kruse and Frazier, 1988).

Deer account for 19 percent of the total edible pounds of subsistence resources harvested by Saxman households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide habitat capability for deer hunted in the Saxman community use area by Saxman residents, all rural hunters, and all hunters in the short term. This alternative was also estimated to provide sufficient habitat capability for Saxman residents and all rural hunters in the long term. However, projected deer harvest for all hunters was estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term.

Alternative 1 for this draft SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-44**  
**Saxman’s Community Use Area**



**Table 3.4-60**  
**LUD Groups in Saxman’s Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	934,998	966,493	1,061,856	987,603	1,117,660	1,084,403	1,243,287	1,845,720
Mostly Natural	612,678	581,183	539,269	560,073	483,610	783,718	404,880	13,758
Moderate Development	102,341	102,341	94,737	102,341	94,633	39,633	94,633	43,463
Intensive Development	325,981	325,981	280,135	325,981	280,095	68,674	233,200	73,488
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>76,457</b>	<b>76,457</b>	<b>65,546</b>	<b>76,457</b>	<b>65,524</b>	<b>31,151</b>	<b>57,418</b>	<b>32,629</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

### Sitka

Located on the west side of Baranof Island, Sitka is the only community in Southeast Alaska that fronts the open sea. According to the 2000 Census, Sitka had a 2000 population of 8,835, with Alaska Natives comprising 19 percent of the total (U.S. Census Bureau, 2001b).

Present-day Sitka was originally inhabited by a major tribe of Tlingits who called the village “Shee Atika.” Traditionally, the Tlingits used a wide area surrounding the community for hunting, fishing, and gathering wild resources. The site became “New Archangel” in 1799, the capital of Russian America (ADF&G, 1994).

Sitka became the focal point of Russian fur trade in North America beginning in 1741. During the mid-1800s, Sitka was the major port on the north Pacific coast, with ships calling from many nations. After the purchase of Alaska by the United States in 1867, it remained the capital of the Territory until 1906, when the seat of government moved to Juneau. During the early 1900s gold mines contributed to its growth, and during World War II the town was fortified. After the war, the Bureau of Indian Affairs converted some of the buildings to a boarding school for Alaska Natives (ADF&G, 1994). The APC pulp mill operated in Sitka from 1959 through 1993, employing almost 400 people at the time of closure.

The population of Sitka, which grew by 41 percent between 1970 and 1990, increased by just 3 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	6,109	7,803	8,588	8,835

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

Sitka has a diversified economy, with tourism, fishing, fish processing, government, health care services, transportation, and retail all contributing to its base. An estimated \$11 million dollars is contributed to the local economy by cruise ships and an estimated \$20 million of gross fishing revenue was realized by residents in 2002. Sound Seafood and Seafood Producers Co-op are major employers of local residents. Regional health care services and the U.S. Forest Service also employ a number of people (Alaska DCED, 2002).

A recent study by the Alaska DOL suggested that Sitka’s economy appears to have survived the downturn in its economy caused by the pulp mill closure, in large part because it has a relatively diversified economy (Gilbertson, 2003b). While the community of Sitka does not appear to have been as negatively affected by the closure of the pulp mill as some predicted, the effects have been felt by the workers who lost their jobs. By 2001, 57 percent of the former pulp mill labor force were no longer employed in Alaska, 43 percent had left the State, and 14 percent were in the State but had left the workforce, most likely retired. Only 25 percent of the former pulp mill workers were still living and working in Sitka (Gilbertson, 2003b).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 8 percent of the labor force in Sitka was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$51,901, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Sitka is part of the Sitka community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

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<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	407	9
Construction	253	6
Manufacturing	189	4
Wholesale Trade	54	1
Retail Trade	476	11
Transportation, Warehousing & Utilities	245	6
Information	72	2
Finance, Insurance, Real Estate, Rental & Leasing	148	3
Professional, Scientific, Management, Administrative & Waste Mgmt	191	4
Education, Health & Social Services	1,414	32
Arts, Entertainment, Recreation, Accommodation & Food Services	354	8
Other Services (Except Public Admin)	292	7
Public Administration	257	6
<b>Total Employment</b>	<b>4,352</b>	<b>100</b>

Source: Alaska DCED, 2002

Wood products employment declined from 404 in 1990 (10 percent of total employment) to 0 in 1999 in the Sitka community group. Services, non-federal government, and retail trade accounted for 31, 22, and 17 percent of total employment in 1999, with recreation-related activities accounting for 10 percent (see Appendix E). A total of 206,279 cruise ship passengers visited Sitka in 2001, approximately 18 percent less than the number of passengers in 1996.

### Potential Effects

#### **Community Use Area**

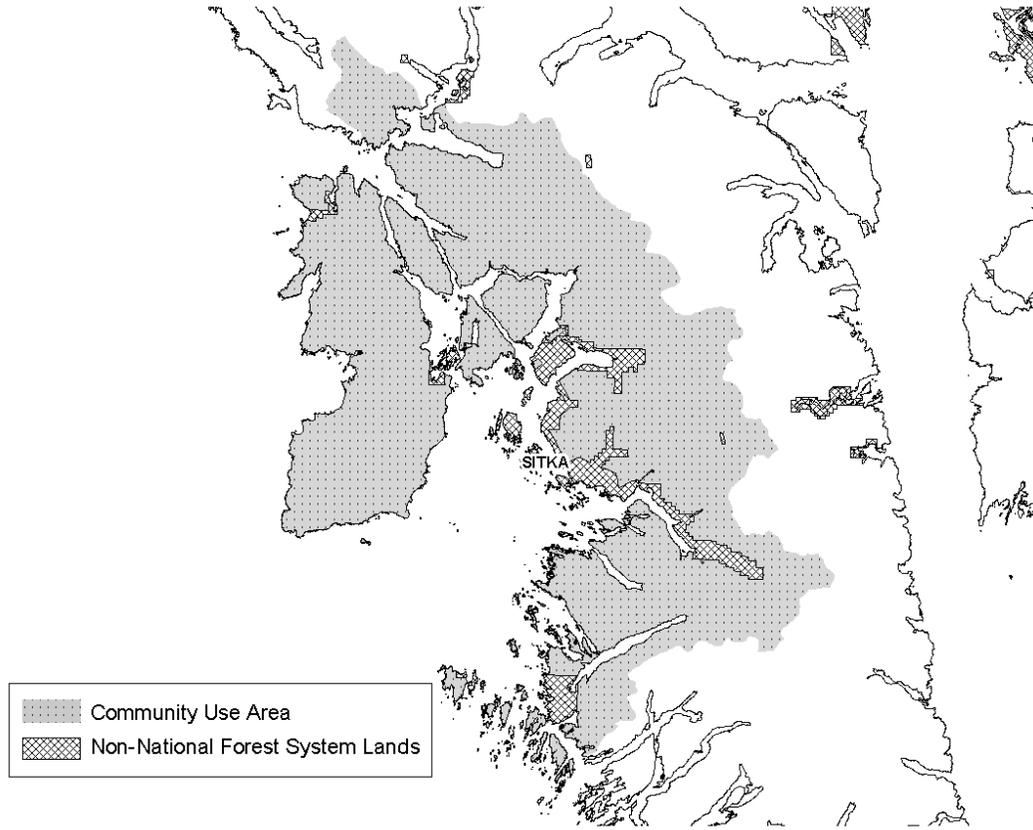
The general area commonly used or related to by many of the residents of Sitka in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-45. This area contains approximately 422,000 acres of National Forest System land (among other land ownerships). Table 3.4-61 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 22 percent of the total acreage within the Sitka community use area. Alternatives 1, 2, 3, 4, 5, and 7 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because 73 percent of the acreage presently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II.

#### **Economy**

Commercial fishing, recreation and tourism, and subsistence are important to Sitka residents. Commercial fishing is not expected to be significantly affected under any of the alternatives. Recreation and tourism could be potentially affected by Alternative 8, which would re-allocate a large part of the Sitka's community use area to Recommended Wilderness. This could potentially affect the tourism industry by limiting outfitter/guide uses that serve large volumes of clients and restricting future recreation developments. Alternative 8 would also recommend preservation of the undeveloped parts of the Sitka community use area as wilderness into the foreseeable future.

**Figure 3.4-45**  
**Sitka's Community Use Area**



**Table 3.4-61**  
**LUD Groups in Sitka's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	16,476	16,476	16,581	16,476	16,476	16,581	16,581	375,683
Mostly Natural	312,353	312,353	312,353	312,353	312,353	380,191	312,353	21,089
Moderate Development	41,269	41,269	41,269	41,269	41,269	14,502	41,269	14,502
Intensive Development	52,391	52,391	52,286	52,391	52,391	11,240	52,286	11,240
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>10,689</b>	<b>10,689</b>	<b>10,687</b>	<b>10,689</b>	<b>10,689</b>	<b>4,229</b>	<b>10,687</b>	<b>4,229</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 69 percent of the total edible pounds of subsistence resources harvested by Sitka households (Kruse and Frazier, 1988).

Deer accounts for 27 percent of the total edible pounds of subsistence resources harvested by Sitka households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 of the 1997 Forest Plan Revision Final EIS) would not be able to provide sufficient habitat capability for deer hunted in the Sitka community use area by Sitka residents, all rural hunters, and all hunters in the short term. Sitka residents were identified as harvesting 15 percent of habitat capability a year, which exceeds 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Skagway**

Skagway is located in northern Southeast Alaska at the head of Taiya Inlet, 95 air miles north of Juneau. It is the end-of-the line for the Alaska Marine ferry and the entrance to the Klondike Highway. According to the 2000 Census, Skagway had a 2000 population of 862, with Alaska Natives comprising 3 percent of the total (U.S. Census Bureau, 2001b).

Prior to the founding of the community, the area was settled by Chilkoot Tlingit who called it “Skagua,” or “the place where the north wind blows.” The Chilkoots controlled access into the interior along what has become known as the Chilkoot Trail, which follows along the Taiya River and over the Chilkoot Pass. The Chilkoot Trail was a major trade route for the Chilkoot Tlingit, interior Tlingit, and Athabaskans (ADF&G, 1994).

Settlement began in Skagway in 1887 when a seafarer named William Moore decided to develop a trading and mining route into the Yukon Territory using the Chilkoot Trail. As the Klondike gold rush hit the area in 1896, the Chilkoot and White Pass trails became the major routes into the Interior. Within a few years, the trails were superseded by the adjacent White Pass and Yukon Railway. The railway continued to function as a supply and shipping route between Skagway and Whitehorse until 1982 (ADF&G, 1994). The railway currently operates as a tourist attraction.

Skagway is incorporated as a first class city. The community participates in the Upper Lynn Canal Fish and Game Advisory Committee (ADF&G, 1994). A total of 610,145 cruise ship passengers visited Skagway in 2001, more than double the number in 1996.

The population of Skagway, which declined between 1980 and 1990, increased by 170 people or 25 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	675	814	692	862

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

Skagway has a strong base in the tourism industry. It is a port of call for cruise ships and a transfer site for interior rail and bus tours. The State ferry also connects travelers to the rest of Southeast Alaska. An estimated \$60 million is contributed to the Skagway economy by the cruise ship business. While an estimated 590,000 cruise ship passengers were expected in 2002, another 150,000 tourists were expected to arrive independently. Skagway is also the site of trans-shipment of lead/zinc ore, fuel, and freight via the Port and Klondike Highway to and from Canada (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	2	0
Construction	69	15
Manufacturing	0	0
Wholesale Trade	5	1
Retail Trade	68	14
Transportation, Warehousing & Utilities	114	24
Information	6	1
Finance, Insurance, Real Estate, Rental & Leasing	14	3
Professional, Scientific, Management, Administrative & Waste Mgmt	26	5
Education, Health & Social Services	52	11
Arts, Entertainment, Recreation, Accommodation & Food Services	74	16
Other Services (Except Public Admin)	13	3
Public Administration	32	7
<b>Total Employment</b>	<b>475</b>	<b>100</b>

Source: Alaska DCED, 2002

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 14 percent of the labor force in Skagway was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$49,375 compared to a regional median of \$44,118 (Alaska DCED, 2002).

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Skagway is part of the Skagway community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. The retail trade, services, and non-federal government sectors were the major employers in the Skagway community group in 1999, accounting for 32, 20, and 17 percent of total employment, respectively. Recreation-related activities (lodging, restaurants, and recreation services) accounted for 25 percent of total employment, illustrating the importance of recreation and tourism for this area (see Appendix E).

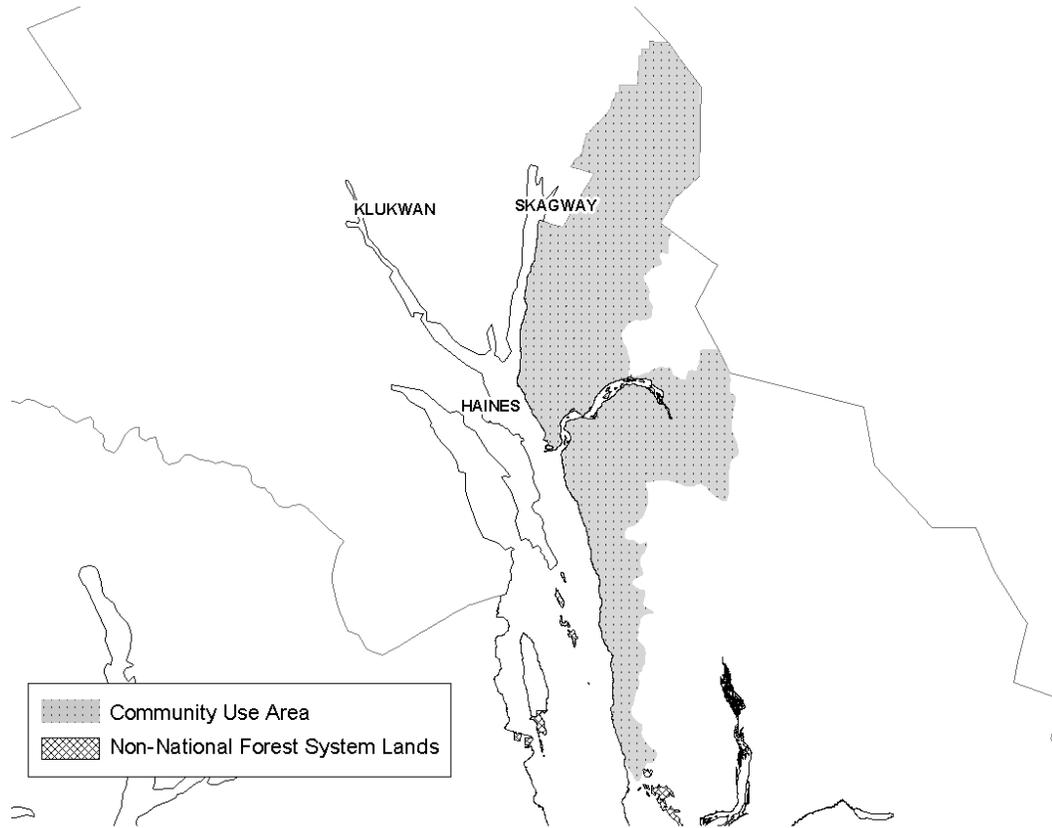
### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Skagway in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-46. This area contains approximately 200,000 acres of National Forest System land (among other land ownerships). Table 3.4-62 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3. Only

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**Figure 3.4-46  
Skagway's Community Use Area**



**Table 3.4-62  
LUD Groups in Skagway's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	0	0	0	0	0	8,999	8,999	196,948
Mostly Natural	192,239	192,239	192,239	192,239	192,239	190,940	190,940	2,990
Moderate Development	7,699	7,699	7,699	7,699	7,699	0	0	0
Intensive Development	0	0	0	0	0	0	0	0
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>86</b>	<b>86</b>	<b>86</b>	<b>86</b>	<b>86</b>	<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

4 percent of the acres in the Skagway community use area are presently allocated as development LUDs. Alternatives 6, 7, and 8 would re-allocate these acres as Recommended Wilderness or LUD II.

### ***Economy***

Recreation, tourism, and subsistence use are important to the community of Skagway. Recreation and tourism could be potentially affected by Alternative 8, which would re-allocate a large part of the Skagway's community use area as wilderness. This could potentially affect the tourism industry by limiting outfitter/guide uses that serve large volumes of clients and restricting future recreation developments. Alternative 8 would also recommend preservation of the undeveloped parts of the Skagway community use area as wilderness into the foreseeable future.

Alternative 8 could also restrict the potential development of electric transmission lines from the Otter Creek Hydropower Project. The purpose of the Otter Creek Hydroelectric Project, located 3 miles south of Skagway on Kasidaya Creek, is to provide electrical power to Skagway and Haines.

### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 88 percent of the total edible pounds of subsistence resources harvested by Skagway households (Kruse and Frazier, 1988).

Deer account for only a small fraction of the total edible pounds of subsistence resources harvested by Skagway households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Skagway residents in the short term and long term. This alternative was also estimated to provide sufficient capability for deer hunted by all rural hunters in the Skagway community use area in the short term. In the long term, harvest for all rural hunters was projected to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort. Projected harvest for all hunters was estimated to exceed 10 percent habitat capability in the short term and long terms. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### **Tenakee Springs**

Tenakee Springs is located 50 miles northeast of Sitka on the north shore of Tenakee Inlet (east Chichagof Island). According to the 2000 Census, Tenakee Springs had a 2000 population of 104, with Alaska Natives comprising 3 percent of the total (U.S. Census Bureau, 2001b). Tenakee Springs, accessible only by floatplane or boat, is a stop on the Alaska Marine Highway ferry system.

A Tlingit winter village site was located in the vicinity of the present-day harbor and a summer village was located across the Inlet at Kadashan Bay (ADF&G, 1994). Early prospectors and fishermen came to the site to wait out the winters and enjoy the natural hot springs in Tenakee. Around 1895, a large tub and building were

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constructed to provide a warm bathing place. The 108-degree sulfur springs is the social focus of the community, with bathing times scheduled for men and women.

In 1904, E. Snyder bought a tract of land from a Tlingit resident, including a house located near the public bathhouse. The post office, established in 1903, used the name Tenakee. In 1928, the community's name was changed to Tenakee Springs. The community has a local Fish and Game Advisory Committee, and many residents practice a subsistence lifestyle, actively exchanging resources with neighbors (ADF&G, 1994).

Tenakee Springs' population increased slightly between 1990 and 2000.

Year	1970	1980	1990	2000
Population	86	138	94	104

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

While Tenakee Springs is often considered a retirement community, commercial fishing and tourism are important sources of income. The City and local store are the primary employers (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 14 percent of the labor force in Tenakee Springs was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$33,125, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	5	11
Construction	2	5
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	5	11
Transportation, Warehousing & Utilities	8	18
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	4	9
Education, Health & Social Services	4	9
Arts, Entertainment, Recreation, Accommodation & Food Services	2	5
Other Services (Except Public Admin)	3	7
Public Administration	11	25
<b>Total Employment</b>	<b>44</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Tenakee Springs is part of the Chatham Strait community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. The non-federal government, wood products, and services sectors were the major employers in the Chatham Strait community group in 1999, accounting for 49, 18, and 17 percent of total employment, respectively. The wood products employment was entirely in the logging sector.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Tenakee Springs in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-47. This area contains approximately 196,000 acres of National Forest the System land (among other land ownerships). Table 3.4-63 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 60 percent of the total acreage within the Tenakee Springs community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because approximately 84 percent of the acreage presently allocated to development LUDs would be re-allocated as Recommended Wilderness or LUD II. There would be less restriction on activities under Alternative 6 because the acreage would be re-allocated as LUD II rather than Wilderness. Alternatives 5 and 7 would fall between those two alternative groupings, with a portion of the existing development LUD acreage (39 and 41 percent, respectively) re-allocated as Wilderness.

#### **Economy**

Tenakee Springs is primarily a commercial fishing, subsistence, and retirement community. The lands along Tenakee Inlet are some of the most important to the community. Kadashan and Trap Bay watersheds are legislated LUD II areas. These areas were designated in the Tongass Timber Reform Act, in part, because of their high value for subsistence use for Tenakee Springs residents.

Commercial fishing is not expected to be significantly affected by Forest Service activities during the next 10 years.

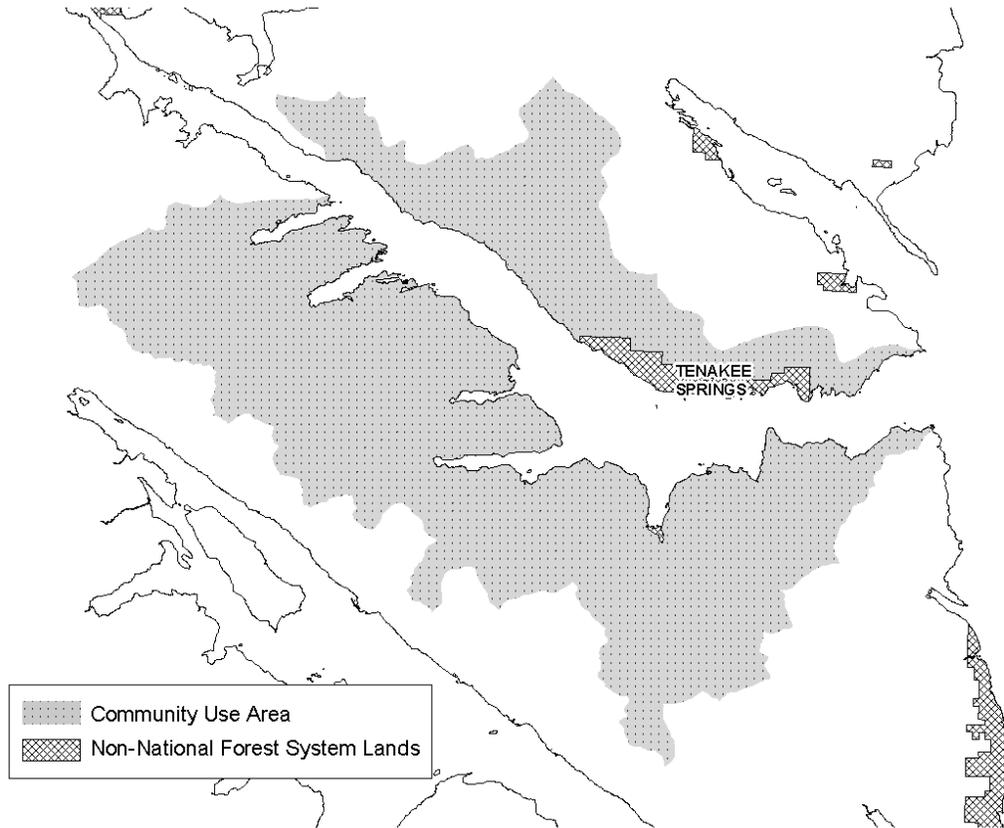
#### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 55 percent of the total edible pounds of subsistence resources harvested by Tenakee Springs households (Kruse and Frazier, 1988).

Deer account for 39 percent of the total edible pounds of subsistence resources harvested by Tenakee Springs households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide habitat capability for deer hunted in the Tenakee Springs community use area by Tenakee Springs residents, all rural hunters, and all hunters in the short term. This alternative was also estimated to provide sufficient habitat capability for Tenakee Springs residents and all rural hunters in the long term. However, projected deer harvest for all hunters was estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the

**Figure 3.4-47**  
**Tenakee Springs' Community Use Area**



**Table 3.4-63**  
**LUD Groups in Tenakee Springs' Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	0	40,656	0	0	100,378	40,824	102,482	167,458
Mostly Natural	78,103	37,447	78,103	78,103	24,330	136,123	23,640	9,238
Moderate Development	4,524	4,524	4,524	4,524	4,350	2,182	4,024	2,403
Intensive Development	113,680	113,679	113,680	113,680	67,248	17,177	66,160	17,207
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>11,444</b>	<b>11,444</b>	<b>11,444</b>	<b>11,444</b>	<b>8,427</b>	<b>3,711</b>	<b>8,391</b>	<b>3,720</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### Thorne Bay

Thorne Bay is located at the head of Thorne Bay on eastern Prince of Wales Island, approximately 40 air miles northwest of Ketchikan. According to the 2000 Census, Thorne Bay had a 2000 population of 557, with Alaska Natives comprising 16 percent of the total (U.S. Census Bureau, 2001b).

Petroglyphs and other archaeological remains indicate occupation and use of the area by Alaska Natives dating back at least 3,000 years. Post-contact development began in the early 1900s with construction of a saltery on the south shore of Thorne Bay (ADF&G, 1994).

In 1960, a floating logging camp was built in Thorne Bay, and, in 1962, a shop, barge terminal, log sort yard, and camp were built to replace facilities at Hollis. Thorne Bay was incorporated as a second class city in 1982, making it one of Alaska's newest cities. Thorne Bay is accessible by road, water, or floatplane. Three air carriers serve the community with six to ten flights daily, and the Alaska Marine Highway system is accessed by the road system to Hollis (ADF&G, 1994).

Thorne Bay's population decreased by 4 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	443	377	581	557

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Thorne Bay economy is primarily based on the timber industry and the U.S. Forest Service management of the National Forest. Logging operations in the area are generally seasonal (March to November) and include a major log transfer site for Prince of Wales Island. Commercial fishing, tourism, and government also provide employment (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 15 percent of the labor force in Thorne Bay was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$45,625, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	53	20
Construction	33	12
Manufacturing	16	6
Wholesale Trade	3	1
Retail Trade	25	9
Transportation, Warehousing & Utilities	15	6
Information	3	1
Finance, Insurance, Real Estate, Rental & Leasing	2	1
Professional, Scientific, Management, Administrative & Waste Mgmt	13	5
Education, Health & Social Services	61	23
Arts, Entertainment, Recreation, Accommodation & Food Services	8	3
Other Services (Except Public Admin)	6	2
Public Administration	31	12
<b>Total Employment</b>	<b>269</b>	<b>100</b>

Source: Alaska DCED, 2002

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Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Thorne Bay is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Thorne Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-48. This area contains approximately 1,004,000 acres of National Forest System land (among other land ownerships). Table 3.4-64 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 55 percent of the total acreage within the Thorne Bay community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because a portion of the acreage presently allocated to development LUDs (37 and 35 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings, with a portion of the existing development LUD acreage (4, 10, and 10 percent, respectively) re-allocated as Wilderness.

#### **Economy**

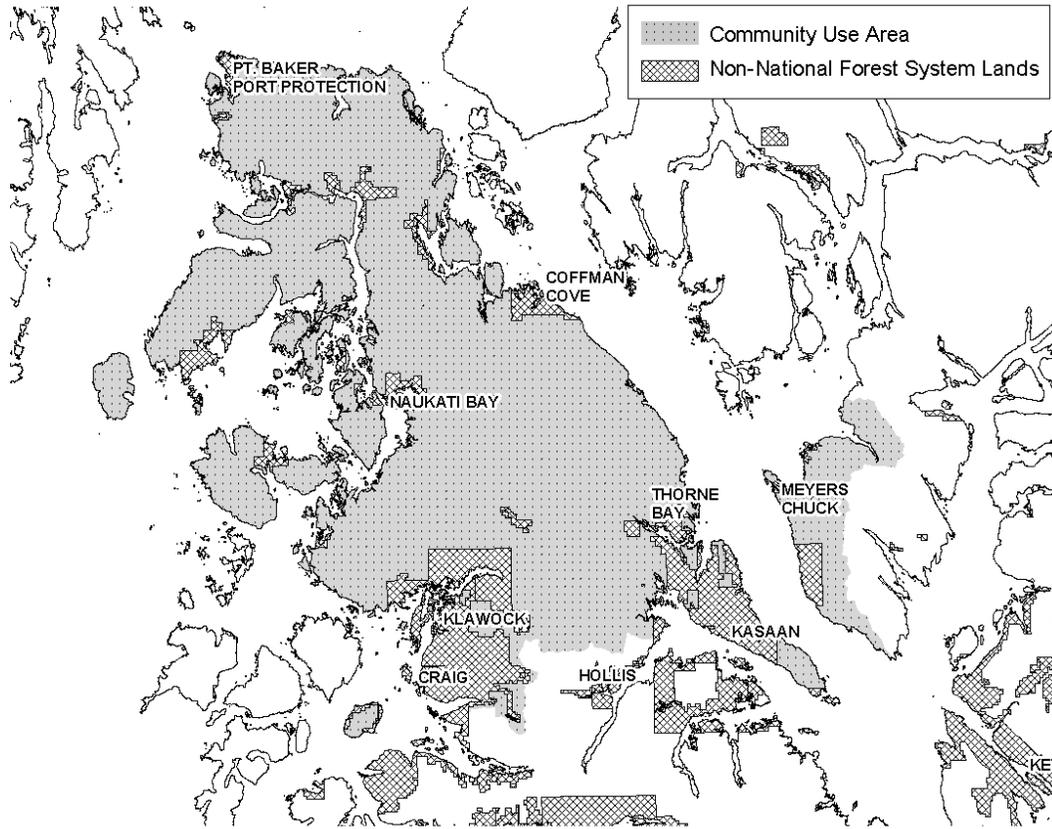
Thorne Bay is primarily a logging community and as such would be directly affected by the amount of logging opportunities on north Prince of Wales Island, as well as elsewhere on the Tongass. The mill survey conducted by the Forest Service in 2000 identified four sawmills operating in Thorne Bay.

Approximately 18.4 MMBF is presently under contract in the North Prince of Wales community group area. Alternatives 6 and 8 would likely prevent 11.3 MMBF, about 61 percent, of this volume from being harvested, and approximately 207.7 and 189.4 MMBF Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging communities throughout Southeast Alaska, including Thorne Bay. Alternatives 6 and 8 would also reduce the lands available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close, partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

The 1997 Forest Plan Revision Final EIS indicated that several small timber operators produce value-added products in Thorne Bay. These value added products include music wood, cabinets, and other products. They need relatively low volumes of timber, but of specific species and grades to meet their needs. All alternatives should meet these needs.

The lodges located near the community would not be affected under any of the alternatives.

**Figure 3.4-48**  
**Thorne Bay's Community Use Area**



**Table 3.4-64**  
**LUD Groups in Thorne Bay's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	51,160	119,362	117,279	88,778	303,545	51,160	303,545	547,959
Mostly Natural	403,835	335,632	358,995	366,220	204,750	605,383	204,750	101,945
Moderate Development	164,745	164,745	158,368	164,745	141,231	98,220	141,231	102,446
Intensive Development	384,558	384,558	369,658	384,558	354,777	249,755	354,777	252,103
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>171,999</b>	<b>171,999</b>	<b>167,967</b>	<b>171,999</b>	<b>161,215</b>	<b>137,546</b>	<b>161,215</b>	<b>139,153</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

**Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Thorne Bay households (Kruse and Frazier, 1988).

Deer account for 20 percent of the total edible pounds of subsistence resources harvested by Thorne Bay (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative should be able to provide sufficient habitat capability for deer hunted by Thorne Bay residents in the short term and long term. Projected deer harvest in the Thorne Bay community use area by all rural hunters and all hunters is estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the short term and long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1, with one possible exception. Under Alternatives 5, 6, 7, and 8, the point when the projected deer harvest for all hunters combined is estimated to exceed the sustainable level is less likely to occur in the short term, but is still likely to occur in the long term.

**Whale Pass**

Whale Pass is a dispersed unincorporated community located on the northeast coast of Prince of Wales Island. According to the 2000 Census, Whale Pass had a 2000 population of 58, with Alaska Natives comprising one percent of the total (U.S. Census Bureau, 2001b).

Whale Pass was originally established as a logging camp by Ketchikan Pulp Company in the early 1960s. According to local residents, a float camp housed loggers and their families in this location for almost 30 years. In 1982, the float camp was removed and many of the logging families left. Others moved to trailer pads on land at the head of the cove. That same year, Whale Pass became the site of a State land sale, which brought renewed population growth and the founding of a homeowners association. The community has been connected to the road system on Prince of Wales Island since 1981. A log transfer station remains on the southwest side of the bay (ADF&G, 1994).

The population of Whale Pass decreased by 17 residents between 1990 and 2000.

Year	1980	1990	2000
Population	90	75	58

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

Whale Pass is primarily dependent on the timber industry, with logging operations and the local school being the only employers in the area (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. These data are extrapolated from a sample of the city population. Since the sample size was small, the extrapolation may not be exact but should provide a general indication of the distribution of employment. The 2000 U.S. Census identified a potential work force of 37 residents and total employment of 14. While no adults in Whale Pass were identified as unemployed and looking for work in 2000, 62 percent were identified as unemployed and not

looking for work. Median household income was \$62,083, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	9	64
Construction	0	0
Manufacturing	0	0
Wholesale Trade	0	0
Retail Trade	3	21
Transportation, Warehousing & Utilities	0	0
Information	0	0
Finance, Insurance, Real Estate, Rental & Leasing	0	0
Professional, Scientific, Management, Administrative & Waste Mgmt	2	14
Education, Health & Social Services	0	0
Arts, Entertainment, Recreation, Accommodation & Food Services	0	0
Other Services (Except Public Admin)	0	0
Public Administration	0	0
<b>Total Employment</b>	<b>14</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Whale Pass is part of the North Prince of Wales community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS. Wood products employment in the North Prince of Wales community group declined by 186 jobs or 69 percent between 1990 and 1999. Wood products employment accounted for 83 jobs or 23 percent of total employment in this community group in 1999.

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Whale Pass in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-49. This area contains approximately 1,004,000 acres of National Forest System land (among other land ownerships). Table 3.4-65 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for 55 percent of the total acreage within the Whale Pass community use area. Alternatives 1, 2, and 4 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because a portion of the acreage presently allocated to development LUDs (37 and 35 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Alternatives 3, 5, and 7 would fall between those two alternative groupings with a portion of the existing development LUD acreage (4, 10, and 10 percent, respectively) re-allocated as Wilderness.

## Environment and Effects 3

### ***Economy***

Residents of Whale Pass could be potentially affected by changes in timber harvest, karst protection, recreation and tourism, and subsistence opportunities. Members of several speliological societies derive a portion of their income from cave and karst analysis and exploration in the vicinity. The Whale Pass Resort and a retail store are located in Whale Pass.

Approximately 18.4 MMBF is presently under contract in the North Prince of Wales community group area. Alternatives 6 and 8 would likely prevent 11.3 MMBF, about 61 percent, of this volume from being harvested, and approximately 207.7 and 189.4 MMBF Forest-wide, respectively (see Table 3.4-14). This type of reduction would likely affect logging communities throughout Southeast Alaska, including Whale Pass. Alternatives 6 and 8 would also reduce the lands available for harvest in the long run. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills could temporarily or permanently close, partly as a result of short-term supply restrictions. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place. Cave and karst exploration and recreation and tourism in the Whale Pass community use area are not expected to be affected under any of the alternatives.

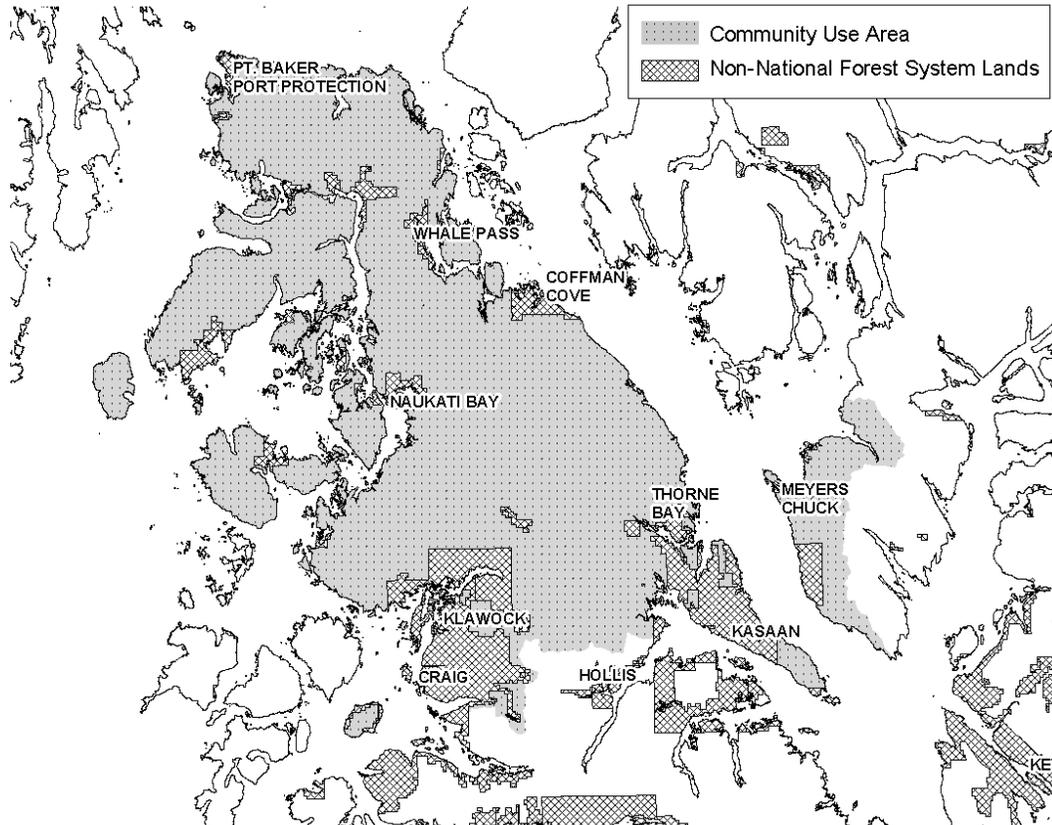
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 60 percent of the total edible pounds of subsistence resources harvested by Whale Pass households (Kruse and Frazier, 1988).

Deer account for 27 percent of the total edible pounds of subsistence resources harvested by Whale Pass households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted by Whale Pass residents in the short term and long term. Projected deer harvest in the Whale Pass community use area by all rural hunters and all hunters is estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the short term and long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-49**  
**Whale Pass' Community Use Area**



**Table 3.4-65**  
**LUD Groups in Whale Pass' Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	51,160	119,362	117,279	88,778	303,545	51,160	303,545	547,959
Mostly Natural	403,835	335,632	358,995	366,220	204,750	605,383	204,750	101,945
Moderate Development	164,745	164,745	158,368	164,745	141,231	98,220	141,231	102,446
Intensive Development	384,558	384,558	369,658	384,558	354,777	249,755	354,777	252,103
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>171,999</b>	<b>171,999</b>	<b>167,967</b>	<b>171,999</b>	<b>161,215</b>	<b>137,546</b>	<b>161,215</b>	<b>139,153</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

### Wrangell

Wrangell is located on the north end of Wrangell Island, near the mouth of the Stikine River, an historic trade route to the Canadian interior. According to the 2000 Census, Wrangell had a 2000 population of 2,308, with Alaska Natives comprising 16 percent of the total (U.S. Census Bureau, 2001b).

Wrangell began as an important Tlingit site primarily because of its proximity to the Stikine River. Wrangell clans held a monopoly of trading rights along the Stikine. In 1811, the Russians began fur trading with area Tlingits and built a stockade named Redoubt Saint Dionysius in 1834. In 1867, a military post named Fort Wrangell was established as part of the Alaska Territory. The community continued to grow because of its strategic location as a military fur trading center, and as an outfitter for gold prospectors between 1861 and the 1930s (ADF&G, 1994; Alaska DCRA, 1995).

Wrangell is incorporated as a home rule municipality and has maintained its historic cultural diversity. The community has a local Fish and Game Advisory Committee. In a move to emphasize the importance of subsistence, the Wrangell Indian Reorganization Act Council has formed its own local Fish and Game Advisory Committee (ADF&G, 1994).

The Silver Bay sawmill is located in Wrangell. According to the mill survey conducted by the Forest Service in 2000, this mill, which has an installed production capacity of 65 MMBF, processed approximately 14 MMBF in 2000 and employs 55 people. Silver Bay Logging announced in February 2003 that it has filed for Chapter 11 reorganization with the U.S. Bankruptcy Court. The company also announced that they plan to continue operating and plan to harvest approximately 25 MMBF of timber in 2003.

Wrangell's population, which increased 22 percent between 1970 and 1990, decreased by 171 residents or 7 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	2,029	2,184	2,479	2,308

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Wrangell economy is primarily based on commercial fishing, fish processing, and the timber industry. Estimated gross fishing earnings of local residents approached \$5 million in 2000. A dive fishery, including for urchins, sea cucumbers, and geoducks, is developing. The Alaska Pulp Corp. sawmill, closed in 1994, was sold to Silver Bay Logging and reopened in April 1998. Wrangell also has a tourist business attracted by sportfishing in Stikine River and by a deep-water port for docking large and small cruise ships. There are also renewed gold mining activities on the Stikine River that will be serviced out of Wrangell (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 9 percent of the labor force in Wrangell was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$43,250, compared to a regional median of \$44,118 (Alaska DCED, 2002).

<b>Employment by Industry</b>	<b>Number</b>	<b>Percent of Total</b>
Agriculture, Forestry, Fishing & Hunting, Mining	176	16
Construction	98	9
Manufacturing	78	7
Wholesale Trade	7	1
Retail Trade	89	8
Transportation, Warehousing & Utilities	77	7
Information	27	3
Finance, Insurance, Real Estate, Rental & Leasing	23	2
Professional, Scientific, Management, Administrative & Waste Mgmt	51	5
Education, Health & Social Services	238	22
Arts, Entertainment, Recreation, Accommodation & Food Services	69	6
Other Services (Except Public Admin)	38	4
Public Administration	108	10
<b>Total Employment</b>	<b>1,079</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Wrangell is part of the Wrangell City community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

Sawmill employment decreased by 62 percent in the Wrangell City community group between 1990 and 1999, a reduction from 162 to 62 jobs. The wood products sector accounted for 9 percent of total employment in the Wrangell City community group in 1999. The main employers in 1999 were the non-federal government and retail trade sectors, which accounted for 24 and 18 percent of total employment, respectively.

**Potential Effects**

**Community Use Area**

The general area commonly used or related to by many of the residents of Wrangell in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-50. This area contains approximately 830,000 acres of National Forest System land (among other land ownerships). Table 3.4-66 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for about 37 percent of the total acreage within the Wrangell community use area. Alternatives 1, 2, 3, 4, and 5 would not have a significant effect on existing LUD allocations in the community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would result in the most significant effects because a portion of the acreage presently allocated to development LUDs (64 and 68 percent, respectively) would be re-allocated as Recommended Wilderness or LUD II. Six percent of the existing development LUD acres would be re-allocated as Recommended Wilderness under Alternative 7.

## Environment and Effects 3

### ***Economy***

Commercial fishing, timber processing, recreation and tourism, and subsistence opportunities are particularly important to Wrangell. Wrangell is one of the stop-over points for visitors traveling to the Stikine River and the Stikine-LeConte Wilderness. Commercial fisheries employment and recreation and tourism activities are not likely to be affected under any of the alternatives.

Silver Bay presently has 101.6 MMBF under contract. Alternatives 5, 6, 7, and 8 would all potentially reduce this volume, with the greatest reductions occurring under Alternatives 6 and 8, 85 and 84 percent, respectively (Table 3.4-11). Reductions in volume would likely affect short-term employment in the mill. As discussed in the short-term effects section, the possibility exists that one or more of the region's sawmills may temporarily or permanently close, partly as a result of short-term supply restrictions. Silver Bay employs approximately 55 people, who primarily reside in Wrangell. Logging employment in the community and surrounding area, as well as employment at the Forest Service's Wrangell Ranger Station, would also be affected under the more restrictive alternatives. If the larger mills in the region were to close, it is probable that the majority of Tongass-related logging would no longer take place.

Wrangell could also be affected by potential restrictions on transportation and utility projects. Under the 1999 Southeast Alaska Transportation Plan, construction of a new ferry terminal and road connection is proposed for south Wrangell Island. Development of this project could be affected under Alternative 8. Alternative 8 could also affect the potential development of transmission lines from the City of Wrangell's Sunrise Lake Water Supply and Hydroelectric Project on Woronofski Island.

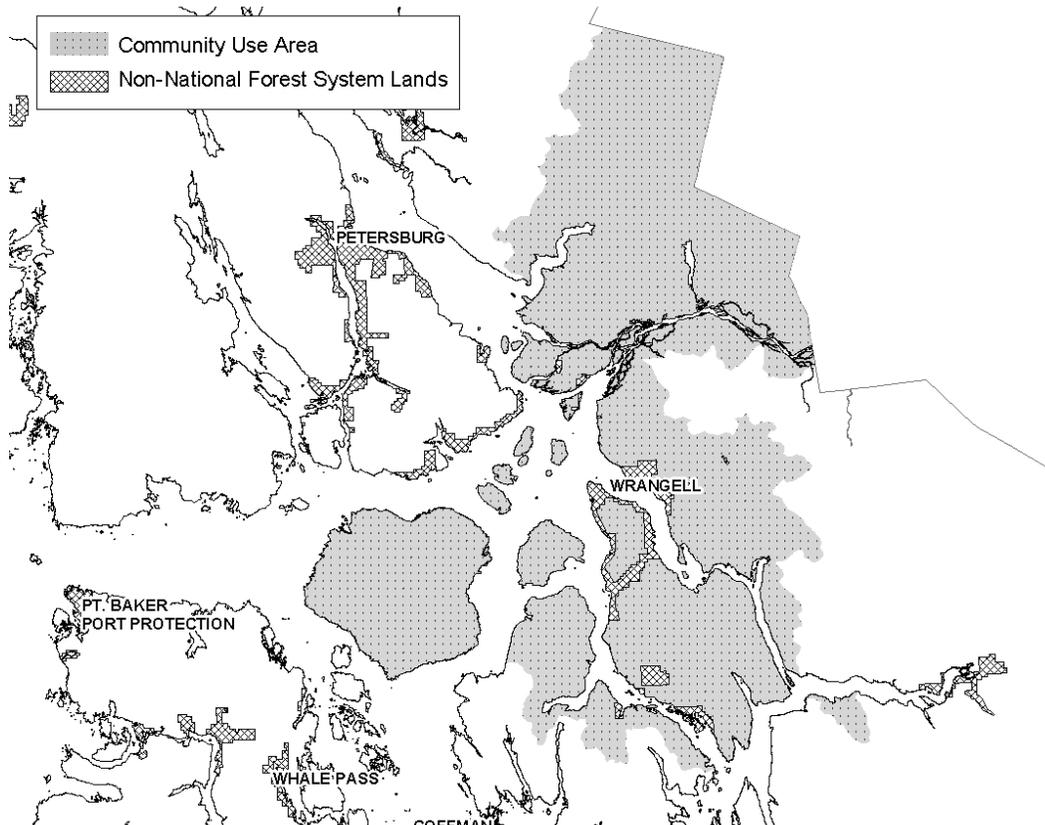
### ***Subsistence***

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Wrangell households (Kruse and Frazier, 1988).

Deer account for 21 percent of the total edible pounds of subsistence resources harvested by Wrangell households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Wrangell community use area by Wrangell residents, all rural hunters, and all hunters in the short term. This is also estimated to be the case for Wrangell residents and all rural hunters in the long term. Projected deer harvest by all hunters is, however, estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that the higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

**Figure 3.4-50  
Wrangell's Community Use Area**



**Table 3.4-66  
LUD Groups in Wrangell's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	367,216	367,244	367,216	367,216	367,216	388,669	388,669	710,838
Mostly Natural	159,671	159,643	159,671	159,671	159,671	331,913	155,360	21,163
Moderate Development	154,597	154,597	154,597	154,597	154,597	54,132	138,709	46,270
Intensive Development	148,352	148,352	148,352	148,352	148,352	55,145	147,098	51,587
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>63,568</b>	<b>63,568</b>	<b>63,568</b>	<b>63,568</b>	<b>63,568</b>	<b>31,886</b>	<b>61,323</b>	<b>29,217</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

## Environment and Effects 3

### Yakutat

Yakutat is located in the lowlands along the northern Gulf of Alaska, 212 miles northwest of Juneau at the mouth of Yakutat Bay. According to the 2000 Census, Yakutat had a 2000 population of 680, with Alaska Natives comprising 47 percent of the total (U.S. Census Bureau, 2001b).

Yakutat, which means “the place where the canoes rest,” has a diverse cultural history. The original settlers, believed to have been Eyak people from the Copper River area, were later conquered by the Tlingits. Intensive contact with European explorers came in the late 1700s when a Russian fur trading company moved into the Yakutat area. By the mid-1800s, foreign traders were well established along the coast. The contemporary town grew up around “the old village,” which was established in 1889 by missionaries (ADF&G, 1994).

Incorporated as a first-class city in 1948, Yakutat is governed by a mayor and a city council. Yakutat Borough, incorporated in 1992, expanded the original city boundaries to include a large section of the Gulf Coast north of Cape Fairweather. Yakutat has a local Fish and Game Advisory Committee. Yakutat is accessible by jet service from Juneau and Anchorage. Wrangell-Saint Elias National Park, Russell Fjords Wilderness, and Glacier Bay National Park are located northwest, northeast, and southeast of Yakutat, respectively.

The population of Yakutat, which almost tripled between 1970 and 1990, increased by 27 percent between 1990 and 2000.

Year	1970	1980	1990	2000
Population	190	449	534	680

Source: USDA Forest Service, 1997a; U.S. Census Bureau, 2001b.

The Yakutat economy is primarily dependent on fishing, fish processing, and government. Fishing opportunities in the area, both freshwater in the Situk River and saltwater, are considered world class, and 25 percent of the local residents have commercial fishing licenses. A cold storage plant is the major private employer (Alaska DCED, 2002).

Employment by industry data compiled by the Alaska DCED from the 2000 Census are summarized in the table below. Approximately 8 percent of the labor force in Yakutat was identified as unemployed and seeking work in 2000, compared to 7 percent for Southeast Alaska as a whole. Median household income was \$46,786, compared to a regional median of \$44,118 (Alaska DCED, 2002).

Employment by Industry	Number	Percent of Total
Agriculture, Forestry, Fishing & Hunting, Mining	136	31
Construction	32	7
Manufacturing	25	6
Wholesale Trade	0	0
Retail Trade	21	5
Transportation, Warehousing & Utilities	64	15
Information	5	1
Finance, Insurance, Real Estate, Rental & Leasing	9	2
Professional, Scientific, Management, Administrative & Waste Mgmt	0	0
Education, Health & Social Services	62	14
Arts, Entertainment, Recreation, Accommodation & Food Services	43	10
Other Services (Except Public Admin)	13	3
Public Administration	30	7
<b>Total Employment</b>	<b>440</b>	<b>100</b>

Source: Alaska DCED, 2002

Please refer to the 1997 Forest Plan Revision Final EIS for further details on the history, economy, and subsistence use of this community.

Yakutat is part of the Yakutat community group (see Table 3.4-33). Detailed employment data are provided for this community group by economic sector for 1990, 1995, and 2000 in Appendix E of this SEIS.

The services and non-federal government sectors were the main employers in the Yakutat community group in 1999, accounting for 24 and 21 percent of total employment, respectively. Seafood processing accounted for 17 percent and recreation and tourism-related activities (lodging, restaurants, and recreation services) accounted for 19 percent of total employment. Wood products (logging) employment decreased by 65 percent between 1990 and 1999 and accounted for just 3 percent of total employment in 1999 (see Appendix E).

### Potential Effects

#### **Community Use Area**

The general area commonly used or related to by many of the residents of Yakutat in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.4-51. This area contains approximately 252,000 acres of National Forest System land (among other land ownerships). Table 3.4-67 shows how the lands within this community use area would be distributed among the LUD groups by alternative. The LUD groups are explained in the introduction to Chapter 3.

Development LUDs presently account for just 15 percent of the acreage in the Yakutat community use area. Alternatives 1, 2, 3, and 4 would not have a significant effect on existing LUD allocations in this community use area because the acreage by LUD group would remain the same as under the existing Forest Plan. Alternatives 6 and 8 would re-allocate 62 percent of this acreage to Recommended Wilderness or LUD II. Alternative 7 would re-allocate 21 percent of the existing development LUD acreage as Recommended Wilderness.

#### **Economy**

Commercial fishing and subsistence are important to Yakutat. Oil exploration may begin again in the Pacific Ocean close to Yakutat. The Yakutat Forelands are some of the community's most important subsistence use areas. Commercial fishing is not expected to be affected under any of the alternatives.

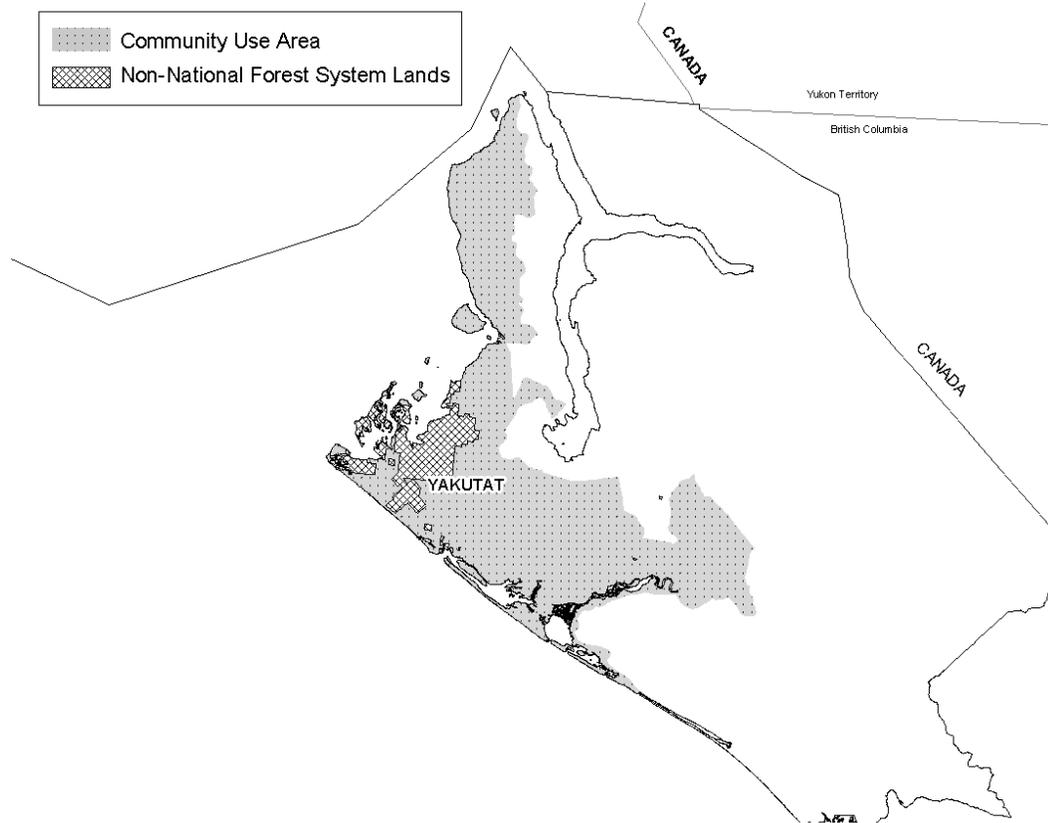
#### **Subsistence**

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 82 percent of the total edible pounds of subsistence resources harvested by Yakutat households (Kruse and Frazier, 1988).

Moose is more important than deer as a subsistence meat source for Yakutat residents. Moose availability would not be affected under any of the alternatives.

Deer account for only a small fraction of the total edible pounds of subsistence resources harvested by Yakutat households (Kruse and Frazier, 1988). The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan Revision Final EIS determined that the selected alternative (Alternative 11 in the 1997 Forest Plan Revision Final EIS) should be able to provide sufficient habitat capability for deer hunted in the Yakutat community use area by Yakutat residents, all rural hunters, and all hunters in the short term. This is also estimated to be the case for Yakutat residents and all rural hunters in the long term. Projected deer

**Figure 3.4-51**  
**Yakutat's Community Use Area**



**Table 3.4-67**  
**LUD Groups in Yakutat's Community Use Area by Alternative**

LUD Groups <sup>1</sup>	Alternative							
	1	2	3	4	5	6	7	8
<b>Acres of National Forest System Land per LUD Group</b>								
Wilderness/National Monument	96,022	96,022	96,022	96,022	99,878	109,221	113,129	232,276
Mostly Natural	118,269	118,269	118,269	118,269	114,414	128,179	109,103	5,123
Moderate Development	21,206	21,206	21,206	21,206	21,205	11,753	21,007	11,753
Intensive Development	16,034	16,034	16,034	16,034	16,034	2,378	8,291	2,378
<b>Suitable National Forest System Acres for Timber Management <sup>2</sup></b>								
<b>Total Suitable Acres</b>	<b>7,268</b>	<b>7,268</b>	<b>7,268</b>	<b>7,268</b>	<b>7,268</b>	<b>3,140</b>	<b>5,670</b>	<b>3,140</b>

<sup>1</sup> See the accompanying large LUD map for the distribution of existing LUDs and the Alternative Maps for which areas in the Community Use Area (and beyond) are recommended for Wilderness or LUD II designation.

<sup>2</sup> Estimated suitable acreage was corrected by the MIRF factor and a scheduling factor.

harvest by all hunters is, however, estimated to exceed 10 percent habitat capability, the level that the analysis assumed would provide a reasonably high level of hunter success for their effort, in the long term.

Alternative 1 for this SEIS is similar to the selected alternative in the 1997 analysis and, therefore, the conclusions for Alternative 1 are the same as those for the selected alternative in the 1997 Forest Plan Revision Final EIS. Based on an assessment of how the SEIS alternatives would affect the analysis presented in the 1997 Forest Plan Revision Final EIS, it is clear that higher habitat capabilities associated with Alternatives 2 through 8 would not be sufficient to change the overall conclusions for Alternative 1.

### Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Order further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participating in, denying persons the benefits of, or subjecting persons to discrimination under such programs, policies, and activities because of their race, color, or national origin.

Race and ethnicity are shown by borough in Table 3.4-68. These data show that 68 percent of the population of Southeast Alaska was identified as White in the 2000 census. American Indian and Alaska Native is the largest minority group, accounting for 17 percent of the total Southeast Alaska population. Table 3.3-68 indicates that there are relatively large proportions of Alaska Natives in the Yakutat Borough and Prince of Wales-Outer Ketchikan and Skagway-Hoonah-Angoon Census Areas. The populations of Haines and Juneau, in contrast, have relatively low proportions of Alaska Natives, below the Southeast Alaska average of 17 percent.

Alaska Native populations are identified as a percentage of total population by community in Table 3.4-35. This information is presented graphically in Figure 3.3-4. These data indicate that 13 of Southeast Alaska's 32 communities have Alaska Native populations that comprise a larger share of total population than the regional average (17 percent). Alaska natives comprised a particularly large share of total population in Angoon (82 percent), Hoonah (61 percent), Hydaburg (85 percent), Kake (67 percent), Klawock (51 percent), Metlakatla (82 percent), and Saxman (66 percent), all considered traditional Native communities.

The percent of households below the poverty line and the median household income in 2000 are also identified by community in Table 3.4-35. The percent of households below the poverty line in Alaska as a whole was 7 percent in 2000. Median household income was approximately \$51,571. The U.S. Census identified 14 communities in Southeast Alaska with a larger percent of households below the poverty line than the state average. These communities include Klawock, Hoonah, Edna Bay, Hydaburg, Port Alexander, and Angoon, as well as Hyder and Port Protection. Median household incomes ranged from \$36,048 in Haines Borough to \$49,924 in the City and Borough of Juneau (U.S. Census Bureau, 2001a). All but four of the communities identified in Table 3.4-35 had median household incomes below the state average. Communities with median household income below the regional average included Port Protection, Hyder, Point Baker, Edna Bay, Angoon, and Hydaburg.

**Table 3.4-68**  
**Race/Ethnicity by Borough/Census Area, 2000**

	2000 Population	Percent White	Percent American Indian and Alaska Native	Percent Two or More Races	Percent Other <sup>1</sup>	Percent Hispanic or Latino <sup>2</sup>
<b>Northern Boroughs</b>						
Haines Borough	2,392	83	12	5	1	1
Juneau Borough	30,711	75	11	7	7	3
Sitka Borough	8,835	69	19	8	5	3
Skagaway-Hoonah-Angoon CA	3,436	57	36	6	2	2
Yakutat Borough	808	50	40	8	2	1
<b>Southern Boroughs</b>						
Ketchikan Gateway Borough	14,070	74	15	5	5	3
Prince of Wales-Outer Ketchikan CA	6,146	53	39	7	1	2
Wrangell-Petersburg CA	6,684	73	16	8	3	2
<b>Southeast Alaska</b>	<b>73,082</b>	<b>68</b>	<b>17</b>	<b>7</b>	<b>8</b>	<b>3</b>
Alaska	626,932	69	16	5	10	4

<sup>1</sup> The “Other” category presented here includes respondents identifying as Black or African American, Asian, Native Hawaiian and Other Pacific Islander, and Other. These categories have been combined for ease of presentation and because they comprise small percentages of local populations.

<sup>2</sup> “Hispanic” can be of any race.

Source: U.S. Census Bureau, 2001.

The potential effects of the alternatives upon the economic and social environment of Southeast Alaska are discussed in the *Regional Economy* section of this document. The principal regional effects would be those associated with changes in the timber industry, recreation and tourism, mining, and transportation and utilities. There could also be potential effects upon subsistence use and heritage resources that have particular significance for Alaska Native populations.

The effects of the alternatives on communities are discussed by community in the preceding part of this section. These community assessments include a discussion of potential timber harvesting within each community’s use area and the potential effects to the subsistence resources and the land base used by each community. These assessments indicate that the alternatives, especially the more restrictive alternatives, could negatively affect employment in low-income and minority communities or groups. Potential reductions in wood products employment would be unlikely, however, to have a disproportionately high effect on these particular communities or groups. Reductions in sawmill employment would be concentrated in Ketchikan, Wrangell, and Craig. Reductions in logging employment would likely be distributed throughout Southeast Alaska, depending upon the alternative. Higher potential reductions in wood products-related employment would be likely to occur under Alternatives 6 and 8.

Employment in the recreation and tourism sector could be affected by restrictions upon outfitter/guide group sizes in areas that are reallocated as Recommended Wilderness. Reductions in this type of employment, if realized, would not disproportionately affect minority or low-income populations. It may, however, be noted that the average annual wage in the recreation and tourism sector is below the regional average (see Table 3.3-3), reflecting, in part, the seasonal nature of much of this work. Potential future restrictions in mining activity and employment, if realized, are not expected to disproportionately affect low-income or minority communities or groups.

## Environment and Effects 3

The potential effects of the alternatives upon transportation and utilities are discussed in the *Transportation and Utilities* section and summarized in the *Regional Economy* section. Implementation of the projects identified in the 1999 Southeast Alaska Transportation Plan could be affected under Alternative 8. These include the ultimate development of a road connection between Kake and Petersburg. Restriction on the possible development of this road connection could occur under Alternatives 3 and 5 through 8, and would likely disproportionately affect Kake, a largely Alaska Native community. Alternative 8 and other alternatives could potentially affect opportunities for other regional transportation developments. These potential effects are unlikely to disproportionately affect minority or low-income communities with the possible exception of a potential road development to the southeast tip of the Kasaan Peninsula, which may disproportionately affect Kasaan. Approximately 38 percent of the population of Kasaan was Alaska Native in 2000, compared to 17 percent region-wide.

Potential power transmission-line development opportunities could be affected under a number of the alternatives. These include projects connecting Kake, Hoonah, and Angoon, largely Alaska Native communities. Kake could be potentially affected under Alternatives 3, 5, 6, 7, and 8. It may be noted that the city of Kake has expressed interest in exploring options for modifications to Alternative 6 that would allow the construction of a powerline corridor between Kake and Petersburg. Hoonah could be potentially affected under Alternative 8. Angoon could be potentially affected under Alternatives 2, 5, 6, 7, and 8. Meyers Chuck could be potentially affected under Alternatives 2, 3, 4, 5, 7, and 8.

Subsistence issues are discussed for the region as a whole in the *Subsistence* section and for each of Southeast Alaska's 32 communities in the preceding part of this section. The deer analysis presented in the 1997 Tongass Forest Plan Final EIS indicated that deer habitat capabilities in several portions of the Tongass may not be adequate to sustain the current levels of deer harvests, which may result in restrictions on subsistence use. Under the alternatives analyzed in this SEIS, the possibility of a significant restriction, resulting from a change in abundance or distribution, would be the same as, or less than, the possibility under Alternative 11 (Selected Alternative) of the 1997 Forest Plan Revision Final EIS. In the short term, the risk of a significant restriction would be about the same under any of the SEIS alternatives. This is because the effects of past harvest would override the effects of new harvest during the next 10 years. In the long term, those alternatives that reduce areas available for future timber harvesting the most would result in the largest reduction in risk. Alternatives 1, 2, and 4 would result in the same possibility of a significant restriction relative to Alternative 11 of the 1997 Final EIS because they would not produce a change in old-growth harvest rates. Alternatives 3, 5, and 7 would reduce the possibility of a significant restriction with reductions in development LUDs of 7, 16, and 31 percent, respectively. Alternatives 6 and 8 would result in a larger reduction in the possibility of a significant restriction with reductions in development LUD acreage of 70 and 69 percent, respectively (see the *Subsistence* section). These effects are discussed for each community in the preceding part of this section.

The potential effects of the alternatives upon heritage resources are expected to be the same or lower than under the current Forest Plan. Because of the protection offered by Forest-wide standards and guidelines, effects on heritage resources are expected to be low under all the alternatives.

# **CHAPTER 4**

## **LIST OF PREPARERS**

# List of Preparers

Provided below are brief biosketches of the preparers from Foster Wheeler Environmental Corporation and the primary reviewers/contributors from the Forest Service. Other Forest Service and Foster Wheeler Environmental staff who contributed to various sections through an extensive internal review process or in other ways are also listed.

**Larry Lunde**, Forest Service Project Manager

Education

B.S., Forest Management, Washington State University, 1973

Experience

Forest Service Experience: 25 years

Tongass National Forest, Environmental Coordinator and Planner

Previous experience in forest and multiple-use management positions as District Resource Staff and District Ranger on: Nez Perce National Forest in Idaho, Eldorado National Forest in California, Gifford Pinchot National Forest in Washington, Mount Hood and Fremont National Forests in Oregon.

**Randal Fairbanks**, Interdisciplinary Team Leader, Project Manager – Foster Wheeler Environmental

Education

M.S., Forest Resources, University of Washington, 1979

B.S., Wildlife Science, University of Washington, 1972

Experience

Twenty-eight years experience in design, conduct, and management of ecological and forest inventory and research, impact assessments, and mitigation plans.

Project manager or interdisciplinary team leader for ten major forest management-related EIS/EA efforts.

Major contributor to dozens of other EISs, EAs, and Environmental Reports.

**Matt Dadswell**, Senior Social Scientist/Economist, Asst. Project Manager – Foster Wheeler Environmental

Education

Ph.D. Candidate, Geography, University of Washington

M.A, Geography, University of Cincinnati, 1990

B.A., Economics and Geography, Portsmouth Polytechnic, 1988

Experience

Ten years experience conducting economic, social, and environmental regulatory analysis on a variety of natural resource projects, including Forest Service and NEPA projects.

Five years experience working on Forest Service projects, including projects on the Tongass National Forest.

**Joe Iozzi**, Silviculturist/Forester – Foster Wheeler Environmental

Education

Silviculture Institute, University of Washington, 1984 to 1985

B.S., Forest Management, Rutgers University, 1977

Experience

More than 20 years experience in silviculture and timber management, primarily on Forest Service and NEPA projects.

Thirteen years as a certified silviculturist for the Forest Service.

Five years experience working on timber sale projects on the Tongass National Forest.

## 4 List of Preparers

### **Mary Jo Russell**, GIS Analyst – Foster Wheeler Environmental

#### Education

B.S., Computer Information Systems, Menlo College

#### Experience

Ten years experience as a GIS analyst specializing in creating complex riparian models, surface modeling, habitat modeling, perspective scene analysis, aerial photo interpretation of logging units, preparation of field maps, and final production of maps for numerous timber sale EISs.

Experience includes serving as lead GIS analyst on more than a dozen Forest Service projects, including four EIS projects specific to Southeast Alaska and the Tongass National Forest.

### **Wayne Watson**, GIS Analyst – Foster Wheeler Environmental

#### Education

1995-1996 - College of Geographic Sciences - Completed GIS Certificate Program

1989-1993 - University of Toronto - Bachelor of Science in Forestry

#### Experience

Experience includes work on more than five Forest Service projects, including EIS projects specific to Southeast Alaska and the Tongass National Forest.

Experience includes database design, data updates, data integrity, programming, custom applications, spatial and tabular analysis, database queries, data conversions, projections, project design, aerial photo interpretation of logging units, preparation of field maps, and final production of maps for numerous timber sale EISs.

Previous experience involved working for 5 years with a private forest industry to produce a 20-year forest management plan.

### **Summer Adamietz**, Social Scientist/Land Use Planning – Foster Wheeler Environmental

#### Education

M.U.P., Urban Planning, University of Washington, 2001

B.S., Geography and Planning, Southwest Texas State University, 1999

#### Experience

Four years experience working on projects involving land use planning, including land supply, land capacity, and land conversion modeling.

One year of experience working on NEPA documents analyzing scenery, recreation, and land use issues, including a timber sale on the Tongass National Forest and several Forest Service projects.

Skills include land use planning, visual assessments, spatial analysis using ArcView and ArcInfo, real estate analysis, and cartography.

### **Guy Robertson**, Economist – Forest Service

#### Education

Ph.D., Forest Economics, University of Washington

Monbusho (Japan Ministry of Education) Scholar, Department of Forestry, Tokyo University of Agriculture and Technology, 1992

M.A., Japan Regional Program, 1991

B.A., Philosophy, Carleton College, 1983

#### Experience

Forest Service Experience: 7 years

Regional Economist, Alaska Region

Research Economist, Pacific Northwest Research Station

**Bill Wilson**, Timber Planner – Forest Service

Education

B.S., Forestry, McNeese State University, 1968

Experience

Forest Service Experience: 26 Years

Group Leader, Silviculture, Inventory, and Plans, Alaska Region

Revision IDT Member, Tongass National Forest, (1987-5/89)

Regional Office Timber Planner, Alaska Region, 8 years

District and Supervisors Office Timber Assistant, Lincoln NF, 3 years

District Timber Assistant, Kiabab NF, 1 year

Supervisors Office Timber Assistant, Prescott NF, 4 years

Inventory Forester, Southern Forest Experiment Station, 3 years

Forestry Aid, Mt. Hood NF, 1 year

**Lynn Humphrey**, Recreation Planner – Forest Service

Education

B.S., Forest Biology, Colorado State University, 1979

Forest Service: 16 years

Experience

Recreation Planner, Tongass NF, 1992-present

Lands, Minerals, Timber, Recreation Specialist, Juneau Ranger District, 1986-1991

Computer Programmer Analyst, Alaska Regional Office, 1984-1986

Computer Programmer, Southern Forest Experiment Station, 1981-1984

Inventory Forester, Southern Forest Experiment Station, 1979-1981

**Mary Clare Schroeder**, Wetland Scientist /Botanist – Foster Wheeler Environmental

Education

B.A., Botany, University of Washington, 2000

MBA, University of Chicago, 1993

Experience

More than 2 years field experience performing wetland delineation; wetland mitigation; planning and monitoring; and national, state, and local project permitting.

Experience conducting stream surveys on the Tongass National Forest.

Two years experience working on EIS and NEPA documents.

**Maggie Huffer**, Technical Editor/Public Involvement Coordinator – Foster Wheeler Environmental

Education

B.A., Journalism/Public Relations, Western Washington University, 2000

Experience

Three years experience writing, editing, and coordinating numerous environmental reports, including multi-volume EISs and other NEPA documents.

Experience includes work on three Forest Service EISs specific to Southeast Alaska and the Tongass National Forest.

**Susan Cripps**, Technical Editor/Public Involvement Coordinator – Foster Wheeler Environmental

Education

B.S., Forest Resources Management, State University of New York College of Environmental Science and Forestry, 1997

B.A., English Literature, University of Texas, 1991

Experience

Six years experience writing, editing, and coordinating production for more than 60 environmental documents and reports, including multi-volume EISs and NEPA documents.

Experience includes work on more than a dozen Forest Service projects and 1.5 years experience on projects specific to Southeast Alaska and the Tongass National Forest.

Past work consisted of coordinating communication and outreach programs for watershed and forestry-related issues, tracking natural resource legislation, and documenting the establishment of two model forests.

## 4 List of Preparers

### **Steve Negri**, Wildlife Biologist – Foster Wheeler Environmental

#### Education

M.S., Wildlife Ecology, Michigan State University, 1995

B.S., Business Finance, University of Missouri, 1985

#### Experience

Ten years of experience as a wildlife biologist, including work on three EISs specific to the Tongass National Forest and more than a dozen Forest Service related projects.

Experience includes work on approximately 15 EISs and other NEPA documents in the Pacific Northwest and Alaska.

A forested threatened and endangered species biologist for the Washington Department of Fish and Wildlife.

### **Paul Anderson**, Wildlife Ecologist – Foster Wheeler Environmental

#### Education

M.S., Forest Resources (Wildlife), University of Washington, 1993

B.S., General Studies (Wildlife Habitat Mgmt.), University of Washington, 1990

B.S., Nursing with Honors, University of Washington, 1982

#### Experience

Eleven years experience in wildlife and habitat assessment/management, including work specific to the Tongass National Forest.

Five years experience conducting wetland delineations, vegetation sampling, and forest stand assessments.

Previously served as principal field biologist and manager of the Wildlife Program Geographic Information System monitoring Roosevelt elk, elk habitat and marine mammals on the Olympic Peninsula.

### **Brendan Miller**, Geomorphologist – Foster Wheeler Environmental

#### Education

M.S., Earth and Atmospheric Science, University of Alberta, 2000

B.S., Physical Geography, University of BC, 1996

#### Experience

Five years experience conducting watershed assessments and terrain stability assessments throughout British Columbia; mapped landslides in northern Alberta.

Explored for minerals (mapped geology, conducted geophysics, collected soil samples, prospected) in British Columbia, the Northwest Territories, and the Nunavut Territory.

Prepared geology, geological instability, and roads sections on two EISs.

Conducted terrain stability assessments as part of a Gate 1 timber sale on the Tongass National Forest.

### **Ben Fairbanks**, Biologist – Foster Wheeler Environmental

#### Education

B.S., Natural Resource Management and Geographic Information Systems, Western Washington University, 2000

#### Experience

Two years experience working on several EISs and other NEPA documents for four projects in the Pacific Northwest and Alaska.

More than 3 years field experience on environmental projects in Alaska.

**Joe Marquez**, Web Designer – Foster Wheeler Environmental  
Education

Web Essentials Program, University of Washington, 2002

B.A., Anthropology/English, University of Colorado, 1993

Experience

Created and designed Tongass SEIS web site using HTML, CSS, JavaScript, Perl, PHP and MySQL. This dynamic web site was created with ease of use in mind and is compliant with Section 508 of the Disabilities Act to ensure ease of use by impaired users.

More than 2 years of experience working with Seattle-based organizations developing web sites. Also has worked in the local film industry behind and in front of the camera on commercials, TV shows, and feature-length films.

### **Other Contributors**

**John Hendee, Ph.D.**

Consultant – Technical Review

**John Sherrod**

Forest Service – Planning Staff Officer

**Jerry Ingersoll**

Forest Service – District Ranger

**Jan Lerum**

Forest Service – Regional Planner

**Jim Schramek**

Forest Service – Senior GIS Analyst

**Gary Fisher**

Forest Service – Resource Information Manager

**Duane Fisher**

Forest Service – Tongass GIS Manager

**Colleen Grundy**

Forest Service – Tongass Planner

**Susan Jennings**

Forest Service – Tongass Document Coordinator

**Randy Hojem**

Forest Service – Tongass Planner

**Craig Trulock**

Forest Service – Tongass Planner

**Winifred Weber**

Forest Service – Alaska Region Document Production

**Steve Patton**

Forest Service – Tongass Contracting Officer

**Tim Obst**

Office of General Counsel

**Mike Hall**

Foster Wheeler Environmental – Wildlife Biologist

## **4 List of Preparers**

**Shannon Tribble**

Foster Wheeler Environmental – Fish Biologist

**Tamer Kirac**

Foster Wheeler Environmental – Senior Regional Economist

**Tim Richards**

Foster Wheeler Environmental – Cover Design

**Judy Brown**

Foster Wheeler Environmental – Lead Word Processing

**Marcy Rand**

Foster Wheeler Environmental – Technical Editing

**Steve Flegel**

Foster Wheeler Environmental – Word Processing

**Don Bergquist**

Foster Wheeler Environmental – Word Processing

# CHAPTER 5

## LIST OF DOCUMENT RECIPIENTS

Federal Agencies	5-1
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# List of Document Recipients

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## Federal Agencies

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Advisory Council on Historic Preservation	
Alaska F&G Advisory Committee	Pelican Committee
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Alaska Fish and Game Advisory Committee	Kake Committee
Alaska Fish and Game Advisory Committee	Angoon Committee
Alaska Fish and Game Advisory Committee	Sumner Strait Committee
Alaska Fish and Game Advisory Committee	Elfin Cove Committee
Alaska Fish and Game Advisory Committee	Upper Lynn Canal Committee
Alaska Fish and Game Advisory Committee	Southeast Regional Council
Alaska Fish and Game Advisory Committee	Sitka Committee
Alaska Fish and Game Advisory Committee	Port Alexander Committee
Alaska Fish and Game Advisory Committee	Wrangell Committee
Alaska Fish and Game Advisory Committee	Tenakee Springs Committee
Federal Aviation Administration	
Federal Highway Administration	
Federal Railroad Administration	
Federal Railroad Administration, Environment Division. P-14	
Forestry Sciences Laboratory, Anchorage	
Forestry Sciences Laboratory, Juneau	
Greater Ketchikan Chamber of Commerce	
Interstate Commerce Commission	
National Marine Fisheries Service	
National Marine Fisheries Service, Habitat Conservation Division	
National Marine Fisheries Service, Protected Resources Mgmt. Div.	
National Park Service, Alaska Area Region	
National Park Service, Glacier Bay National Park, Gustavus	
National Park Service, Glacier Bay National Park, Yakutat	
National Park Service, Klondike Gold Rush National Historical Park	
National Park Service, Rivers and Trails	
Native Subsistence Commission	
Pacific Salmon Commission	
Tongass National Forest	Petersburg Supervisors Office
Tongass National Forest	Admiralty National Monument
Tongass National Forest	Craig Ranger District
Tongass National Forest	Petersburg Ranger District
Tongass National Forest	Ketchikan-Misty Ranger District
Tongass National Forest	Yakutat Ranger District
Tongass National Forest	Juneau Ranger District
Tongass National Forest	Hoonah Ranger District
Tongass National Forest	Sitka Ranger District
Tongass National Forest	Thorne Bay Ranger District
Tongass National Forest	Wrangell Ranger District
US Air Force (USAF)	Environment, Safety, and Occupational Health
US Army Corps of Engineers, Anchorage	
US Army Corps of Engineers, Juneau	
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US Army Corps of Engineers, Washington DC	
US Coast Guard, Juneau	
US Coast Guard, Washington DC	

## 5 List of Document Recipients

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US Environmental Protection Agency, Anchorage  
US Environmental Protection Agency, Juneau  
US Environmental Protection Agency, Office of Federal Activities  
US Environmental Protection Agency, Region 10  
US Fish and Wildlife Service, Anchorage  
US Fish and Wildlife Service, Fisheries Division  
US Fish and Wildlife Service, Juneau  
US Fish and Wildlife Service, Subsistence Management Division  
US House of Representatives  
US Naval Observatory OP-963, Naval Oceanography Division  
US Navy, Environmental Protection Division  
US Senate, Anchorage Office  
US Senate, Juneau Office  
USCGC Woodrush (WLB 407)  
USDA Forest Service, (Chief 1950)  
USDA Forest Service, Alaska Region  
USDA Forest Service, Alaska Region, Ecosystem Planning and Budget  
USDA Forest Service, Chugach National Forest  
USDA Forest Service, Humboldt-Toiyabe National Forest  
USDA Forest Service, Tongass National Forest, Ketchikan  
USDA Forest Service, Tongass National Forest, Sitka  
USDA National Agricultural Library  
USDA Natural Resources Conservation Service  
USDA Office of Civil Rights, Policy and Planning Division  
USDA OPA Publications Stockroom  
USDI Office of Environmental Policy and Compliance

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### Alaska Native Tribes and Corporations

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Alaska Native Brotherhood	Wrangell Camp #4
Alaska Native Brotherhood	Angoon Camp #7
Alaska Native Brotherhood	Sitka Camp #1
Alaska Native Brotherhood	Hoonah Camp #12
Alaska Native Brotherhood	Juneau Camp #2
Alaska Native Brotherhood	Petersburg Camp #16
Alaska Native Brotherhood	Yakutat Camp #13
Alaska Native Brotherhood	Kake Camp #10
Alaska Native Brotherhood	Grand Camp President
Alaska Native Brotherhood	Haines Camp #5
Alaska Native Brotherhood	Tenakee Camp #76
Alaska Native Sisterhood	Camp #4
Alaska Native Sisterhood	Wrangell Camp #1
Alaska Native Sisterhood	Hoonah Camp #12
Alaska Native Sisterhood	Angoon Camp #7
Alaska Native Sisterhood	Glacier Valley Camp #70
Alaska Native Sisterhood	Petersburg Camp #16
Alaska Native Sisterhood	Douglas Camp #3
Alaska Native Sisterhood	Juneau Camp #2
Alaska Native Sisterhood	Yakutat Camp #13
Alaska Native Sisterhood	Kake Camp #10
Alaska Native Sisterhood	Klukwan Camp #8
Alaska Native Sisterhood	Tenakee Camp #76
Alaska Native Sisterhood	Haines Camp #5

## List of Document Recipients 5

Angoon T&H Community Council  
Chilkat Indian Village  
Chilkoot Indian Association  
Craig Tlingit and Haida Community Council  
Douglas Indian Association  
Gathering Council of Kake  
Goldbelt, Inc.  
Custavus Community Association  
Haida Corporation  
Haines T&H Community Council  
Hoonah Indian Association  
Hoonah T&H Community Council  
Juneau T&H Community Council  
Kake Tribal Corp.  
Kake Tribal Heritage Foundation  
Ketchikan Indian Corporation  
Klawock Tlingit and Haida Community Council  
Klukwan T&H Community Council  
Kootznoowoo, Inc.  
Metlakatla Tlingit and Haida Community Council  
Native Village of Kasaan  
Organized Village of Kake  
Organized Village of Kasaan EPD  
Organized Village of Saxman  
Pelican T&H Community Council  
Petersburg Indian Association  
Petersburg T&H Community Council  
Saxman Tlingit and Haida Community Council  
Sealaska Corporation  
Shee Atika, Inc.  
Sitka T&H Community Council  
Sitka Tribe of Alaska  
Skagua Traditional Council

Native Lands and Resource Agency

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### State Agencies

Alaska Department of Commerce and Econ. Development	Division of Economic Development
Alaska Department of Commerce and Econ. Development	Division of Community and Business Development
Alaska Department of Environmental Conservation	Juneau
Alaska Department of Environmental Conservation	Sitka District Office
Alaska Department of Fish and Game	Habitat and Restoration Division, Douglas
Alaska Department of Fish and Game	Division of Subsistence
Alaska Department of Fish and Game	Division of Wildlife Conservation
Alaska Department of Fish and Game	Habitat and Restoration, Juneau
Alaska Department of Fish and Game	Division of Habitat
Alaska Department of Fish and Game	Division of Wildlife Conservation*
Alaska Department of Fish and Game	Division of Subsistence
Alaska Department of Fish and Game	Habitat and Restoration Division, Petersburg*
Alaska Department of Fish and Game	Habitat and Restoration Division, Ketchikan*
Alaska Department of Fish and Game	Division of Sport Fish
Alaska Department of Fish and Game	Division of Commercial Fisheries
Alaska Department of Fish and Game	Commercial Fish Division
Alaska Department of Fish and Game	Wildlife Division
Alaska Department of Fish and Game	FRED Division
Alaska Department of Fish and Game	Habitat and Restoration Division, Sitka
Alaska Department of Natural Resources	State Historic Preservation Officer
Alaska Department of Natural Resources	Division of Forestry
Alaska Department of Natural Resources	Division of Mining, Lands, and Water

## 5 List of Document Recipients

Alaska Department of Natural Resources  
Alaska Department of Transportation and Public Facilities  
Alaska State Library  
Alaska State Office of Housing and Urban Development  
State of Alaska

Forestry Division

Government Publications

Division of Governmental Coordination, Juneau

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### City and Borough Agencies and Libraries

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City and Borough of Juneau  
City and Borough of Sitka  
City of Angoon  
City of Craig  
City of Gustavus  
City of Haines  
City of Hoonah  
City of Ketchikan  
City of Klawock  
City of Kupreanof  
City of Metlakatla  
City of Pelican  
City of Petersburg  
City of Port Alexander  
City of Saxman  
City of Tenakee Springs  
City of Thorne Bay  
City of Wrangell  
Craig Public Library  
Douglas Public Library  
Elfin Cove Public Library  
Gustavus Public Library  
Haines Public Library  
Hollis Public Library  
Hyder Public Library  
Irene Ingle Public Library  
Juneau Memorial Library  
Kake Community Library  
Kasaan Community Library  
Ketchikan Gateway Borough, Office of the Borough Attorney  
Ketchikan Public Library  
Kettleton Memorial Library  
Mendenhall Valley Public Library  
Milwaukee Public Museum  
Pelican Public Library  
Petersburg Public Library  
Sheldon Jackson Library  
Skagway Public Library

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### Other Organizations

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Alaska Discovery  
Alaska Forest Association  
Alaska Miners Association, Inc.  
Alaska Pacific Trading Company  
Alaska Rainforest Campaign  
Alaska Society of American Forest Dwellers\*  
Alaska Travel Adventures  
Alaska Travel Industry Assoc.  
Alaska Women in Timber  
Alaskans for Juneau\*

## List of Document Recipients 5

Anderson & Anderson, Inc.  
Angoon Community Association  
C.A.R.E.  
Channel Construction Inc.  
Chicago Audubon  
Craig Community Association  
Daily Sitka Sentinel  
EarthJustice Legal Defense Fund  
Edna Bay Home Owners Association  
ERA Helicopters  
Forest Conservation Council, Boca Raton  
Forest Conservation Council, Santa Fe  
Forest Dwellers  
Foster Wheeler Environmental Corp.  
Foundation for the Protection of the Common People  
Fred J. Shaw Log Co.  
Friends of Berners Bay  
Friends of Admiralty Island  
Friends of Glacier Bay  
FSEEE  
Gateway Forest Products  
Glacier Guides, Inc.  
Gricklegrass Group  
Harza Engineering  
Hydaburg Coop. Assoc.  
Hyder Community Assoc.  
Industrial Economics, Inc.  
Island News  
Juneau Convention and Visitor's Bureau  
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# **CHAPTER 7**

## **GLOSSARY**

# Glossary

These definitions apply to Forest Service land management and planning. Meanings may differ when used in another context. Glossary definitions are not legal unless otherwise noted. Definitions were shortened, paraphrased or adapted to fit local conditions and for ease of understanding.

## A

<b>Access</b>	The opportunity to approach, enter, and make use of public lands.
<b>Access management</b>	Acquiring rights and developing and maintaining facilities needed by people to get to and move through public lands (physical attributes).
<b>Active channel</b>	As defined for purposes of the riparian standards and guidelines . . . includes stream channels*, secondary channels*, and braided channels*. For the Alluvial Fan Process Group, it also includes gravel outwash lobes. (Words marked by a * have further definitions within the glossary.)
<b>Administrative site</b>	Lands used as headquarters or administrative facility by a Federal agency.
<b>AFHA</b>	See Anadromous Fisheries Habitat Assessment
<b>AHMU</b>	Aquatic Habitat Management Unit.
<b>Allowable Sale Quantity (ASQ)</b>	The maximum quantity of timber that may be sold in each decade from suitable lands covered by the Forest Plan.
<b>Alpine</b>	Parts of mountains above tree growth.
<b>Alternative</b>	An option proposed for decision making.
<b>Amenity</b>	Resource use, object, feature, quality, or experience that gives pleasure or is pleasing to the mind or senses. Amenity value typically describes those resource properties for which monetary values (or market values) are not or cannot be established.
<b>Anadromous fish</b>	Fish which mature and spend much of their adult life in the ocean, returning to inland waters to spawn. Salmon and steelhead are examples.

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<b>Anadromous Fisheries Habitat Assessment</b>	An assessment conducted in 1994 within the Tongass National Forest (published in 1995) to study the effectiveness of current procedures for protecting anadromous fish habitat and to determine the need for any additional protection.
<b>ANCSA</b>	The Alaska Native Claims Settlement Act of December 18, 1971. Public Law 92-203, 92nd Congress, 85 Stat. 688-716.
<b>ANILCA</b>	The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551.
<b>Appropriation of land</b>	The act of selecting, devoting, or setting apart land for a particular use or purpose, such as appropriating land for public buildings and military reservations or other public uses (Black, 1979).
<b>Aquaculture</b>	Maintaining, enhancing, and rehabilitating fish stocks through improvements and facilities, including the rearing of anadromous juvenile fish, generally in fresh water, for release into salt water for maturing, to become available as a common property resource.
<b>Aquatic ecosystem</b>	A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.
<b>Arterial roads</b>	Classified roads that provide service to large land areas; arterial roads are usually developed and operated for long-term land and resource management purposes and constant service.
<b>ASQ</b>	See Allowable Sale Quantity.
<b>Available timberlands</b>	Timberland not withdrawn from use in production of timber products as a result of administrative statute or regulation.
<b>B</b>	
<b>Background</b>	The distant part of a landscape. The seen, or viewed, area located from three or five miles to infinity from the viewer. (See "Foreground" and "Middleground".)
<b>Bankfull width</b>	The width of the wetted channel when the water surface is at the same elevation as the active floodplain.
<b>Beach fringe</b>	The area inland from salt water shorelines which is typically forested.
<b>Beachlog salvage</b>	The salvage of logs that have been washed-up on beaches. Special provisions in ANILCA allow beachlog salvage in Wilderness and National Monuments if it can be conducted without roads or use of vehicles on uplands.
<b>Bedload</b>	Sand, silt, and gravel, or soil and rock debris rolled along the bottom of a stream by the moving water. The particles of this material have a density or grain size which prevents movement far above or for a long distance out of contact with the streambed under natural flow conditions.
<b>Benthic</b>	Pertaining to the sea bottom or to organisms that live on the sea bottom.

<b>Best Management Practices (BMPs)</b>	Land management methods, measures or practices selected by an agency to meet its non-point source control needs. BMP's include, but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMP's can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. BMP's are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. BMP's are found in Forest Service Handbook 2509.22.
<b>Biogeographic provinces</b>	Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province.
<b>Biological diversity (Biodiversity)</b>	The variety of life forms and processes, including the complexity of species, communities, gene pools, and ecological functions, within the area covered by a land management plan.
<b>Blowdown</b>	See windthrow.
<b>BMPs</b>	See Best Management Practices.
<b>Board foot</b>	A unit of timber measurement equaling the amount of wood contained in an unfinished board 1 inch thick, 12 inches long and 12 inches wide.
<b>C</b>	
<b>CFR</b>	Code of Federal Regulations.
<b>Channel</b>	A natural waterway of perceptible extent that periodically or continuously contains moving water. It has a definite bed and banks which serve to confine the water.
<b>Channel type</b>	A means of distinguishing parts of a stream system into segments which have fairly consistent physical and biological characteristics. For descriptions, see "Channel Type Field Guide," Forest Service publication R10-MB-6.
<b>Class (streams)</b>	See Stream class.
<b>Classified roads</b>	Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for motor vehicle access, such as State roads, County roads, privately-owned roads, National Forest System roads, and roads authorized by the Forest Service that are intended for long-term use.
<b>Clearcut</b>	Harvesting method in which all trees are cleared in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning.
<b>Collector roads</b>	Classified roads serving smaller land areas than arterial roads; collector roads collect traffic from local roads and usually connect to forest arterial roads or State and

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County highways. They are operated for either constant or intermittent service depending on land use and resource management objectives.

### **Connectivity**

A measure of the extent that forest areas between or outside reserves provide habitat for breeding, feeding, dispersal, and movement.

### **Convey**

To pass or transmit the title to property from one to another (Black 1979).

### **Conveyance**

An instrument by which some estate or interest in lands is transferred from one person to another (Black 1979); a transfer of legal title to land.

### **Corridor (transportation)**

A linear strip of land defined for the present or future location of transportation or utility rights-of-way within its boundaries. For planning purposes, potential and proposed corridors are depicted on the Plan map to show approximate corridor routes and widths. Actual corridor routes and boundaries for new systems will be identified through site-specific transportation and/or utility project planning.

### **Corridor (habitat)**

Habitats, often linear, that facilitate dispersal and movement of wildlife between larger patches of suitable habitat. (Also see "connectivity.")

### **Corridor (Wild & Scenic Rivers)**

Wild, scenic and recreational river corridors are generally comprised of the area within 1/4 mile either side of the ordinary high water mark of the river. River corridor boundaries may be changed as a result of specific river planning following inclusion of the River in the National Wild and Scenic Rivers system.

### **Cumulative effects**

See Effects.

## **D**

### **DBH**

See Diameter at Breast Height.

### **Decommissioning**

Demolition, dismantling, removal, obliteration, or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Portions of an asset or component may remain if they do not cause problems or require maintenance.

### **Demand**

The amount of goods or services that will be consumed if offered over a given range of prices at a particular point in time.

### **Developed recreation**

That type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

### **Development LUDs**

Land use designations that permit commercial timber harvest (Timber Production, Modified Landscape, and Scenic Viewshed) and convert some of the old-growth forest to early-to mid-successional, regulated forests.

### **Diameter at Breast Height (DBH)**

The diameter of a standing tree at a point four feet, six inches from ground level.

<b>Dispersed recreation</b>	That type of recreation use that requires few, if any, improvements and may occur over a wide area. This type of recreation involves activities related to roads, trails and undeveloped waterways and beaches. The activities do not necessarily take place on or adjacent to a road, trail, or waterway, only in conjunction with it. Activities are often day-use oriented and include hunting, fishing, boating, off-road vehicle use, hiking, and among others.
<b>Dissected landforms</b>	A physical, recognizable form or feature of the earth's surface such as a mountain, hill, or valley, having a characteristic shape, that in part is the result of several shallow or deeply incised drainage channels.
<b>Distance zone</b>	Areas of landscapes denoted by specified distances from the observer (foreground*, middleground*, or background*). Used as a frame of reference in which to discuss landscape characteristics of management activities. (Words marked by a * have further definitions within the glossary.)
<b>Disturbance</b>	A force that results in changes in the structure and composition through natural events such as wind, fire, flood, avalanche, or mortality caused by insect or disease outbreaks or by human caused events (e.g., timber harvest).
<b>Diversity</b>	See Biological diversity.

## E

<b>Ecological provinces</b>	See Biogeographic provinces.
<b>Ecological sections</b>	Ecosystems may be subdivided into ecological sections that consist of ecological subsections (see "Ecological Subsection"). There are 14 ecological sections on the Tongass.
<b>Ecological subsections</b>	Ecological subsections are subdivisions of ecosystems that are delineated based on surficial geology, lithology, geomorphic process, soil groups, subregional climate, and potential natural communities (climax vegetation). There are 73 ecological subsections on the Tongass National Forest.
<b>Ecosystem</b>	A complete, interacting system of organisms considered together with their environment (e.g., a marsh, a watershed, or a lake).
<b>Ecosystem Services</b>	The services and benefits provided by healthy ecosystems. Definitions of ecosystem services can be broad, including both use and non-use values. Some definitions include consumptive uses, such as logging, fishing, and hunting, that can be considered market goods. Other types of ecosystem services provide what might be considered long-term life support benefits to society as a whole. This is the definition used in this document. Examples of these types of benefits that pertain to forests include watershed services, soil stabilization and erosion control, improved air quality, climate regulation and carbon sequestration, and biological diversity.

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<b>Effects</b>	<p><b>Direct.</b> Results of an action occurring when and where that action takes place.</p> <p><b>Indirect.</b> Results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future.</p> <p><b>Cumulative.</b> Results of collective past, present, and reasonably foreseeable future actions.</p>
<b>EIS</b>	See Environmental Impact Statement.
<b>Encumbrance</b>	A claim, lien, charge, or liability attached to and binding real property (Black 1979).
<b>Endangered Species</b>	Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.
<b>Endemic</b>	Restricted to a particular locality. For example, a particular species or subspecies may occur on only one or a very few islands.
<b>Environmental Impact Statement (EIS)</b>	A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969) requires that such statements be prepared. It is prepared first in draft or review form, and then in a final form. An impact statement includes the following points: (1) the environmental impact of the proposed action, (2) any adverse impacts which cannot be avoided by the action, (3) the alternative courses of actions, (4) the relationships between local short-term use of the human environment and the maintenance and enhancement of long-term productivity, and (5) a description of the irreversible and irretrievable commitment of resources which would occur if the action were accomplished.
<b>Escapement</b>	Adult anadromous fish that escape from all causes of mortality (natural or human-caused) to return to streams to spawn.
<b>Estuary</b>	An ecological system at the mouth of a stream where fresh water and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.
<b>EVC</b>	See Existing Visual Condition.
<b>Even-aged management</b>	The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees in forming the main canopy level of a stand usually does not exceed 20 percent of that age of the stand at harvest rotation age. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.
<b>Exchange</b>	A trading of public lands (surface or subsurface estates) that usually do not have high public value for lands in other ownerships which do have value for public use, management, and enjoyment.
<b>Executive Order</b>	An order or regulation issued by the President or some administrative authority under his direction.

**Existing Visual Condition (EVC)**

EVC ratings are established to give the land manager an indication of the current level of visual quality and visual evidence of management activities. EVC classes are as follows:

**Type 1.** Appears to be untouched by human activities, except for trails needed for access; only ecological changes have occurred.

**Type 2.** Changes in the landscape are not noticed unless pointed out.

**Type 3.** Changes in the landscape are noticed as minor disturbances, but the natural appearance of the landscape remains dominant.

**Type 4.** Changes in the landscape are easily noticed and perceived as disturbances, but resemble natural patterns.

**Type 5.** Changes stand out as a dominant impression on the landscape, yet are shaped to resemble natural patterns from 3-5 miles or more distant.

**Type 6.** Changes are in glaring contrast to the landscape's natural appearance; excessive visual alteration has occurred.

**F**

**Falldown**

The difference between the number of acres planned for timber harvest and those actually harvested, usually experienced as a reduction in acres. Falldown results from many factors, including unmapped unsuitable timber land, newly available information, and project-level consideration of site-specific issues and non-timber resource needs. See also Management Implementation Reduction Factor.

**Fish Passage**

The ability of both adult and juvenile fish to move both up and down stream.

**Flood plain**

That portion of a river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages in response to a 100-year storm event.

**Foreground**

A term used in visual management to describe the stand of trees immediately adjacent to a scenic area, recreation facility or forest highway. The area is located less than 1/4 mile from the viewer. (See Background and Middleground.)

**Forest health**

An expression of the relationship among biotic and abiotic influences on the forest (i.e., insects, diseases, atmospheric deposition, silvicultural treatments, harvesting practices, natural disturbance process) and the ability to achieve management objectives for a given forest unit now or in the future, and sustain long-term site productivity.

**Forest Plan**

Source of management direction for an individual Forest specifying activity and output levels for a period of 10-15 years. Management direction in the plan is based on the issues identified at the time of the plan's development.

**Forested land**

Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

**Forested wetland**

A wetland whose vegetation is characterized by an overstory of trees that are 20 feet or taller.

**Forest-wide Standards & Guidelines**

A set of rules and guidance that directs management activities and establishes the environmental quality, natural renewable and depletable resource requirements, conservation potential, and mitigation measures that apply to several land use designations.

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**FORPLAN** The forest planning model. A linear programming software package used to analyze planning decisions regarding land use patterns, capital investment, and timber harvest scheduling.

**Fragmentation** An element of biological diversity that describes the natural condition of habitats in terms of the size of discrete habitat blocks or patches, their distribution, the extent to which they are interconnected, and the effects of management on these natural conditions. Also the process of reducing the size and connectivity of stands within a forest.

**FSH** Forest Service Handbook.

**FSM** Forest Service Manual.

### G

**Glacial refugia** The areas of Southeast Alaska that were not covered by glaciers during the last ice age.

**Glacial rivers and streams** Rivers and streams that receive their main flow characteristics from the presence and activities of ice and glaciers and their meltwater.

**Group Selection** A harvesting method in which trees are removed in small groups at a time.

**Guideline** A preferred or advisable course of action or level of attainment designed to promote achievement of goals and objectives.

### H

**Habitat** The sum total of environmental conditions of a specific place occupied by a wildlife or plant species or a population of each species.

**Habitat capability** The estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area.

**Haul out** Areas used by marine mammals for resting and other social/biological activities which occur in the intertidal zone.

**Heritage Resources** The physical remains of districts, sites, structures, buildings, networks, events, or objects used by humans in the past. They may be historic, prehistoric, architectural, or archival in nature. Heritage resources are non-renewable aspects of our national heritage.

**High-volume, coarse canopy old growth** A measure of stands with many tall, large-diameter, widely spaced trees, measured on the Tongass National Forest by volume classes 6 and 7.

**Historic property** Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. The term includes artifacts, records, and remains that are related to and located within such properties.

**Hydrologic cycle** The complete cycle through which water passes, commencing as atmospheric water vapor, passing into liquid and solid form as precipitation, thence along or into the ground surface, and finally again returning to the form of atmospheric water vapor by means of evaporation and transpiration. Also called Water Cycle.

## I

**IDT** See Interdisciplinary Team.

**Interdisciplinary Team (IDT)** A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem.

**Interior old-growth forest** The region of a forested stand that has a stable microclimate relative to light, wind, humidity, moisture regime, etc. Natural forest ecotones (see glossary) “seal” a forest’s edge and stabilize these microclimate features. Ecotones created by management such as the old growth - clearcut edge may have “edge” effects that extend into a forest for several hundred feet (estimated 2-3 tree heights) before stable “interior forest” conditions are achieved and microclimatic effects of the edge are no longer evident.

**Inventoried roadless area** Undeveloped areas typically exceeding 5,000 acres that met the minimum criteria for wilderness consideration under the Wilderness Act and that were inventoried during the Forest Service’s Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning.

**Irretrievable commitments** Applies to losses of production or use of renewable natural resources for a period of time. For example, timber production from an area is irretrievably lost during the time an area is allocated to a no-harvest prescription. If the allocation is changed to allow timber harvest, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

**Irreversible commitments** Decisions causing changes which cannot be reversed. For example, if a roadless area is allocated to allow timber harvest and timber is actually harvested, that area generally cannot, at a later date, be allocated to Wilderness. Once harvested, the ability of that area to meet Wilderness criteria has been irreversibly lost. Often applies to nonrenewable resources such as minerals and cultural resources.

**Issue** A point, matter, or section of public discussion or interest to be addressed or decided.

## K

**Karst** A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed, surface drainage that are sinkholes, collapsed channels, or caves.

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### L

<b>Lacustrine wetland</b>	Includes permanently flooded lakes and reservoirs, intermittent lakes, and tidal lakes with ocean-derived salinities of less than 0.5 percent. Typically, there are extensive areas of deep water and there is considerable wave action.
<b>Land allocation</b>	The decision to use land for various resource management objectives to best satisfy the issues, concerns and opportunities and meet assigned forest output targets.
<b>Land exchange</b>	The conveyance of non-Federal land or interests to the United States in exchange for National Forest System land or interests in land.
<b>Land Use Designation (LUD)</b>	A defined area of land specific to which management direction is applied. (See also Land Use Prescriptions.)
<b>Land Use Prescriptions</b>	Specific management direction applied to a defined area of land (land use designation) to attain multiple use and other goals and objectives.
<b>Landform</b>	Any physical, recognizable form or feature of the earth's surface, having a characteristic shape, and produced by natural causes. Major forms included are plains, plateaus, and mountains; minor forms are hills, valleys, slopes, eskers, and dunes.
<b>Large Woody Debris (LWD)</b>	Any piece of relatively stable woody material, having a diameter of four inches or greater and a length greater than three feet, that intrudes into a stream channel. Formerly called large organic debris.
<b>Leasable minerals</b>	Generally includes minerals such as coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur, and geothermal steam.
<b>Local roads</b>	Classified roads that connect terminal activities (e.g., trail head, log landing, camping site) to collector and arterial roads. They are constructed to meet the access requirements of a specific resource activity rather than for travel efficiency. When not in use for the activity for which they were constructed, local roads may be used for other purposes. They are often closed to restrict motor use.
<b>Locatable minerals</b>	Includes minerals such as gold, silver, lead, zinc, copper, and mercury.
<b>Log Transfer Facilities (LTF)</b>	Formerly referred to as Terminal Transfer Facilities, Log Transfer Facilities include the site and structures used for moving logs and timber products from land-based transportation forms to water-based transportation forms (or vice versa).
<b>Logging slash</b>	The wood residue left on the ground after harvesting. It includes unused logs, uprooted stumps, broken or uprooted stems, tops, branches, and leaves.
<b>LTF</b>	See Log Transfer Facilities.
<b>LUD</b>	See Land Use Designation.
<b>LWD</b>	See Large Woody Debris.

## M

<b>Managed stand</b>	A stand of trees in which stocking level control is applied to achieve maximum growth.
<b>Management Implementation Reduction Factor (MIRF)</b>	An adjustment made to the timber outputs of the FORPLAN computer model to account for anticipated effects on timber availability that cannot be accounted for in the computer model. (See also Falldown.)
<b>MBF</b>	Thousand Board Feet.
<b>Middleground</b>	The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape. The area is located from 1/4 to 3-5 miles from the viewer. (See Foreground and Background.)
<b>Mineral development</b>	The activities and facilities associated with extracting mineral deposits.
<b>Mineral entry</b>	Filing a mining claim on public land to obtain the right to mine any minerals it may contain. Also the filing for a mill site on Federal land for the purpose of processing off-site minerals.
<b>Mineral exploration</b>	The search for valuable minerals on lands open to mineral entry.
<b>Mineral rights</b>	The rights of one who owns the mineral estate (subsurface).
<b>Mineral withdrawal</b>	A formal designation by the Secretary of Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.
<b>Mining claims</b>	A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit.
<b>MIRF</b>	See Management Implementation Reduction Factor.
<b>Mitigate</b>	To lessen or make minimal the severity. For cultural resources, to lessen or minimize an adverse effect upon a cultural resource listed on or eligible for the National Register of Historic Places. The two categories of mitigation most often used are project modification and data recovery.
<b>MMBF</b>	Million Board Feet.
<b>Model</b>	An idealized representation of reality developed to describe, analyze, or understand it; a mathematical representation of the relationships under study (e.g., FORPLAN, wildlife habitat capability models).
<b>Modification</b>	See Visual Quality Objectives.
<b>Monitoring</b>	Gathering information and observing results of management activities to provide a basis for the periodic evaluation of the Forest Plan.

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**Motorized equipment** Machines that use a motor, engine, or other nonliving power sources. This includes, but is not limited to, chain saws, aircraft, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas powered hand carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.

**Multiple use** The management of all the various renewable surface resources of the National Forest System so that they are used in the combination that will best meet the needs of the American people; harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources.

**Muskeg** See Peatland.

## N

**National Environmental Policy Act of 1969 (NEPA)** An act declaring a National policy to encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and the biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality.

**National Forest Management Act (NFMA)** A law passed in 1976 that amends the Forest and Rangeland Renewable Resources Planning Act and requires the preparation of Forest Plans.

**National Forest System (NFS) Land** Federal lands that have been designated by Executive order or statute as National Forests, National Grasslands, or Purchase Units, or other lands under the administration of the Forest Service.

**National Forest System road** A classified forest road under the jurisdiction of the Forest Service. The term "National Forest System road" is synonymous with the term "Forest development road," as used in 23 U.S.C. 205.

**National Register of Historic Places** A register of cultural resources of national, state, or local significance, maintained by the Department of the Interior.

**National Wild and Scenic River System** Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

**Native selection** Application by Native corporations formed under authority of the Alaska Native Claims Settlement Act of 1971 (ANCSA - Public Law 92-203, 85 Stat. 688) and by Native individuals (under Section 14(h)(5), ANCSA) to the USDI Bureau of Land Management (BLM) for conveyance of a portion of lands withdrawn under ANCSA in fulfillment of Native entitlements established under ANCSA. Native village corporations had three years from the date of ANCSA (December 18, 1971) to make their selections and regional corporations had four years. Native individuals who met the criteria had two years from the date of ANCSA to make application under Section 14(h)(5). BLM regulations allowed Native corporations formed under ANCSA to select in excess of their entitlements to ensure sufficient land would be available to meet full entitlement. Remaining lands in excess of entitlement which have been

selected but not conveyed will revert back to unencumbered National Forest System land status after full entitlement is reached.

**NIC**

See Non-interchangeable Components.

**Non-declining even flow**

A policy governing the volume of timber removed from a National Forest, which states that the volume planned for removal in each succeeding decade will equal or exceed that volume planned for removal in the previous decade.

**Non-development LUDs**

Land use designations that do not permit commercial timber harvest and generally maintain the integrity of the existing old-growth ecosystem.

**Nonforest land**

Land that has never supported forests and lands formerly forested but now developed for such nonforest uses as crops, improved pasture, etc.

**Non-interchangeable Components**

Non-interchangeable components (NICs) are defined as increments of the suitable land base and their contribution to the allowable sale quantity (ASQ) that are established to meet Forest plan objectives. NICs are identified as parcels of land and the type of timber thereon which are differentiated for the purpose of Forest plan implementation. The total ASQ is derived from the sum of the timber volumes from all NICs. The NICs cannot be substituted for each other in the timber sale program.

**NIC I. Normal Operability:** This is volume scheduled from suitable lands using existing logging systems. Most of these lands are expected to be economic under projected market conditions. On average, sales from these lands have the highest probability of offering a reasonable opportunity for a purchaser to gain a profit from his/her investment and labor. This is the best operable ground.

Normal operability includes those systems most frequently used on the Tongass. These systems are tractor, shovel, standard cable and some helicopter.

**Tractor** - Tractor logging includes all ground wheel or track system used for skidding logs to a landing. Shovel yarding is included; however, tractor or rubber-tire skidding used in conjunction with swing operations are not included.

**Standard Cable** - The most typical logging systems used on the Tongass. Included in the standard cable system component are highlead uphill, highlead downhill, slackline, running skyline, and flyer.

**Standard Helicopter** - Helicopter yarding with yarding distances up to three quarters of a mile.

**NIC II. Difficult and Isolated Operability:** This is volume scheduled from suitable lands that are available for harvest using logging systems not in common use in Southeast Alaska. Most of these lands are presently considered economically and technologically marginal.

Difficult operability includes those systems used on the Tongass which have significantly higher cost. These may include balloon, long-span skyline, multi-span, or helicopter with yarding distances greater than three-quarters of a mile. This category also includes lands which have limited access as a result of being isolated by prior harvest activities or other management activities.

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**Long Span Cable** - Cable systems which require longer than average yarding distances. Typical long span cable systems considered are standing skylines and multispan.

**Access Limitation** - Logging systems required for areas with access limitation concerns. The logging system could be highlead cable when access to timber and roading is difficult. Typical harvest systems are helicopter and swing operations.

**Isolated Operability** - This class is comprised entirely of isolated stands. These are small stands of isolated timber which are extremely difficult to harvest. The harvest system could vary, but would be more costly due to the location of the stand. Typical harvest systems are helicopter with average yarding distances greater than one mile.

### Non-use Value

Non-use values represent the value that individuals assign to a resource independent of their use of that resource. These types of values, which include existence, option, and bequest values, are usually measured via surveys that ask people how much they would be willing to pay to preserve a particular area. These values represent the value that individuals obtain from knowing that the wilderness exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it would be left for future generations to inherit.

## O

### Off-Highway Vehicle (OHV)

Any vehicle which is restricted by law from operating on public roads for general motor vehicle traffic. Includes motorbikes, minibikes, trailbikes, snowmobiles, dunebuggies, all-terrain vehicles, and four-wheel drive, high clearance vehicles (FSM 2355.01). Sometimes referred to as Off-Road Vehicle or "ORV."

### OHV

See Off-Highway Vehicle.

### Old-growth forest

Ecosystems distinguished by the later stages of forest stand development that differs significantly from younger forests in structure, ecological function, and species composition. Old-growth forest is characterized by a patchy, multi-layered canopy; trees that represent many age classes; large trees that dominate the overstory, large standing dead (snags) or decadent trees; and higher accumulations of large down woody material. The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.

### Old-growth associated species

Plant and animal species with habitat relationships that exhibit a strong association with old-growth forests.

### Old-growth habitat reserve

A contiguous unit of old-growth forest habitat to be managed to maintain the integrity of the old-growth forest ecosystem.

### Open road density

The length of forest development roads open for public access and use per unit area of land; usually expressed as miles of open road per square mile of land.

### Operability

See Non-interchangeable Components.

### ORV

Off-Road Vehicle. (See Off-Highway Vehicle.)

### Other forest land

Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions.

<b>Output</b>	The measurable goods, end products, or services resulting from management activities that are purchased, consumed, or used directly by people.
<b>Overselection</b>	Unconveyed lands selected in excess of entitlement. Overselections by the State of Alaska are authorized in Section 906 (f), ANILCA. They are authorized for Native Corporations organized under ANCSA in Federal Regulations (43 CFR 2650).
<b>P</b>	
<b>Palustrine wetland</b>	Includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 percent.
<b>Partial cut</b>	Any cutting in which only part of the stand is harvested. This may include thinning, selection, shelterwood, or an overstory removal.
<b>Partial retention</b>	See “Visual Quality Objectives.”
<b>Passive Use Value</b>	See “Non-use Value”
<b>Peatland</b>	A wetland type (also called “muskeg”) in Southeast Alaska that has developed over thousands of years in depressions, or flat areas on gentle to steep slopes. These bogs have poorly drained, acidic, organic soils materials that support vegetation that can be either sphagnum moss or herbaceous plants or sedges, rushes, and forbs or may be a combination of sphagnum moss and herbaceous plants. These vegetation types may have a lesser abundance of shrubs and stunted trees.
<b>Planning records</b>	A system that records decisions and activities that result from the process of developing a forest plan, revision, or significant amendment.
<b>Plant association</b>	Climax forest plant community type representing the endpoint of succession.
<b>Plant communities</b>	An assemblage of plants that, in general, occur together on similar site conditions.
<b>Population viability</b>	Probability that a population will persist for a specified period of time across its range despite normal fluctuations in population and environmental conditions.
<b>Present Net Value (PNV)</b>	PNV figures are calculated by subtracting costs from benefits to yield a net value. Future values (i.e., costs and benefits incurred and received in the future) are discounted using an appropriate discount rate to obtain a present value. The PNV of a given alternative is the discounted sum of all benefits minus the discounted sum of all costs associated with that alternative.
<b>Preservation</b>	A technique of conservation which maintains the resource in or on the ground in perpetuity.
<b>Primary succession</b>	Vegetation development initiated on newly formed soils or upon surfaces exposed for the first time (as by landslides or retreating glaciers) which have, as a consequence, never borne vegetation before. Any succession beginning on a bare area not previously occupied by plants or animals.

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<b>Process Group</b>	A combination of similar channel types based on major differences in landform, gradient and channel shapes. (A full description of process groups is located in Appendix D of the Forest Plan.)
<b>Productive old growth</b>	Old-growth forest capable of producing at least 20 cubic feet of wood fiber per acre per year, or having greater than 8,000 board feet per acre.
<b>Public issue</b>	A subject or question of widespread public interest relating to management of the National Forest System.
<b>Public participation</b>	Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

## R

<b>Reconstruction</b>	Road or trail construction activities which take place on an existing road or trail and raises the standard of the road or trail. This can include relocation of the facility in a completely new location.
<b>Recreation capacity</b>	The number of people that can take advantage of the supply of a recreation opportunity during an established use period without substantially diminishing the quality of the recreation experience or the resources.
<b>Recreation Opportunity Spectrum (ROS)</b>	<p>A system for planning and managing recreation resources that categorizes recreation opportunities into six classes. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use. The seven classes are:</p> <p><b>Primitive.</b> An unmodified environment generally greater than 5,000 acres in size and located generally at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquillity, self-reliance, challenge, and risk. Evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.</p> <p><b>Semi-Primitive Non-motorized.</b> A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located at least 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) but not further than 3 miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of experiencing solitude, freedom, closeness of nature, tranquillity, self-reliance, challenge, and risk. There is a minimum of subtle on-site controls. No roads are present in the area.</p> <p><b>Semi-Primitive Motorized.</b> A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located within 1/2 mile of primitive roads and other motorized travel routes used by motor vehicles; but</p>

not closer than 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motored travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquillity along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or along saltwater shorelines there may be extensive boat traffic.

**Roaded Natural.** Resource modification and utilization are evident, in a predominantly naturally-appearing environment generally occurring within 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed.

**Roaded Modified.** Vegetative and landform alterations typically dominate the landscape. There is little on-site control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day), and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber management activities.

**Rural.** The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more than 20 group encounters per day.

**Urban.** Urbanized environment with dominant structures, traffic lights and paved streets. May have natural appearing backdrop. Recreation places may be city parks and large resorts. Opportunity to observe and affiliate with other users is very important as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant except for competitive sports. Intensive on-site controls are numerous.

## Recreation places

Identified geographical areas having one or more physical characteristics that are particularly attractive to people engaging in recreation activities. They may be beaches, streamside or roadside areas, trail corridors, hunting areas of the immediate area surrounding a lake, cabin site, or campground.

## Recreation Visitor Day (RVD)

A measure of recreation use of an area. One recreation visitor day consists of 12 hours of recreation use of a site or area. Recreation visitor days are used to measure recreation production or output capacity.

## Reforestation

The natural or artificial restocking of an area usually to produce timber and other wood products, but also to protect watersheds, prevent soil erosion, and improve wildlife, recreation and other natural resources. Natural reforestation includes site preparation to reduce competing vegetation and provide a mineral seed bed for seed

## 7 Glossary

provided by seed trees. Artificial reforestation is the planting of seedlings, cuttings or seeds by hand or mechanical means and may include site preparation.

### **Research Natural Area (RNA)**

An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and aquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and most public uses are not allowed.

### **Reserve**

A general term for an area of land recognized for, and managed to preserve or maintain, specific natural features. Wilderness is one common example. In the context of wildlife or fish habitat management, or biological diversity, an area set aside for the maintenance and perpetuation of its habitat or ecosystem features. (See also Old-growth habitat reserve and Non-development LUDs.)

### **Resident fish**

Fish that are not migratory and complete their entire life cycle in fresh water.

### **Resource values**

The tangible and intangible worth of forest resources.

### **Responsible official**

The Forest Service employee who has the delegated authority to make a specific decision.

### **Right-of-Way**

An easement, license, or permit to pass through another person's land. It does not grant an estate of any kind, only the right to use.

### **Riparian area**

The area including a stream channel, lake or estuary bed, the water itself, and the plants that grow in the water and on the land next to the water.

### **Riparian corridor**

The floodplain and associated riparian soils, vegetation, and wetlands.

### **Riparian ecosystem**

Land next to water where plants that are dependent on a perpetual source of water occur.

### **Riparian management area**

Land areas delineated in the Forest Plan to provide for the management of riparian resources. Specific standards and guidelines, by stream process group, are associated with riparian management areas. Riparian management areas may be modified by watershed analysis.

### **Riverine wetland**

A category in wetland classification which includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5 percent.

### **RNA**

See Research Natural Area.

### **Road**

A motor vehicle travelway over 50 inches wide, except those designated and managed as a trail. A road may be classified, unclassified, or temporary.

### **Road analysis**

An integrated ecological, social, and economic science-based approach to transportation planning that addresses existing and future road management options.

### **Road-based recreation**

Activities that are normally associated with classified roads and are consistent with the settings and experiences identified with Semi-Primitive Motorized (SPM), Roaded Natural (RN), Rural (R), and Urban (U) classes of the Recreation Opportunity

Spectrum. Examples of these activities include car camping and picnicking, gathering berries and firewood, driving for pleasure, wildlife viewing, and OHV use.

<b>Road density</b>	The number of road miles per square mile of land area.
<b>Road obliteration</b>	A form of road decommissioning that re-contours and restores natural slopes.
<b>Roadless areas</b>	For the purposes of this SEIS, a generic term that includes inventoried roadless area and unroaded areas.
<b>ROS</b>	See Recreation Opportunity Spectrum.

### S

<b>Saleable minerals</b>	Include common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay. In general, these minerals are of wide-spread occurrence and are of relatively low unit value. They are generally used for construction materials and for road building purposes.
<b>Salvage harvest</b>	Removal of dead or dying trees resulting from insect and disease epidemics or wildfire.
<b>Sawlogs (Sawtimber)</b>	That portion of a tree that is suitable in size and quality for the production of dimension lumber, collectively known as sawtimber.
<b>Scoping</b>	Determination of the significant issues to be addressed in an environmental impact statement.
<b>Scrub-shrub wetland</b>	Wetlands dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. In Southeast Alaska this includes forested lands where trees are stunted because of poor soil drainage.
<b>Second growth</b>	Forest growth that has regenerated naturally or has been planted after some drastic interference (e.g., clearcut harvest, serious fire, or insect attack) with the previous forest growth.
<b>Secondary succession</b>	The process of re-establishing vegetation after normal succession is disrupted by fire, cultivation, lumbering, windthrow, or any similar disturbance.
<b>Seed tree</b>	Small number of seed-bearing trees left singly or in small groups after timber harvest to provide seed for regeneration of the site.
<b>Selection cutting</b>	A silvicultural system used to create or maintain uneven-aged stands, usually by the periodic removal of groups of trees or individual trees. It is undertaken to provide periodic harvests while maintaining full residual stand growth rates. It attempts to develop a balanced uneven-aged stand structure, including the encouragement of regeneration by providing the cultural measures needed for tree growth and seedling establishment. The selection system refers to the programs used to create or maintain the stand, while the selection method refers to the way in which the stand is regenerated. The cutting usually involves a mixture of regeneration and

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improvement cuts. Note that selection cutting is not the same thing as selective cutting (logging). See also Selective cutting.

### **Selective cutting**

A system in which groups of trees or individual trees are removed periodically from the forest based on economic criteria aimed at maximizing logging revenues rather than the need to ensure satisfactory regeneration or to maintain stand growth rates and quality of timber production.

The term is often used synonymously with selection cutting, but this is seldom correct, since the management goals of the two systems differ. Selective cutting provides periodic revenues from the forest but is not specifically designed to improve the growing conditions of the trees remaining.

The practice of selective cutting has historically resulted in the selection of all the biggest and best trees for cutting, leaving behind a silvicultural slum of damaged trees and degraded ecosystem functions. See also High grade; Selection cutting.

### **Sense of place**

The aesthetic, nostalgic, or spiritual effects of physical locations on humans based on personal, use-oriented, or attachment-oriented relationships between individuals and those locations. The meaning, values, and feelings that people associate with physical locations because of their experiences there.

### **Sensitive species**

Plant or animal species which are susceptible or vulnerable to habitat alterations or management activities resulting in a viability concern for the species long-term persistence. Sensitive species may be those species under consideration for official listing as endangered or threatened species, that are on an official state list, or that are recognized by the Regional Forester as needing special consideration to assure viable populations and to prevent their being placed on Federal or state lists.

### **Sensitive travel route**

A road system or marine water way which receives a moderate to high degree of use by the public, both Alaskan residents and tourists.

### **Sensitivity level**

A measure of the people's concern for the scenic quality of the National Forest applied to travel routes, use areas, and water bodies.

### **Shelterwood harvest**

The removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand.

### **SHPO**

See State Historic Preservation Officer.

### **Silvicultural system**

A management process whereby forests are tended, harvested, and replaced resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the process. (See single-tree selection, shelterwood cutting, group selection, even-aged management, uneven-aged management, two-aged management, and clearcut.)

### **Silviculture**

The science and art of growing and tending crops of forest trees to attain the desired level of marketable and unmarketable products.

### **Single-tree selection**

A cutting method to develop and maintain uneven-aged stands by removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.

### **Site index**

A measure of the relative productive capacity of an area for growing wood. Measurement of site index is based on height of the dominant trees in a stand at a given age.

<b>Slash</b>	Debris left after logging, pruning, thinning, or brush cutting, and large accumulations of debris resulting from windstorms. It includes logs, bark, branches, and stumps.
<b>Smolt</b>	A young silvery-colored salmon or trout which moves from freshwater streams to saltwater.
<b>Special Interest Areas</b>	A designation for areas possessing unique or unusual scenic, historic, prehistoric, geodesic scientific, or other characteristics.
<b>Special Use Authorization</b>	A permit, term permit, temporary permit, lease, or easement that allows occupancy or use of, or rights and privileges on National Forest System lands.
<b>Special Use Permit</b>	Permits and granting of easements (excluding road permits and highway easements) authorizing the occupancy and use of land.
<b>Stand</b>	A group of trees occupying a specific area and sufficiently uniform in composition, age arrangement, and condition as to be distinguishable from the trees in adjoining areas.
<b>Standard</b>	A course of action or level of attainment required by the forest plan to promote achievement of goals and objectives.
<b>State Historic Preservation Officer (SHPO)</b>	The official appointed or designated pursuant to Section 101(b)(1) of the National Historic Preservation Act of 1966, as amended, to administer the State Historic Preservation Program.
<b>State selection</b>	(from National Forest System lands) Application by Alaska Department of Natural Resources to the USDI Bureau of Land Management for conveyance of a portion of the 400,000-acre State entitlement from vacant and unappropriated National Forest System lands in Alaska, under authority of Section 6(a) of the Alaska Statehood Act of 1959 (Public Law 85-508, 72 Stat. 340). For lands to be conveyed, State selections must be approved by the USDA Forest Service, Regional Forester, Alaska Region under criteria of the Statehood Act. Until approved by the Regional Forester, the State application is not considered a valid selection. The State can select up to 25 percent in excess of its remaining entitlement.
<b>Stream bank</b>	The portion of the channel cross section that restricts lateral movement of water at normal water levels. The bank often has a gradient steeper than 45 degrees and exhibits a distinct break in slope from the stream bottom. An obvious change in substrate may be a reliable delineation of the bank.
<b>Stream class</b>	A means to categorize stream channels based on their fish production values. There are four stream classes on the Tongass National Forest. They are: <b>Class I.</b> Streams and lakes with anadromous or adfluvial fish habitat; or high quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish. <b>Class II.</b> Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-5 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.

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**Class III.** Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sufficient sediment and debris to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bankfull widths greater than 5 feet and are highly incised into the surrounding hillslope.

**Class IV.** Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hillslope.

**Non-streams.** Rills and other watercourses, generally intermittent and less than 1 foot in bankfull width, little or no incisement into the surrounding hillslope, and with little or no evidence of scour.

### **Subsistence**

Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as, “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade.”

### **Suitable forest land**

Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions, and for which there is reasonable assurance that such lands can be adequately restocked, and for which there is management direction that indicated that timber production is an appropriate use of that area.

### **Surface rights**

All rights in the surface of the land except oil, gas, and other mineral or subsurface rights.

### **Sustained yield**

The amount of renewable resources that can be produced continuously at a given intensity of management.

## **T**

### **Temporary facility**

Any structure or other human-made improvement which can be readily and completely dismantled and removed from the site when the authorized use terminates.

### **Temporary roads**

Roads authorized by contract, permit, lease, or emergency operation, not intended to be a part of the forest transportation system and not necessary for long-term resource management.

### **Tentatively suitable forest land**

Forest land that is producing or is capable of producing crops of industrial wood and: (a) has not been withdrawn by Congress, the Secretary of Agriculture or the Chief of the Forest Service; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest; and (d) adequate information is available to project responses to timber management activities.

<b>Terrestrial ecosystems</b>	Plant communities that are not dependent on a perpetual source of water to grow.
<b>Thinning</b>	<p>The practice of removing some of the trees in a stand so that the remaining trees will grow faster due to reduced competition for nutrients, water, and sunlight. Thinning may also be done to change the characteristics of a stand for wildlife or other purposes. Thinning may be done at two different stages:</p> <p><b>Precommercial.</b> Removing trees that are too small to make a merchantable product to improve tree spacing and promote more rapid growth.</p> <p><b>Commercial.</b> Removing trees that have reached sufficient size to be manufactured into a product to improve tree spacing and promote more rapid growth.</p>
<b>Threatened species</b>	A plant or animal species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.
<b>Threshold</b>	The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.
<b>Tiering</b>	Elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmental impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.
<b>Timber</b>	A general term for the major woody growth of vegetation in a forest area.
<b>Timber classification</b>	<p>Forested land is classified under each of the land management alternatives according to how it relates to the management of the timber resource. The following are definitions of timber classifications used for this purpose.</p> <p><b>Nonforest.</b> Land that has never supported forests and land formerly forested where use for timber production is precluded by development or other uses.</p> <p><b>Forest.</b> Land at least 10-percent stocked (based on crown cover) by forest trees of any size, or formerly having had such tree cover and not currently developed for nonforest use.</p> <p><b>Suitable.</b> Land to be managed for timber production on a regulated basis.</p> <p><b>Unsuitable.</b> Forest land withdrawn from timber utilization by statute or administrative regulation (for example, wilderness), or identified as inappropriate for timber production in the Forest planning process.</p> <p><b>Commercial forest.</b> Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.</p>
<b>Timberlands</b>	Forest lands producing or capable of producing crops of industrial wood. Areas qualifying as timberland can produce more than 20 cubic feet per acre per year of industrial wood at culmination of mean annual increment.
<b>Timber production</b>	The purposeful growing, tending, harvesting, and regeneration of trees for industrial or consumer use.
<b>Tongass Resource Use Cooperative Survey(TRUCS)</b>	A study done to gather information on subsistence uses of the Forest.
<b>Trail</b>	A pathway for travel by foot, stock, or trail vehicles.

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### Transportation and Utility System (TUS)

Significant corridors, with their associated sites used to accommodate public transportation and energy transmission needs.

**Avoidance Area.** An area where the establishment and use of transportation or utility corridors and sites is not desirable given the land use designation emphasis. A search for “windows” should be exhausted before TUS facilities are considered in avoidance areas. When practical, these areas should be avoided through site-specific analysis during project-level planning. Avoidance areas often include Congressionally and administratively designated areas. Although special environmental and procedural considerations may be required for these areas, these special designations do not preclude consideration and use as a TUS. Avoidance areas are designated through the allocation of lands to management prescriptions specifically identified as TUS avoidance areas in their standards and guidelines.

**Exclusion Area.** A large area (large enough to cause significant barriers) which legislatively precludes transportation and utility systems. Due to special authorities provided in Title XI, ANILCA, there will be no exclusion areas on the Tongass.

**Window.** An area potentially available for the location of transportation or utility corridors and sites.

### TRUCS

See Tongass Resource Use Cooperative Survey.

### TTRA

Tongass Timber Reform Act of 1990.

### TUS

See Transportation and Utility System.

### Two-aged management

A silvicultural method in which the majority of the trees in a harvest unit are cut in one entry, and the rest are left as residual trees, either singly or in patches. The residual trees remain unharvested to provide structural diversity and older-aged trees within the second-growth stand. See “Two-aged System” in the Timber Forest-wide Standards & Guidelines for guidance.

## U

### Unclassified roads

Roads on National Forest System lands that are not needed for, and not managed as part of, the forest transportation system, such as unplanned roads, abandoned travelways, off-road vehicle tracks which have not been designated and managed as a trail, and those roads no longer under permit or authorization.

### Uneven-aged management

The application of actions needed to maintain high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. Cutting methods that develop and maintain uneven-aged stands are single-tree and group selection.

### Unroaded area

Any area, without the presence of a classified road, of a size and configuration sufficient to protect the inherent characteristics associated with its roadless condition. Unroaded areas do not overlap with inventoried roadless areas.

### Unsuitable lands

Forest land not managed for timber production because: 1) Congress, the Secretary, or the Chief has withdrawn it; 2) it is not producing or capable of producing industrial wood; 3) technology is not available to prevent irreversible damage to soils productivity, or watershed conditions; 4) there is no reasonable assurance, based on

existing technology and knowledge, that it is possible to restock lands within 5 years after final harvest; 5) there is, at present, a lack of adequate information about responses to timber management activities; or 6) timber management is inconsistent with or not cost efficient in meeting the management requirements and multiple-use objectives specified in the Forest Plan.

## V

<b>VAC</b>	See Visual Absorption Capability.
<b>Value Comparison Unit (VCU)</b>	First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. There are 926 units established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.
<b>VCU</b>	See Value Comparison Unit.
<b>Viable population</b>	For forest planning purposes a fish or wildlife population which has the estimated number and distribution of reproductive individuals to insure its continued existence is well distributed in the National Forest.
<b>Viewshed</b>	An expansive landscape or panoramic vista seen from a road, marine water way or specific viewpoint.
<b>Visual Absorption Capability (VAC)</b>	The capability of the landscape to visually absorb management activities. Landscapes are rated with high, moderate or low abilities to absorb management activities. These ratings reflect the degree of landscape variety in an area, viewing distance and topographic characteristics. As an example, steep, evenly sloped landscapes viewed in the foreground to middleground are typically given a low VAC rating.
<b>Visual Quality Objective (VQO)</b>	<p>A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.</p> <p><b>Inventory VQO.</b> Derived through application of the USDA Visual Management System. Uses three elements to determine the inventory: Sensitivity levels, distance zones and landscape variety class. Provides a benchmark and illustrates the optimum objective based on current use patterns and sensitivity.</p> <p><b>Adopted VQO.</b> The VQO to be achieved as a result of management direction identified in the approved forest plan. Adopted VQO's represent the visual resource objective for the Forest Land Management Plan period, normally 10 years. (FSH 2309.22, R-10 Landscape Management Handbook.)</p> <p><b>Preservation.</b> Management activities are generally not allowed in this setting. The landscape is allowed to evolve naturally.</p> <p><b>Retention.</b> Management activities are not evident to the casual Forest visitor.</p> <p><b>Partial Retention.</b> Management activities may be evident, but are subordinate to the characteristic landscape.</p> <p><b>Modification.</b> Management activities may dominate the characteristic landscape but will, at the same time, use naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed as middleground (1/4 to 5 miles from viewer).</p>

## 7 Glossary

**Maximum Modification.** Management activities may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

**V-Notches** A deeply incised valley along some waterways that would look like a “V” from a frontal view. These abrupt changes in terrain features are often used as harvest unit or yarding boundaries.

**Volume strata** Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan for each Administrative Area.

**VQO** See Visual Quality Objective.

## W

**WAA** See Wildlife Analysis Area.

**Watershed** The area that contributes water to a drainage or stream. Portion of the forest in which all surface water drains to a common point. Watersheds can range from tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

**Third order watershed.** A watershed where there are (generally) two major branches to the mainstream of the watershed. (Also see Stream order.)

**Fourth order watershed.** A watershed which contains at least two third order watersheds.

**Wetlands** Areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include peatlands, muskegs, marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

**Wild and Scenic Rivers** Rivers or sections of rivers designated by congressional actions under the 1968 Wild and Scenic Rivers Act. Wild and scenic rivers may be classified and administered under one or more of the following categories:

**Wild river areas.** Rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

**Scenic river areas.** Rivers or sections of rivers that are free of impoundments, with watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

**Recreational river areas.** Rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

**Wilderness** Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural

conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest. On the Tongass National Forest, Wilderness has been designated by ANILCA and TTRA.

**Wildlife Analysis Area**

A division of land used by the Alaska Department of Fish and Game for wildlife analysis (WAA).

**Windthrow**

The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There are generally three types of windthrow - endemic where individual trees are blown over; catastrophic where a major windstorm can destroy hundreds of acres; and management related, where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.

**Winter range**

An area, usually at lower elevation, used by big game during the winter months; usually smaller and better-defined than summer ranges.

**Withdrawal**

The withholding of an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws for the purpose of limiting activities under those laws in order to maintain other public values in the area.

# **CHAPTER 8**

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**APPENDIX A**  
**ISSUE IDENTIFICATION FOR**  
**THE DRAFT SEIS**

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# Appendix A

## Issue Identification for the Draft SEIS

### 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 SEIS. This SEIS is a supplement to the 1997 Tongass Land Management Plan Revision Final EIS (USDA Forest Service, 1997a). Appendix A of the 1997 Final EIS discusses the issue identification process used in the Tongass National Forest planning process.

Identification of issues helps define or predict what resources or uses could be most affected by the planning alternatives under consideration. These issues are then used as a basis to formulate alternatives or to measure differences between alternatives. The following sections describe the process used to identify the issues for this SEIS and the key issues identified.

### Issue Identification

The scope of this SEIS was initially determined by the Court in its ruling on the 1997 ROD. Additional information was analyzed to help clearly define the issues for this Draft SEIS and for use in the development and analysis of alternatives. For this Draft SEIS, we evaluated comments and information from a wide variety of public inputs that were related to wilderness and management of roadless areas on the Tongass National Forest. This included a review of information compiled from past planning efforts that spanned more than a decade, extending back to 1989. Sources reviewed included:

- ◆ public comments that were generated during the Forest Plan Revision process that related to wilderness and roadless area issues,
- ◆ Tongass Forest Plan Revision appeals,
- ◆ public input on the Forest Service's 2001 National Roadless Area Conservation Rule that was specific to the Tongass National Forest,
- ◆ congressional proposals for wilderness that have been developed recently and during the Forest Plan Revision process,
- ◆ public input related to roadless areas, expressed during project-level EIS analyses over approximately the past 10 years, and
- ◆ public input on the National Forest Transportation Rule and Policy that was specific to the Tongass National Forest.

In addition, public involvement has occurred during the development of the SEIS over the past 8 months and the public input that has been received so far was also considered as part of this issue identification process employed for this SEIS. This input has been reviewed and synthesized into a Supplemental Scoping Report which is maintained in the SEIS planning record.

This information in the aggregate provides an overview of public opinion with respect to roadless area protection and wilderness designation on the Tongass. This may be considered the first step in the issue identification process. These issues will also be evaluated in the light of additional public input during the public comment period and public involvement activities that will follow publication of this Draft SEIS.

## Appendix A

The remainder of this section is divided into two parts. The first part briefly describes the sources of information from past planning efforts that were used in the issue identification process. The second part discusses the SEIS public involvement activities that have taken place to date.

### Past Planning Efforts

#### *Tongass Forest Plan Revision*

Appendix L of the 1997 Final EIS presents summaries of all substantive comments received during the three public comment periods for the Tongass Forest Plan Revision, as well as presenting Forest Service responses to these comment summaries. All public comment periods held during the Tongass Forest Plan Revision were announced in the Federal Register, by news release, in local newspapers, and through newsletters. Informational meetings and open houses, followed by hearings, were held in most Southeast Alaska communities during each comment period. Over 3,000 individuals, organizations, interest groups, and agencies provided written or oral input on the 1990 Draft EIS. More than 7,000 and 21,000 responses were received on the 1991 Supplement and the 1996 Revised Supplement, respectively.

Comments summarized in Appendix L were identified by location and issue and entered into a database that had more than 850 entries. Information developed through this review was used to help identify public interest in specific roadless areas, as well as in the issue identification process.

#### *Tongass Forest Plan Revision Appeals*

A total of 23 appeals were received on the 1997 Tongass Land Management Plan Revision Record of Decision (ROD). These appeals were reviewed and comments were summarized by location and issue and entered into a database. Information developed through this review was used to help identify public interest in specific roadless areas, as well as in the issue identification process.

#### *National Roadless Area Conservation Rule*

A total of 1,155,000 separate pieces of public input were received on the National Roadless Area Conservation Rule Draft EIS. The results of the Forest Service's content analysis of these comments are presented in Volume 3 of the Roadless Area Conservation Final EIS along with the Forest Service's responses to the identified comment summaries (USDA Forest Service, 2000). The portion of these comments that specifically pertained to the Tongass were reviewed as part of the issue identification process for this SEIS. Comments were received in support of and against roadless area conservation on the Tongass. Issues identified through this review included:

- ◆ Preservation of roadless areas as habitat for wildlife and endangered and threatened species.
- ◆ Effects of roadless area conservation on the regional economy, in terms of potential reductions in timber employment and the positive effects that limiting road building could have upon the recreation and tourism industry.
- ◆ Effects of roadless conservation on subsistence use. Some commenting indicated that limiting road construction would limit access for subsistence, while others noted that there are already sufficient roads on the Tongass to meet subsistence needs.

#### *Congressional Proposals for Wilderness*

Information was compiled from the House version of what became the Tongass Timber Reform Act of 1990 (House Resolution [HR] 987) and a current congressional proposal (HR 2908, the Alaska Rainforest Protection Bill).

### ***Project-Level EIS Analyses***

Public input related to roadless areas and wilderness that has been expressed during project-level EIS analyses over approximately the past 10 years was reviewed and entered into a database. Public comments received on a total of 39 project-level EIS/EAs were reviewed. These projects included proposed timber sales and landscape planning analyses. Many of the comments that addressed wilderness and roadless area issues were made in response to proposals to build roads. Issues identified through this review included:

- ◆ Preservation of roadless areas on the Tongass in a wilderness condition because there are very few other temperate rainforests with intact, functioning ecosystems
- ◆ Protection of fish and wildlife species and stream resources by not allowing road construction and timber harvest in certain proposed timber sale areas.
- ◆ Protection of scenic resources, primitive recreation, and recreation and tourism opportunities, as well as subsistence, heritage resources, and traditional cultural properties.

### ***National Forest Transportation Rule and Policy***

Public input on the National Forest Transportation Rule and Policy that pertained specifically to the Tongass was also reviewed as part of this issue identification process.

### **Public Input for the SEIS**

Public involvement activities that have taken place during the development of this SEIS include:

- ◆ the Notice of Intent was published in the Federal Register in September 2001;
- ◆ a notification letter was sent to a mailing list of approximately 550 in November 2001;
- ◆ an SEIS Web site was developed and has been maintained to inform and engage the public beginning in November 2001; it is updated as new information is developed or published and provides a mechanism for public input; a number of comments and questions have been received through the Web site;
- ◆ a working interdisciplinary team meeting, that was open to the public, was held in November 2001 regarding the definition of issues and alternatives (specific public input was received at this meeting regarding these topics);
- ◆ a project update (newsletter) was sent to a mailing list of approximately 600 in January 2002
- ◆ in response to the above items, a number of letters have been received containing comments regarding the issues and alternatives (these have included letters from environmental organizations, the timber industry, Southeast Alaska community organizations, and a number of individuals from Southeast Alaska and across the nation);
- ◆ a number of specific meetings have also occurred with various organizations (including Alaska native groups).

The public comments that have been received to date have identified a number of issues including the following:

- ◆ Timber sales should not be permitted in roadless areas; roadless areas should be preserved while they can still be saved.
- ◆ Roadless areas on the Tongass should be preserved because the Tongass is the last, relatively intact, temperate rainforest on earth, one of the world's last great places, and a national treasure.
- ◆ Ecological values of the land types in the remaining Tongass Roadless Areas; values of roadless areas as fish and wildlife habitat and primitive recreation.

## Appendix A

- ◆ Contribution to the National Wilderness Preservation System in terms of old growth.
- ◆ Consideration of the long-term economic benefits and deficits associated with wilderness designation.
- ◆ Additional wilderness and the continued threat of an injunction will negatively affect the timber industry with the potential closure of existing mills, as well as affecting the ability of timber operators to make mill and other needed improvements.
- ◆ A potential loss of mill jobs would have significant negative effects upon residents of potentially affected communities.
- ◆ Road access, timber sales, recreation site development, and utility developments are crucial to the economic well-being of Southeast Alaskan communities, and the region as a whole.

### Key Issues

Based on the public input examined, it was clear that the specific issues to be considered in this analysis should be grouped into two broad issue categories, which are referred to as key issues in the following sections. These key issues are the major issues driving the alternatives and the analysis. In general, they represent two very different sets of strongly held values and viewpoints.

#### **Key Issue 1 – Additional wilderness designation will provide greater long-term protection of roadless areas on the Tongass National Forest than is provided by the 1997 Forest Plan.**

Approximately 6.6 million acres of Congressionally designated wilderness, National Monument, or LUD II lands occur throughout the Forest. Aside from wilderness, there are approximately 9.7 million acres of inventoried roadless areas (including designated LUD II) on the Tongass. The 1997 Forest Plan allocated 74 percent of the roadless areas to non-development LUDs; however, because that designation is not permanent (and may be subject to future Forest Plan amendments and revisions) some segments of the public would rather have permanent protection status. There is concern by some that the Forest Plan does not provide sufficient recognition and long-term protection for Tongass roadless areas. Much of this concern is with roadless area protection, rather than wilderness designation. Some also hold the belief that many areas would be of more value to Americans as wilderness than as other LUDs. However, there is no consensus on which areas should be recommended for wilderness.

While recognizing the existence of a variety of wilderness values, Hendee et al. (1990) identify three central themes that have consistently emerged in the discourse surrounding wilderness. These themes are the *experiential*, *scientific*, and *symbolic and spiritual* values of wilderness. The review of public input conducted for this SEIS indicated that concerns for additional wilderness protection primarily center around two broad themes. These can be generally characterized as the *symbolic* and *spiritual* value of wilderness and the value of wilderness as a means for additional *ecological* protection, including protection of wildlife viability, biodiversity, and fish populations. These themes, which are discussed in the following paragraphs, are important to segments of the public in Southeast Alaska, across the nation, and possibly internationally.

**Symbolic and Spiritual Value of Wilderness** – In a world characterized by rapid change and complexity, the symbolic and spiritual values of wilderness may be increasingly important. Wilderness can be viewed as symbolic of the nation's heritage. It may also be viewed as a symbol of restraint, a self-imposed limit on technological and economic development that reflects a wider awareness of environmental responsibility. The spiritual values associated with wilderness can be specific religious and cultural values attributed to particular places or types of landscapes. Alternatively, they may represent the feelings that people have for wild, natural landscapes that are often difficult to put into words. Although difficult to characterize or value in monetary terms, these types of values are very important for a lot of people.

Segments of the public place high value on the knowledge that wilderness exists, whether they use it or not. This value increases as more areas and larger areas are designated. Economists generally refer to this type of value, as non-use or passive use value. These types of values include the value that individuals obtain from knowing the wilderness exists (existence value), knowing that it would be available

to visit in the future should they choose to do so (option value), and knowing that it would be left for future generations to inherit (bequest value). Economists have tried to measure these values via surveys that ask people how much they would be willing to pay to preserve a particular area. Loomis (2000) found that household willingness to pay increases with an increase in the number of acres proposed for wilderness protection, but at a decreasing rate.

There is interest in preserving large portions of the Tongass because the majority of the Forest is in a natural condition, unlike most other national forests, and the Tongass represents a significant portion of the world's remaining temperate rainforests.

**Indicators:** Analysis relative to this issue compares the amount and proportion of land protected as wilderness and in other non-development LUDs. Also, the values of the lands protected are considered. Non-use values are discussed qualitatively, with examples provided from other studies.

**Ecological Values of Wilderness** – Many people believe that roadless areas should be allowed to evolve naturally through their own dynamic processes and should be afforded permanent protection to ensure that this will occur.

The ecological value of wilderness theme that consistently emerges from public input concerning roadless area and wilderness management on the Tongass may be considered a subpart of the broader scientific value that Hendee et al. (1990) identify. Hendee et al.'s scientific value is more generally concerned with the value of wilderness for scientific study, but the concerns with ecosystems, landforms, and wildlife habitat that they identify are consistent with the concerns that have been identified for the Tongass. The Tongass includes very large undeveloped land areas, with several portions of the Forest consisting of contiguous roadless areas that exceed one million acres and represent large, unfragmented blocks of wildlife habitat. This scale of habitat protection is not possible elsewhere in the National Forest System, except on the Chugach National Forest.

Ecological protection can be achieved through a number of Forest planning approaches, including wilderness designation. Wildlife population viability is addressed on the Tongass by a conservation strategy consisting of two key components of the Forest Plan; the forest-wide system of reserves (including all non-development LUDs), and the standards and guidelines that apply in development LUDs. The 1997 Tongass Forest Plan Revision Record of Decision concluded that the old-growth conservation strategy and specific species management prescriptions represent a balance of wildlife habitat conservation measures that consider the best available scientific information and, within an acceptable level of risk inherent in projecting management effects, will provide sufficient fish and wildlife habitat to maintain well-distributed viable populations of vertebrate species in the planning area, and maintain the diversity of plants and animals on the Forest. Providing long-term protection for additional areas could further reduce these risks.

**Indicators:** Analysis relative to this issue compares the amount of productive old-growth forest and inventoried roadless areas that would be protected under each alternative, as well as the percentages of ecoregions and biogeographic provinces that would be protected.

### Other Wilderness Values

A third broad type of wilderness value identified by Hendee et al. (1990) is the experiential value. This category is meant to encompass the direct value of the wilderness experience, which is typically viewed as synonymous with wilderness recreation. Consistent experiential themes include closeness to nature, freedom, solitude, education, and simplicity, as well as the aesthetic, spiritual, and mystical dimensions of the wilderness experience (Hendee et al., 1990). There is clearly some overlap between this and the symbolic and spiritual values that people may assign to wilderness. While the review of public input conducted for the SEIS has identified concern for preserving roadless areas as wilderness, little emphasis has been placed on preserving roadless areas as wilderness for recreation purposes. As such, while it is generally important to recognize the experiential value associated with wilderness, it is not included as part of this key issue.

## Appendix A

### **Key Issue 2 – Additional wilderness designation will affect the social and economic well-being of the communities of Southeast Alaska.**

Many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, including wood products, commercial fishing and fish processing, recreation, tourism, mining, and mineral development. Many residents also depend on subsistence hunting and fishing to meet their basic needs. There is very little private land throughout the region to provide these resources. Some people are concerned that wilderness recommendations could negatively affect employment and income generated by natural resource-based industries, including wood products, mining, and recreation and tourism. The employment and income associated with these industries is important to the economic and social well-being of many Southeast Alaskan communities. In addition, wilderness designation could affect transportation and utility projects that are considered by some as essential for continued economic development and well-being in the region.

This issue focuses on the social and economic effects of recommended wilderness designation on communities in Southeast Alaska. There are three central themes to this issue: natural resource-based industry, transportation and utility projects, and the regional economy and local communities.

### **Natural Resource-Based Industry**

**Wood Products** –The Southeast Alaskan timber industry has undergone significant changes over the past decade with closure of the two large pulp mills in Ketchikan and Sitka. Harvest levels on the Tongass and wood products employment in the region has consistently declined since peaking in 1990. Wood products employment declined from 3,543 jobs in 1990 to 993 jobs in 2000. With the closure of the pulp mills, the Southeast Alaska wood products industry is currently experiencing a period of significant structural change.

Sawmills in Southeast Alaska are dependent on the availability of timber resources from the Tongass National Forest, which provided 92 percent of the volume processed in local mills in 2000 (USDA Forest Service, 2001a). Timber harvest would not be allowed in areas recommended for wilderness or LUD II and reductions in the supply of available timber could have short- and long-term effects on the wood products industry.

Indicators: The analysis of short-term effects on the wood products industry focuses on the existing Tongass Sale Volume under Contract (i.e., National Forest timber sales that have been sold but not yet harvested) and proposed sales that are not yet under contract. The long-term effects analysis focuses on the number of acres suitable for timber production, as well as potential changes to the Allowable Sale Quantity (ASQ), which is the maximum quantity of timber that may be scheduled from suitable lands on the entire Forest for a 10-year period.

**Mining**– The Tongass National Forest contains many important mineral resources, from precious metals to chemical-grade minerals. Except for designated wildernesses and other withdrawn areas, all Tongass National Forest lands are open to mineral exploration and development. Recommendations for additional wilderness may have an effect on the exploration and development of minerals. However, recommended areas would remain open to mineral exploration and development until Congress acted to designate areas as wilderness.

Indicators: Analysis related to the mining issue focuses on changes in the amounts of identified mineral tracts and undiscovered mineral areas that could be withdrawn from mineral production or made more costly to develop.

**Recreation and Tourism** – The recreation and tourism industry in Southeast Alaska has grown significantly over the past decade. Visitor-related employment was estimated to account for 4,185 jobs or 11 percent of total Southeast Alaskan employment in 1999. Much of the growth over the past decade is due to a dramatic increase in the number of cruise ship passengers visiting the region. Cruise ship passengers docking at Juneau increased from approximately 237,000 in 1990 to 632,000 in 2000, approximately eight passengers for every Southeast Alaska resident (USDA Forest Service, 2001c). Seventy-three percent of surveyed commercial recreation businesses reported an increase in business

between 1995 and 2000, with cruise ship passengers accounting for 41 percent of total clients for all the surveyed businesses (Alaska Division of Community & Business Development [DCBD], 2001).

Changes in the land base available for tourism and recreation developments could affect this industry. In addition, potential use restrictions associated with wilderness designation could affect the size of commercially guided groups visiting particular locations.

Indicators: Analysis related to the recreation/tourism issue considers the effects of wilderness designation on Recreation Opportunity Spectrum (ROS) settings, outfitter/guide use, recreation places important for tourism, and the percent of the Forest available for tourism developments. The ROS system identifies the appropriate combination of activities, settings, and experience for different types of recreation experience, ranging from primitive to urban settings.

### **Transportation and Utility Projects**

Residents of the region are dependent on air and water transportation for travel between most communities. A roaded transportation system has been developed on National Forest System land, largely in support of timber harvest. The 1999 Southeast Alaska Transportation Plan (Alaska Department of Transportation and Public Facilities, 1999) identified future investments in roads, ferry terminals, and ferries to develop a comprehensive regional transportation system. Several other corridors have been considered for major transportation routes, including a Juneau to Skagway linkage and the East Bradfield River corridor connection to Canada. Full implementation of these transportation plans would require construction of new roads and facilities within the National Forest.

Proposals also exist to develop a power grid to inter-connect electrical generating facilities with most of the communities throughout Southeast Alaska. The State of Alaska has proposed corridors for transmission lines and/or undersea cables to link many Southeast Alaska communities with one another and British Columbia. An intertie corridor, connecting the Swan Lake project (near Carroll Inlet) with the Tyee project (on the Bradfield Canal) has been permitted and is planned for construction beginning in summer 2002. A number of other potential interties and power generation projects have been proposed on National Forest System lands. Many Southeast Alaska communities use diesel powered generation plants for electricity.

Recommendations for additional wilderness may have an effect on the development of potential transportation or utility corridors or other land uses.

Indicators: Effects on transportation and utilities are analyzed by identifying the corridors that could be precluded or otherwise affected by the alternatives.

### **Regional Economy and Local Communities**

As noted above, many communities in Southeast Alaska depend on the Tongass National Forest to provide the foundation for natural resource-based industries, as well as subsistence hunting and fishing. Recreation opportunities associated with the Tongass also play an important role in the quality of life of many Southeast Alaskans. Many families have favorite places where they fish, hunt, beachcomb, or just go to get away.

#### ***Regional Employment and Income***

Natural resource-dependent employment accounted for approximately 23 percent of total employment in Southeast Alaska in 1999, with wood products, recreation and tourism, and mining accounting for 3 percent, 11 percent, and 1 percent of total regional employment, respectively. Wilderness recommendations could affect Southeast Alaskan communities and residents by affecting employment and income in natural resource-based industries. Wilderness recommendations may also restrict proposed transportation and utility projects and affect future economic development and associated employment opportunities, as well as travel between communities and, in some cases, local power sources.

## Appendix A

Indicators: This analysis focuses on the potential effects on wood products and recreation and tourism employment and income at the regional level. Short-term effects on wood products employment focus on the potential effects associated with reductions in the existing volume under contract. Long-term effects on wood products employment address the potential effects of changes in the ASQ. Changes in recreation and tourism employment are based on projected changes in Recreation Visitor Days (RVDs). The potential effects of restrictions on mining and transportation and utility projects are also considered.

### ***Local Communities***

**Employment** - Timber and logging activities play an important role in at least 10 of Southeast Alaska's 32 communities. These communities would be affected by reductions in wood products employment.

**Subsistence** - For many rural Alaskans, subsistence means hunting, fishing, trapping, and gathering natural resources to provide needed food and supplement rural incomes. For Native Alaskans and other rural Alaskans, subsistence is that and more: a lifestyle that preserves customs and traditions reflecting deeply held attitudes, values and beliefs. Concerns about subsistence include maintaining subsistence opportunities and protecting traditional subsistence areas. The alternatives considered here would result in the same or greater protection for subsistence resources; however, the effects are evaluated in Chapter 3 and by community.

**Recreation** - Resident recreation patterns may be affected by new wilderness recreation proposals, due to potential restrictions on recreation facility developments and numbers of visitors, as well as the long-term effects of maintaining areas in the primitive ROS.

Indicators: The discussion of community effects focuses on changes in jobs and income, subsistence, and recreation opportunities, and the resultant effects on the communities as a whole. The subsistence analysis is based on the subsistence analysis conducted for the 1997 Forest Plan Revision Final EIS, which used deer as the main "indicator" species for potential subsistence resource consequences. The percent change in the amount of productive old growth available after 120 years relative to the current (1997) Forest Plan is used as an indicator. The percent of the inventoried recreation places within 20 miles of one or more communities that would be in Wilderness or Recommended Wilderness is used as an indicator for recreation.

# **APPENDIX B**

## **DESCRIPTION OF ANALYSIS PROCESS**

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# Appendix B

## 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.

## Appendix B

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.

## Appendix B

### 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 the Draft SEIS. The number of roadless areas was reduced to 109 for the Final 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.

**APPENDIX D**  
**NEW LAND USE**  
**DESIGNATION PRESCRIPTIONS**

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        Standards and Guidelines ..... D-4

    Recommended Land Use Designation II ..... D-12

        Standards and Guidelines ..... D-14

## Appendix D

### New Land Use Designation Prescriptions

#### Management Prescriptions Recommended Wilderness and Recommended LUD II

Following are Management Prescriptions for Recommended Wilderness and Recommended LUD II Land Use Designations (LUDs) used for the Tongass Forest Plan Revision Supplemental Environmental Impact Statement (SEIS).

These Management Prescriptions provide interim direction for the management of lands allocated to Recommended Wilderness or Recommended LUD II as a result of the SEIS. These prescriptions will be in effect until such lands are acted on by Congress, or until they are re-allocated through a subsequent Forest Plan Revision or Amendment process.

The intent of the prescriptions is to ensure there will be no activity, subject to valid existing rights, on lands recommended to Congress for inclusion into the National Wilderness Preservation System or as LUD II, that would preclude their consideration for such designation.

At such time as lands are designated by Congress, they will then be managed as prescribed in the 1997 Forest Plan Revision Wilderness and/or LUD II Land Use Designation Management Prescriptions.

# Recommended Wilderness

## Land Use Designation RW

### Goals

To manage all Recommended Wilderness to maintain wilderness resources while providing for public access and uses consistent with maintenance of the presently existing wilderness characteristics of the area.

To protect and perpetuate natural biophysical and ecological conditions and processes.

### Objectives

Manage recreation activities to meet the appropriate levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the adopted or existing Recreation Opportunity Spectrum, as appropriate.

Provide for public use of the Recommended Wilderness in accordance with ANILCA provisions for motorized and non-motorized access and travel, including reasonable traditional subsistence use by rural residents.

Provide trails and primitive facilities that are in harmony with the natural environment and that promote primitive and semi-primitive recreation experiences.

Subject to prior existing rights, provide for current ongoing activities that maintain the present wilderness character and the option for wilderness designation by Congress.

### Desired Condition

All Recommended Wilderness on the Tongass National Forest is characterized by extensive, unmodified natural environments. Ecological processes and natural conditions are not measurably affected by past or current human uses or activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness, and may pursue activities requiring self-reliance, challenge and risk. Motorized and mechanized use is allowed consistent with maintaining the eligibility for future wilderness designation, access to state and private lands, subsistence uses, valid existing mineral rights, and for public access and other uses specifically allowed by the Forest Plan.

**Recommended Wilderness Land Use Designation**  
**Apply the following Forest-wide Standards & Guidelines located in Chapter 4**  
**of the 1997 Tongass Forest Plan**

<b>Resource</b>	<b>Section</b>	<b>Sub-Sections</b>	<b>Page</b>
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1	All	4-4
	BEACH2	I, II(A)	
Facilities	FAC	All	4-6
Fire	FIRE12	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH1	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST	All	4-18
	CAVE	All	
Lands	LAND11,123,23,24,26	All	4-21
	LAND122	All	
	LAND25	All	
Minerals And Geology	MG11	All	4-32
	MG12	All	
Recreation And Tourism	REC111	All	4-34
	REC112	All	
	REC122	All	
Riparian	RIP1	All	4-52
	RIP2	All	
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1	All	4-74
	VIS11	I,II(A,B)	
	VIS12	I(A,B,D),II	
Soil And Water	S&W1111,1112,2	All	4-82
	S&W112	I(A:1-7,B-F),II	
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111-1	All	4-93
	TIM111-2	All	4-94
	TIM114	VIII	
Trail	TRAI1	All	4-100
	TRAI2	All	
Transportation	TRAN	All	4-102
Wetlands	WET	All	4-109
Wildlife	WILD112	A	4-110
	WILD22	All	
	WILD23	All	

## Appendix D

### Apply the following Land Use Designation Standards & Guidelines:

#### FACILITIES

##### Administrative Facilities: FAC2

- A. Construct new permanent administrative facilities in Recommended Wilderness, consistent with ANILCA, Sections 1303, 1306, 1310, and 1315.
- B. Allow the continued operation and maintenance of permanent administrative facilities for which there is an ongoing need (ANILCA, Section 1306 (b)).
  1. When reconstruction of existing permanent administrative structures is necessary, reconstruct or replace them with structures of compatible design.
  2. During reconstruction and maintenance activities:
    - \* Paint or stain structure to blend with the environment.
    - \* Keep clearing of vegetation to the minimum feasible.
    - \* Select materials that are natural in appearance.
- C. Allow temporary facilities and crew barges for administration seasonally.
  1. Temporary administrative camps used by wilderness rangers, trail crews, or for other administrative activities should avoid areas used for camping by the general public and should be screened from view.
  2. Temporary administrative camps may remain in place only during periods required for the administrative activity. All equipment and materials will be removed or collapsed and laid flat at the end of the field season or during other extended periods of non-use.
  3. Temporary camps will seek to achieve minimum impact on the land. There will be no permanent foundations or anchors, and only minimal clearing of vegetation at campsites.
  4. Crew barges should be located in unobtrusive locations. They may be periodically moved and relocated to support administrative needs.
- D. Allow administrative use of public cabins and shelters in Recommended Wilderness. Scheduling should avoid conflict with public use.
- E. Allow radio repeaters when necessary to provide essential communications for the health and safety of people involved in the administration of the area. Allow permanent radio repeaters currently located in Recommended Wilderness to remain. Allow continued use, maintenance and development of electronic sites consistent with Appendix E, as amended, of the Forest Plan.

#### FIRE

##### Fire Suppression: FIRE12

###### *Suppression Action*

- A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
- B. Emphasize suppression tactics resulting in the least possible disturbance or evidence of human presence.
  1. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
  2. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, but within one year after the fire occurs.

**Fuel Improvements: FIRE2**

*Prescribed fire*

- A. As a general management practice, do not use management-ignited prescribed fire. Should it become necessary to consider the use of management-ignited prescribed fire, FSM 2324 provides direction.
- B. As a general management practice, do not use prescribed natural fire because there is not a history of natural ignitions in Tongass Wildernesses. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

**FISH**

**Fish Habitat Planning: FISH112**

*Planning*

- A. Plan for fisheries in Recommended Wilderness consistent with ANILCA, Section 1315(b) which recognizes the goal of restoring and maintaining fish production in the State of Alaska to optimum sustained yield levels and in a manner which adequately maintains protection, preservation, enhancement, and rehabilitation of the wilderness resource. Subject to reasonable regulations, permanent improvements and facilities such as fishways, fish weirs, fish ladders, fish hatcheries, spawning channels, stream clearance, egg planting, and other accepted means of maintaining, enhancing, and rehabilitating fish stocks may be permitted. For this purpose, optimum sustained yield levels will be considered synonymous with the long-term harvest goals documented in the State of Alaska Comprehensive Salmon Plans and other state fisheries plans. Consult R-10 supplements to FSM 2632 and FSM 2320 for further details.
- B. Determine the need for wilderness aquaculture projects (as described in ANILCA, Section 1315(b)) on a broad basis that includes the potential of private, state, and Federal non-wilderness projects.
- C. Evaluate fish habitat improvement during project planning by considering: 1) availability of suitable non-wilderness opportunities which should be used first; 2) effects on wilderness conditions, in general; 3) effects resulting from the introduction of species not indigenous to the watershed; 4) the appropriateness of structures both in type and scale to the Recreation Opportunity Spectrum Class (ROS) setting; and 5) the need to provide well-distributed fisheries that support sport and commercial fisheries, subsistence, and community stability.
- D. In planning, stress protection of fish habitat to prevent the need for mitigation.

**Fish Habitat Improvement: FISH22**

- A. Construct facilities in a rustic manner to blend into the natural character of the area and limit facilities to those essential to the project (ANILCA, 1315(b)).
- B. Permit reasonable access, including the temporary use of motorized equipment, subject to reasonable regulation to maintain the wilderness character, water quality, and fish and wildlife values of the area.

**FOREST HEALTH**

**Forest health Management: HEALTH1**

- A. Allow natural occurrences to play their normal role in ecological succession.

**Forest Insect and Disease Survey and Inventory: HEALTH2**

- A. Survey and inventory visible outbreaks.

## Appendix D

### HERITAGE      **Heritage Resource Activities: HER**

#### *Enhancement*

- A. Heritage Resources are available for scientific study to the extent that the study is consistent with: 1) the maintenance of wilderness values; 2) the intent of the Wilderness Act; and, 3) heritage resource management objectives.
- B. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses, consistent with management of Recommended Wilderness.
  - 1. Provide interpretive information concerning Heritage Resources to users in the form of exhibits and publications outside of the Recommended Wilderness.

#### *Evaluation*

- A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, and protection within the Recommended Wilderness.
  - 1. Identify heritage properties to be nominated to the National Register of Historic Places.
  - 2. Identify, classify, and evaluate known Heritage Resources.
  - 3. Identify heritage properties that require stabilization or other protective measures.

### KARST AND CAVES      **Cave Management Program: CAVE**

- A. Identify opportunities for interpretation of karst and caves for public education and enjoyment. Notwithstanding current or ongoing activities, interpretation will generally occur outside this Land Use Designation.
- B. Manage caves as Class 1 (Sensitive) or Class 3 (Undeveloped) as described in the Karst and Cave Resources Forest-wide Standards & Guidelines.

### LANDS

#### **Special Use Administration (non-recreation): LAND122**

- A. Authorize activities which are consistent with maintaining the option to designate Recommended Wilderness lands under the Wilderness Act or specifically allowed by ANILCA and are otherwise in compliance with management direction of this plan. (Consult FSM 2700, FSM 2320, and Regional Supplements.)
  - 1. Analyze proposals on a case-by-case basis.
  - 2. Permit activities which will not adversely affect the resources and values for which the Recommended Wilderness was allocated under the Forest Plan.
  - 3. Integrate special use management with the ROS so that approved uses and activities conform to adopted ROS criteria.
- B. New special use cabins and related structures may be permitted by the Forest Service officer with delegated authority consistent with maintaining the option of wilderness designation.
- C. Provide for the continuance of existing and future establishment and use of temporary campsites, tent platforms, shelters, and other temporary facilities and equipment, directly related to and necessary for the taking of fish and wildlife in accordance with ANILCA (Section 1316) and R10 supplement to FSM 2709.11 Chapter 40, and consistent with maintaining the option for future wilderness designation by Congress.
- D. Allow reasonable access to, and operation and maintenance of existing air and water navigation aids, communication sites, and related facilities, as well as existing facilities for national defense purposes, weather, climate and fisheries research and monitoring. Allow the continuation of necessary motorized access at existing sites (ANILCA, Section 1310(a)). New facilities proposed for these activities and purposes, including communications sites consistent with

Appendix E of the Forest Plan, shall be permitted: 1) following consultation between the head of the Federal agency undertaking the establishment, operation, or maintenance, and the Forest Service officer with delegated authority; and, 2) in accordance with such terms and conditions as may be mutually agreed upon in order to minimize the adverse effects of such activities on the wilderness resources (ANILCA, Section 1310).

1. Perform environmental analysis to evaluate the effects of such proposals on wilderness resources and to provide the basis for determining the necessary terms and conditions under which the use will be permitted.
  2. Mechanized transport and motorized equipment may be authorized where no other reasonable alternative exists.
  3. Forest Service officer(s) with delegated authority will consult with the permittees and jointly develop an operating plan, documenting procedures which will minimize impacts on the wilderness resources without unreasonably limiting the operation and maintenance of the proposed facilities.
- G. This Land Use Designation represents a potential Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites and corridors may be located in this Land Use Designation after an analysis of potential TUS opportunities has been completed and no reasonable alternatives exist outside this Land Use Designation.
- H. Onshore facilities such as waterlines, storage areas, and shoreties for mariculture may be permitted in Recommended Wilderness consistent with maintaining the option for wilderness designation.

### **Landline Location and Maintenance: LAND231, LAND24**

- A. Provide adequate marking for the public and Forest Service employees to distinguish land ownership.
  1. Survey, mark, and post property lines of inholdings and adjacent private lands. Give highest priority to those landlines that are adjacent to private lands where activities or occupancies are likely to encroach into the Recommended Wilderness. The next priority is adjacent to trails, canoe routes, and other area transportation corridors or areas of frequent human use.

### **Land Ownership Adjustments: LAND26**

- A. Acquire private inholdings as opportunities arise.
  1. Acquisition of private inholdings within the Recommended Wilderness is a potential high priority.
  2. As opportunities arise, acquire private inholdings through donation, exchange, or purchase.

## **MINERALS AND GEOLOGY**

### **Minerals and Geology Administration: MG12**

#### *Forest Lands Not Withdrawn From Mineral entry*

- A. Forest lands within Recommended Wilderness are not withdrawn from mineral entry.
- B. Claimants with valid claims located within the Recommended Wilderness retain valid existing rights, and new claims may be filed until such time the Recommended Wilderness is actually designated as Wilderness by Congress.
- C. Permit reasonable access to mining claims in accordance with the provisions of approved Plans of Operation (ANILCA, Section 1110(b)).
- D. Section 1010 of ANILCA provides for the assessment of oil, gas, and other mineral potential on all public lands in Alaska. Core and test drilling for geologic information purposes, including exploratory oil and gas test wells, may be authorized within Recommended Wilderness. Air access shall be permitted for such assessment activities.

## Appendix D

### *Plan of operations*

- A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to potential wilderness values to the extent reasonable. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource effects.
- B. The use of motorized equipment is allowed. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads (ANILCA, Section 1110 (b)).

## RECREATION AND TOURISM

### **Recreation Use Administration: REC122**

#### *Recreation Management and Operations*

- A. To the degree consistent with the overall purposes of wilderness recommendation, provide a spectrum of wildland recreation opportunities which reflects the inherent ecological, cultural, historical, prehistorical, scientific and sociological conditions found within the Recommended Wilderness.
- B. Manage for Primitive and Semi-primitive ROS settings which emphasize opportunities that maintain the option for future Wilderness designation by Congress. Provide for the appropriate activities throughout the Recommended Wilderness. Protect the integrity of the potential wilderness resources and values through integrated project planning and implementation within the Recommended Wilderness.
  - 1. Manage for the existing or the adopted ROS class in the Forest Plan if it is equal or of a less developed class. Seek to minimize the changes through project design and mitigation. Manage recreation and tourism use in a manner that maintains the option for future Wilderness designation.
  - 2. In locations where scheduled activities change the recreation setting(s), manage the new setting(s) in accordance with the appropriate ROS guidelines. Seek to minimize changes to the setting through project design and mitigation. Maintain the capability of the Recommended Wilderness to provide quality primitive and semi-primitive recreation on a sustained basis.
- C. Manage recreation activities to meet the appropriate levels of social encounters, on-site development, methods of access, and visitor impacts indicated for the adopted or existing ROS settings (see "B" above). (Consult national and regional Handbooks.)
- D. Provide for general public use of the Recommended Wilderness with guidance of ANILCA provisions for the use of snowmachines (during periods of adequate snow cover), motorboats, fixed-wing airplanes, and nonmotorized surface transportation methods for traditional activities that are legal and for travel to and from villages and homesites (ANILCA, Section 1110).
  - 1. Traditional activities include, but are not limited to, recreation activities such as sport fishing, sport hunting, boating, sightseeing and hiking.
  - 2. Traditional activities, which are legal, shall be allowed to continue. No permits will be required for the general public to use these specific types of motorized transport or any nonmotorized surface transportation methods for traditional activities that are legal, unless an area is specifically closed to public use. Such use is subject to reasonable regulation by the Forest Service officer with delegated authority to protect natural and other values of the Recommended Wilderness from damage.
  - 3. Restrictions or closures of specific areas within the Recommended Wilderness to transportation methods listed in "D" above, may be invoked by the Forest Service officer with delegated authority following adequate public notice and involvement, and the determination that such use would be detrimental to maintenance of wilderness resource values. Closure of broad areas is not contemplated.

4. Fixed-wing airplanes will be allowed to land on all suitable lakes, beaches, and icefields without a permit unless the activity (i.e., commercial use) requires a permit.
  5. The landing of helicopters for access by the general public will be allowed unless limited to specific helicopter access areas by the Forest Service officer with delegated authority.
- E. Maintain existing public use cabins and shelters at present or improved condition. Consider additional public use cabins and/or shelters consistent with the need for health and safety purposes (ANILCA, Section 1315(d)).
1. Base new cabin or shelter locations on an analysis of public health and safety needs. The analysis shall include at least the following factors:
    - \* Difficulty of access particularly in regard to timely pick-up of users by floatplane or boat or for emergency situations.
    - \* Presence of natural hazards including weather, brown bears, and dangerous tide and currents.
    - \* History of fatalities and life-threatening incidents in the area.
    - \* Natural attractions that entice people to use a particular area.
  2. Design of new or replacement cabins or shelters will use drawings approved for use in Wilderness.
  3. Appurtenant structures to the cabin or shelter will be limited to a toilet, a woodshed, and minimum structures necessary for resource protection and accessibility.
  4. All structures shall be built of materials, which blend with, and are compatible with, the foreground and middleground landscape surrounding the site.
  5. Decisions to construct new cabins or relocate or move existing cabins must be supported by an environmental analysis.
- F. With the help of user groups, develop "Leave No Trace" camping and use programs that encourage dispersal and use of durable campsites. Where dispersal is not feasible, develop designated campsites and encourage their use.

### *Outfitter/Guide Operations*

- A. Special Use Authorizations permitting individuals or organizations to provide visitor services in Recommended Wilderness may be issued if the use maintains the option for future Wilderness designation and they are deemed appropriate for the area proposed. District Rangers will maintain a record of currently active authorizations.

### *Recreation Special Uses*

- A. Permits are allowed consistent with maintaining the option for future designation of a Recommended Wilderness as Wilderness by Congress. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

## SCENERY

### **Scenery Operations: VIS1**

- A. Design activities to not be visually evident to the casual observer.
1. Apply Forest-wide Standards & Guidelines for the Retention and Partial Retention Visual Quality Objectives. This objective defines the maximum limit of allowable change to the visual character of the area; less visible evidence of activities such as those compatible with the Preservation Visual Quality Objective is acceptable.
  2. Design allowed structures, campsites and constructed trails to meet the Partial Retention Visual Quality Objective. Electronic sites allowed under Appendix E of the Forest Plan should meet Partial Retention as seen from the middleground or background distance zone.

## Appendix D

### SOIL AND WATER

#### Watershed Resource Improvements: S&W2

- A. Undertake watershed improvements where deteriorated soil and hydrologic conditions caused by humans or their influences create a threat or loss of wilderness values or where such conditions could cause serious depreciation of important environmental qualities outside of the Recommended Wilderness. For exceptions, see the Fish section.
- B. Whenever possible, use indigenous plant species and materials in implementing watershed improvements.

### SUBSISTENCE

#### Subsistence: SUB

- A. Rural residents engaged in subsistence uses shall have reasonable access to subsistence resources. Appropriate use of snowmachines, motorboats, and other means of surface transportation traditionally employed for such purposes by local residents shall be permitted, subject to reasonable regulation to protect wilderness resource values (ANILCA Section 811).

### TIMBER

#### Timber Resource Planning: TIM112

- A. Forested land is classified as unsuitable for timber production and withdrawn from the timber base.
- B. Timber can be salvaged only to prevent significant damage to other resources. Examples are removal of windfall in an important fish stream or control of epidemic insect infestations.
- C. Personal use of wood is allowed for cabin logs, fuel wood, float logs, trolling poles, and other similar uses consistent with maintaining the option for future Wilderness designation.
- B. The following types of public uses may be authorized if done in a manner that minimizes effects on the Recommended Wilderness:
  1. Commercial beach log salvage on Recommended Wilderness coastlines may be authorized. Require that the recovery of logs above mean high tide be conducted from the water without roads or use of vehicles on uplands. Beach log salvage is defined as the recovery of logs that have been lost in transit and washed up on beaches.
  2. Traditional personal use wood harvesting activities {primarily: 1) beach logs on coastlines, which can be removed without roads or use of vehicles on uplands, and 2) firewood}, subject to reasonable regulations to protect potential Wilderness resources. The cutting of down trees in navigable rivers (sweepers) and removal of trees from the banks is compatible with Recommended Wilderness objectives.
  3. Removal, or use of trees cut as part of some other authorized use within the Recommended Wilderness. (For example, clearing for a fish ladder.)
  4. Trees may be cut for use in construction and maintenance of authorized structures when it is not reasonable to obtain the necessary material from outside the Recommended Wilderness.

### TRAIL

#### Trail Activities: TRAIL

- A. Provide for a diversity of outdoor recreation trail and waterway opportunities which are appropriate for the ROS class and management intent of the Recommended Wilderness. Emphasize nonmotorized and nonmechanized participation in activities such as hiking, mountaineering, spelunking, cross-country skiing, canoeing and kayaking.
- B. Emphasize primitive and semi-primitive recreation opportunities which are in harmony with the natural environment and consistent with the intent and purposes of the Wilderness Act and ANILCA.
- C. Consider trail systems that provide:
  1. Connected, multi-day trip opportunities for both land trails and water trails.

2. Alpine trail systems with access from saltwater anchorages, cabins, local communities, and resorts.
3. Loop trail systems in connection with public use cabins.
4. Access from local communities to snow line where development of snow trails is feasible.

**Trail Administration: TRAI2**

- A. Trails and associated waterways leading to and within Recommended Wilderness often become the principal management tools for achieving management objectives. Construct and maintain trails, such as bridges and signs, so they:
  1. contribute to management goals and objectives.
  2. are compatible with the ROS setting.
  3. appear to be part of the Recommended Wilderness environment and not an intrusion upon it. Consult the Forest Service Trails Management Handbook, and Alaska Region Trails Construction and Maintenance Guide.

**TRANSPORTATION Transportation Operations: TRANS1**

- A. New roads and new airstrips are not permitted, except to access surrounded state and private land and valid mining claims subject to stipulations to protect the natural and other values of such lands. Any transportation development in association with minerals exploration and extraction will be in accordance with an approved Plan of operations, and subsequent annual work plans.
- B. Any existing roads in the Recommended Wilderness are closed to motorized uses unless needed for valid existing rights or consistent with the objectives of ANILCA.
- C. Allow use of snowmachines, motorboats, fixed-wing airplanes and nonmotorized methods of surface transportation for traditional activities that are legal and for transportation to and from villages and homesites. (Consult ANILCA, Section 1110 and Wilderness and Recreation & Tourism Sections.)
- D. Provide adequate and feasible access for economic and other purposes to owners of land, including subsurface rights to land, valid mining claims, permittees, or other valid occupancies, which are effectively surrounded by Recommended Wilderness.
  1. The routes and types of access shall be practical in an economic sense; but do not necessarily have to be the most economically feasible alternative.
  2. District Rangers will work with the landowner, or his/her authorized representative, to work out reasonable solutions which will meet the intent of future Wilderness designation, while minimizing adverse effects on wilderness resources and values.

**WILDERNESS Wilderness Resource Administration: WILD12**

*Wilderness Resource Management*

- A. Manage all Recommended Wilderness to maintain the option for future Wilderness designation.

**WILDLIFE Wildlife Habitat Improvement: WILD22**

- A. Conduct wildlife habitat improvement projects consistent with maintaining the option for future Wilderness designation, as well as, to assist in the recovery of a federally-listed threatened or endangered species.

**Wildlife Habitat Planning: WILD112**

- A. Wildlife management activities will be consistent with maintaining the option for future Wilderness designation.
- B. Address issues regarding management, introduction, and re-introduction of wildlife species consistent with National and Regional Policy.

# Recommended Land Use Designation II

## Land Use Designation RL

### Goals

To manage Recommended Land Use Designation II (LUD II) to maintain the option for future designation as LUD II by Congress.

To manage these areas in a roadless state to retain their wildland character.

### Objectives

Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated by the Primitive and Semi-primitive Recreation Opportunity Spectrum classes. Generally apply the LUD II direction from the 1997 Tongass Forest Plan, which is summarized as follows:

- ◆ prohibit commercial timber harvest. Permit salvage logging only to prevent significant damage to other resources. Allow personal use of wood for cabin logs, fuelwood, float logs, trolling poles, etc.
- ◆ permit water and power developments if designed to be compatible with the primitive characteristics of the area
- ◆ permit roads only for access to authorized uses, for transportation needs identified by the state or for vital linkages (See the Standards & Guidelines in this prescription)
- ◆ allow mineral development
- ◆ permit boats, aircraft, and snowmachines, unless such uses become excessive
- ◆ permit fish and wildlife habitat improvements. Design structures to minimize the effects to recreation resources
- ◆ permit primitive recreational facilities
- ◆ major concentrated recreational facilities will generally be excluded

Salvage logging, personal use of wood, water and power development, fish and wildlife habitat improvement, and research facilities will be designed to be compatible with the primitive characteristics of the area.

### Desired Condition

Areas in this Land Use Designation are characterized by extensive, generally unmodified natural environments, and retain their wildland character. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Users have the opportunity to experience a high-to-moderate degree of independence, closeness to nature, solitude and remoteness and may pursue activities requiring self-reliance, challenge, and risk. Interactions between users are infrequent. Recreational facilities and structures are primitive.

**Recommended Land Use Designation II**  
**Apply the following Forest-wide Standards & Guidelines located in Chapter 4**  
**of the 1997 Tongass Forest Plan**

<b>Resource</b>	<b>Section</b>	<b>Sub-Sections</b>	<b>Page</b>
Air	AIR	All	4-3
Beach And Estuary Fringe	BEACH1	All	4-4
	BEACH2	All	
Facilities	FAC	All	4-6
Fire	FIRE	All	4-7
Fish	FISH	All	4-8
Forest Health	HEALTH	All	4-13
Heritage Resources	HER	All	4-14
Karst And Cave Resources	KARST,CAVE	All	4-18
Lands	LAND	All	4-21
Minerals And Geology	MG	All	4-32
Recreation And Tourism	REC	All	4-34
Riparian	RIP1	All	4-52
	RIP2	All	
Rural Community Assistance	RUR	All	4-73
Scenery	VIS1,12	All	4-74
	VIS11	I,II(A-C)	
Soil And Water	S&W1111,1112	All	4-82
	S&W112	I(A:1-7, B-F),II,III	
Subsistence	SUB	All	4-85
Threatened, Endangered, Sensitive	TE&S	All	4-87
Timber	TIM111,111-1, 111-2,130,140	All	4-93
	TIM114	VIII	
Trails	TRAI	All	4-100
Transportation	TRAN111,122,212,22,23	All	4-102
	TRAN214	All	
Wetlands	WET	All	4-109
Wildlife	WILD112	I-VIII; IX(A:1-8,11,B); X-XV	4-110
	WILD22	All	
	WILD23	All	

## Appendix D

### Apply the following Land Use Designation Standards & Guidelines:

#### FACILITIES

##### **Administrative Facilities: FAC2**

- A. Permanent administrative facilities may be constructed in a manner which blends with the natural character of the area.

#### FIRE

##### **Fire Suppression: FIRE12**

###### *Suppression Action*

- A. Suppress wildfires using the suppression option identified in the Southeast Alaska/Prince William Sound Fire Management Plan. An Escaped Fire Situation Analysis (EFSA) of expected fire behavior, time of year, and locations with respect to private land and adjacent land use areas, may lead to a lower strategy. If an EFSA discloses no adverse effects and it is more cost-efficient, the lower strategy will be used.
- B. Emphasize suppression tactics which result in the least possible disturbance or evidence of human presence.
  1. Suppression tactics will avoid human/bear conflicts and existing policy will be emphasized to leave no trash or any other kinds of bear attractants in the area.
  2. Rehabilitation of all campsites, suppression lines, and other evidence of human presence will occur as soon as it is safe, and no longer than one year after the fire occurs.

##### **Fuel Improvements: FIRE2**

###### *Prescribed Fire*

- A. Allow management-ignited prescribed fire for fuels management, insect and disease protection, and wildlife habitat improvement.
- B. As a general management practice, do not use prescribed natural fire, although natural ignitions may be used to perpetuate natural ecological processes. Should it become necessary to consider the use of prescribed natural fire, the Forest Plan must be amended to analyze, justify, and approve prescribed natural fire programs. (Consult FSM 5142.)

#### FISH

##### **Fish Habitat Planning: FISH112**

###### *Fish Enhancement*

- A. Improvements such as fishways, fish hatcheries, or aquaculture sites may be built. Appropriate landscape management techniques will be applied in the design and construction of such improvements to reduce impacts on recreational resources and scenery.

#### FOREST HEALTH

##### **Forest Health Management: HEALTH1**

- A. Insect and disease management measures consistent with this Land Use Designation may be implemented to protect these and adjacent resources.

##### **Forest Insect and Disease Survey and Inventory: HEALTH2**

- A. Survey and inventory visible outbreaks.

#### HERITAGE

##### **Heritage Resource Activities: HER**

###### *Enhancement*

- A. Heritage Resources are available for recreational, scenic, scientific, educational, conservation, and historic uses.
  1. Heritage Resources are available for scientific studies that are consistent with the primitive settings and activities, and heritage resource management objectives for the specific site.

*Inventory/Evaluation*

- A. Develop priorities and schedule management activities to implement heritage resource inventory, evaluation, protection, and interpretation.
  - 1. Identify, classify, and evaluate known Heritage Resources.
  - 2. Identify heritage properties to be nominated to the National Register of Historic Places.
  - 3. Identify heritage properties that require stabilization or other protective measures.
  - 4. Identify opportunities for interpretation of Heritage Resources for public education and enjoyment.

**KARST AND CAVES Cave Management Program: CAVE**

- A. Identify opportunities for interpretation of karst and caves for public education and enjoyment. Interpretation may occur inside or outside of this Land Use Designation.

**LANDS Special Use Administration (Non-Recreation): LAND122**

- A. Water and power developments are permitted if they can be designed to retain the overall primitive characteristics of the allocated area.
- B. Permit those activities which are consistent with the wildland character of the area.
- C. This Land Use Designation represents a potential Transportation and Utility System (TUS) "Avoidance Area." Transportation and utility sites or corridors may be located within this Land Use Designation after an analysis of potential TUS corridors has been completed and no reasonable alternatives exist outside this Land Use Designation.

**MINERAL AND GEOLOGY Minerals and Geology Administration: MG12**

*Forest Lands Open to Mineral entry*

- A. Forest lands within this Land Use Designation are open to mineral exploration and development.
- B. Assure prospectors and claimants their right of ingress and egress granted under the General Mining Law of 1872, ANILCA, and National Forest Service Mining Regulations 36 CFR 228.
- C. Permit reasonable access to mining exploration and development in accordance with the provisions of an approved Plan of operations.

*Plan of operations*

- A. Encourage use of state-of-the-art techniques for developing minerals to reduce impacts to the extent feasible. Include mitigation measures that are compatible with the scale of proposed development and commensurate with potential resource impacts.
- B. Apply appropriate Transportation Forest-wide Standards & Guidelines to the location and construction of mining roads.
- C. Manage mineral exploration and development activities to be compatible with the emphasis on maintaining the wildland character of the Recommended LUD II Land Use Designation. Apply the following management practices to reduce resource impacts.
  - 1. Manage mineral activities to maintain the present and continued productivity of anadromous fish and other foodfish habitat to the maximum extent feasible. (Consult ANILCA, Section 505 (a).)
  - 2. Manage mineral activities to maintain the present and continued productivity of wildlife habitat to the extent feasible.
  - 3. Take maximum advantage of topographic and vegetative screening when locating drill rigs and pumps, roads, rock quarries, structures, and marine transfer facilities.

## Appendix D

4. Discourage use of motorized surface vehicles, but utilize guidance provided in ANILCA, Section 1110(b), which addresses adequate and feasible access for economic and other purposes.
5. Locate material sites and marine transfer facilities outside this Land Use Designation, if reasonable alternatives exist.
6. Ensure that vegetation removed from the project area is hauled away, buried, burned or scattered when located adjacent to Visual Priority Travel Routes and Use Areas.
7. Minimize the scale of spoil/disposal areas in relation to the surrounding landscape as seen from sensitive viewpoints.
8. Approve use of colors that simulate those found in the characteristic landscape. Avoid use of reflective materials in project facilities.
10. Approve reclamation plans in which minerals activities leave a natural-appearing condition.
11. Ensure that landform modifications simulate naturally-occurring forms.
12. Ensure that disturbed areas are revegetated in accordance with project plans.

### RECREATION AND TOURISM

#### Recreation Use Administration: REC122

##### *Recreation Management and Operations*

- A. Generally provide for semi-primitive ROS settings, recognizing that more developed settings may be present due to authorized activities, existing use patterns, and activities in adjacent Land Use Designations.
  1. Primitive recreation facilities, such as recreation cabins, boat docks, moorings and trails may be constructed and maintained.
- B. Major concentrated recreation facilities, such as development scale IV and V (those heavily-modified or with a high degree of site modification) will generally be excluded.
- C. If a transportation link is constructed through this Land Use Designation, recreation facilities needed to serve the traveling public, to reduce impacts of recreation use to adjacent wildlands, or to provide interpretation, may be constructed in proximity to the transportation link.

##### *Recreation Special Uses*

- A. Major developments are generally not consistent with the objectives of the Land Use Designation. Development proposals require scrutiny of the magnitude and scope for Land Use Designation conformance. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.
- B. Minor developments may be compatible with the Land Use Designation objectives depending on the scope, purpose, and magnitude of the proposal. Each proposal will be evaluated on a case-by-case basis. Refer to the Recreation and Tourism Forest-wide Standards & Guidelines.

### SCENERY

#### Scenery Operations: VIS1

- A. Landscapes are managed to retain a natural-appearing visual condition, where activities are not visually evident to the casual observer.
  1. Apply Forest-wide Standards & Guidelines for the Retention Visual Quality Objective.
  2. Some authorized activities and improvements may not meet the Retention Visual Quality Objective, based on project analysis. However, seek to mitigate visual impacts through location, siting, design, material, and coloring of structures.

### TIMBER

#### Timber Resource Planning: TIM112

- A. Forested land is classified as unsuitable for timber production. Commercial timber harvesting is not permitted.

- B. Timber can be salvaged only to prevent significant damage to other resources. Examples are removal of windfall in an important fish stream or control of epidemic insect infestations.
- C. Personal use of wood is allowed for cabin logs, fuel wood, float logs, trolling poles, and other similar uses.

**TRANSPORTATION    Transportation Operations: TRAN1**

- A. Existing roads are generally closed to highway vehicular use. Any proposed roads will use the following guidelines.
  - 1. Allow vital Forest transportation system linkages including roads and transfer facilities. Vital Forest transportation system linkages refer to necessary additions to the permanent road network. Such linkages may be built through Recommended LUD II areas when either: 1) no other reasonable routes exist to access adjacent Land Use Designations, or 2) when it can be demonstrated that the routing through the Recommended LUD II area is clearly environmentally preferable and site-specific mitigation measures can be designed to minimize the impact of the road on the surrounding Recommended LUD II area. A clear need to build such linkages must be demonstrated through a comparative analysis of feasible transportation alternatives through the NEPA process and must be approved by the Forest Supervisor.
  - 2. Roads, other than vital transportation linkages, will not be built except to serve authorized activities such as mining, power and water developments, aquaculture developments, or transportation needs determined by the State of Alaska (also the Transportation and Utility Systems Land Use Designation).

**WILDLIFE                    Wildlife Habitat Planning: WILD112**

- A. Wildlife habitats will generally evolve in natural successional stages. Habitat improvement is permitted.

**APPENDIX E**  
**COMMUNITY GROUP**  
**EMPLOYMENT DATA**

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# **Appendix E**

## **Community Group Employment Data**

### **Introduction**

This appendix presents employment data originally compiled by the Alaska Department of Labor (Alaska DOL) at the community group level. Community groups are sub-areas of boroughs and census areas developed by the Alaska DOL. Some of the community groups represent individual communities; others include several communities and named places. The communities and named places that comprise each community group are identified in Table 3.4-33 of the Final SEIS document.

Employment data are presented for 1990, 1995, and 1999 for the major divisions of the Standard Industrial Classification (SIC) code, as well as natural resource-based employment. These data do not include self-employed workers. The data are by place of work, not place of residence and, therefore, include people who work in these areas but do not live there. A summary graph that shows total, wood products, and recreation-related employment for 1990, 1995, and 1999 is included for each community group.

Employment data compiled during the 2000 U.S. Census are presented for each community in the Individual Community Assessments section of Chapter 3 of the Final SEIS.

## Appendix E

### Baranoff

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	7	13	12	91	5	71
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	46	39	1	8	-45	-98
Transportation and Public Utilities	0	0	0	0	0	na
Wholesale Trade	0	0	0	0	0	na
Retail Trade	0	0	0	2	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	0	0	0	0	0	na
Federal Government	0	0	0	0	0	na
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>53</b>	<b>52</b>	<b>13</b>	<b>100</b>	<b>-40</b>	<b>-75</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	46	39	1	8	-45	-98
Logging	46	39	1	8	-45	-98
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>46</b>	<b>39</b>	<b>1</b>	<b>8</b>	<b>-45</b>	<b>-98</b>
Natural Resource-Based as a Percentage of Total Employment	87	75	8	na	na	na

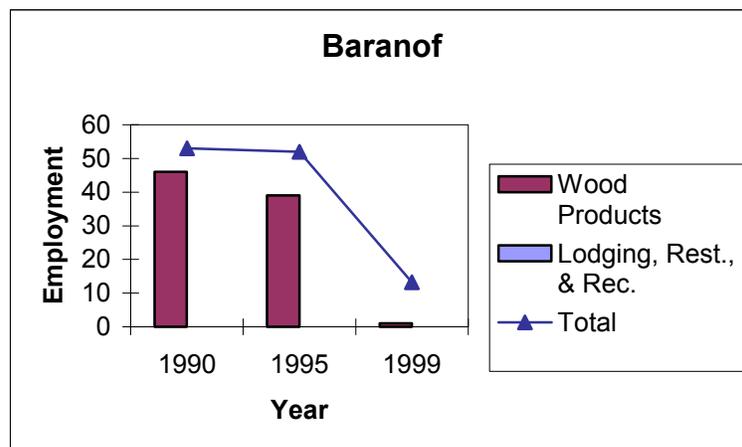
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



Central Prince of Wales

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	5	0	6	1	1	17
Mining	0	0	21	2	21	na
Construction	47	68	71	7	24	51
Manufacturing	329	180	150	14	-179	-54
Transportation and Public Utilities	69	138	46	4	-23	-33
Wholesale Trade	8	12	9	1	1	16
Retail Trade	151	205	252	24	101	67
Finance, Insurance, Real Estate	39	35	72	7	33	85
Services	104	114	135	13	31	30
Federal Government	32	45	7	1	-25	-78
Other Government	186	261	282	27	96	52
<b>Total Employment</b>	<b>970</b>	<b>1,058</b>	<b>1,051</b>	<b>100</b>	<b>81</b>	<b>8</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	312	137	116	11	-196	-63
Logging	312	117	85	8	-227	-73
Sawmills	0	20	31	3	31	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	17	42	23	2	6	36
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	140	13	140	na
<b>Total Natural Resource-Based Employment</b>	<b>329</b>	<b>179</b>	<b>279</b>	<b>27</b>	<b>-50</b>	<b>-15</b>
Natural Resource-Based as a Percentage of Total Employment	34	17	27	na	na	na

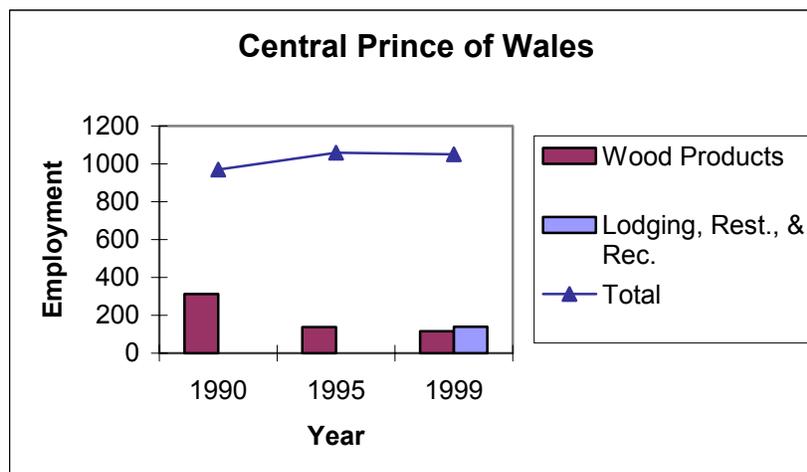
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Chatham Strait

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	0	0	1	0	1	na
Manufacturing	100	112	40	18	-60	-60
Transportation and Public Utilities	2	5	6	3	4	192
Wholesale Trade	0	0	0	0	0	na
Retail Trade	23	23	22	10	-1	-4
Finance, Insurance, Real Estate	19	21	9	4	-10	-54
Services	27	28	37	17	10	37
Federal Government	9	3	0	0	-9	-100
Other Government	151	133	108	49	-43	-28
<b>Total Employment</b>	<b>331</b>	<b>325</b>	<b>223</b>	<b>100</b>	<b>108</b>	<b>-33</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	89	112	40	18	-49	-55
Logging	89	112	40	18	-49	-55
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	19	21	22	10	3	17
<b>Total Natural Resource-Based Employment</b>	<b>108</b>	<b>133</b>	<b>62</b>	<b>28</b>	<b>-46</b>	<b>-42</b>
Natural Resource-Based as a Percentage of Total Employment	33	41	28	na	na	na

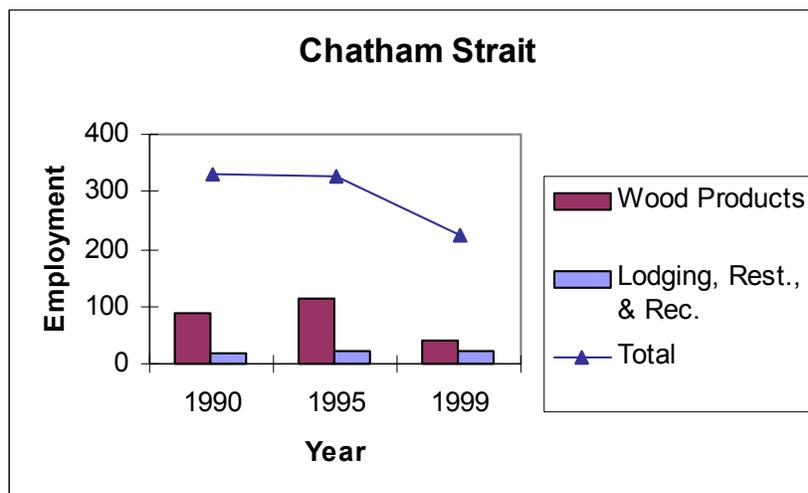
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



**Cleveland Peninsula**

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	0	0	180	92	180	na
Transportation and Public Utilities	0	0	1	0	1	na
Wholesale Trade	0	0	0	0	0	na
Retail Trade	0	0	0	0	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	22	14	14	7	-8	-36
Federal Government	0	0	0	0	0	na
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>22</b>	<b>14</b>	<b>195</b>	<b>100</b>	<b>173</b>	<b>786</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	180	92	180	na
Logging	0	0	180	92	180	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	22	14	14	7	-8	-37
<b>Total Natural Resource-Based Employment</b>	<b>22</b>	<b>14</b>	<b>194</b>	<b>99</b>	<b>172</b>	<b>781</b>
Natural Resource-Based as a Percentage of Total Employment	100	100	99	na	na	na

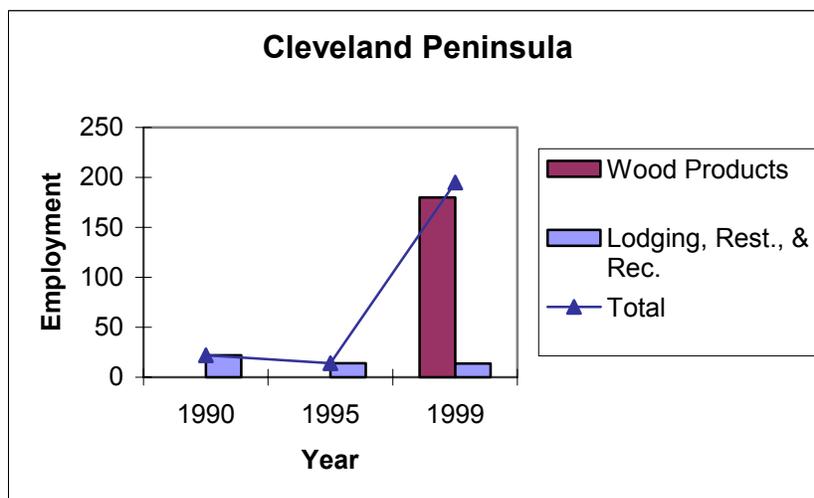
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Gustavus Island

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	1	0	1	na
Construction	3	3	7	4	4	-88
Manufacturing	2	4	0	0	-2	157
Transportation and Public Utilities	7	18	18	10	11	-100
Wholesale Trade	9	0	0	0	-9	183
Retail Trade	6	9	17	9	11	na
Finance, Insurance, Real Estate	0	0	0	0	0	29
Services	59	96	76	40	17	84
Federal Government	37	27	68	36	31	na
Other Government	0	2	2	1	1	na
<b>Total Employment</b>	<b>123</b>	<b>159</b>	<b>189</b>	<b>100</b>	<b>66</b>	<b>53</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	0	0	0	na
Logging	0	0	0	0	0	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	59	97	75	40	16	27
<b>Total Natural Resource-Based Employment</b>	<b>59</b>	<b>97</b>	<b>75</b>	<b>40</b>	<b>16</b>	<b>28</b>
Natural Resource-Based as a Percentage of Total Employment	48	61	40	na	na	na

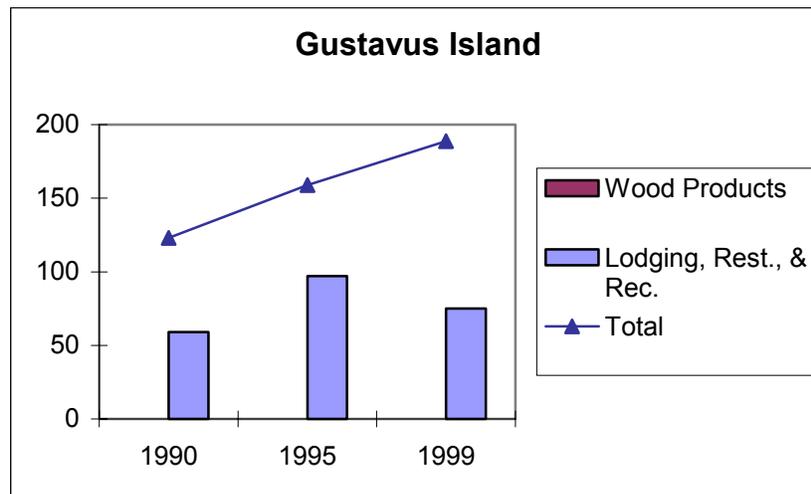
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



Haines

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	39	57	38	4	-1	-3
Manufacturing	225	105	57	7	-168	-75
Transportation and Public Utilities	169	149	107	12	-62	-37
Wholesale Trade	5	1	10	11	5	100
Retail Trade	5	1	10	1	5	100
Finance, Insurance, Real Estate	17	17	20	2	3	18
Services	101	143	221	26	120	119
Federal Government	9	11	11	1	2	22
Other Government	163	150	177	20	14	9
<b>Total Employment</b>	<b>891</b>	<b>792</b>	<b>865</b>	<b>100</b>	<b>-26</b>	<b>-3</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	140	10	0	0	-140	-100
Logging	0	10	0	0	0	na
Sawmills	140	0	0	0	-140	-100
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	82	90	51	6	-31	-37
Lodging, Restaurants, and Recreation Services <sup>3</sup>	101	131	192	28	-80	-25
<b>Total Natural Resource-Based Employment</b>	<b>323</b>	<b>231</b>	<b>243</b>	<b>28</b>	<b>-80</b>	<b>-25</b>
Natural Resource-Based as a Percentage of Total Employment	36	29	28	na	na	na

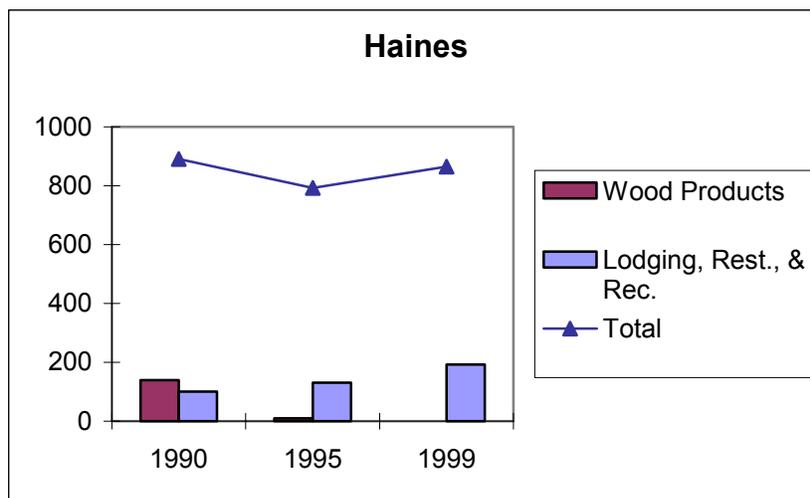
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



# Appendix E

## Hydaburg

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	0	0	1	1	1	na
Transportation and Public Utilities	10	4	12	16	2	20
Wholesale Trade	0	0	0	0	0	na
Retail Trade	7	9	6	8	-1	14
Finance, Insurance, Real Estate	14	9	6	8	-1	-14
Services	4	4	14	19	10	250
Federal Government	0	0	0	0	0	na
Other Government	42	37	36	48	-6	-14
<b>Total Employment</b>	<b>77</b>	<b>63</b>	<b>75</b>	<b>100</b>	<b>-2</b>	<b>-3</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	1	1	1	na
Logging	0	0	1	1	1	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>na</b>
Natural Resource-Based as a Percentage of Total Employment	0	0	1	na	na	na

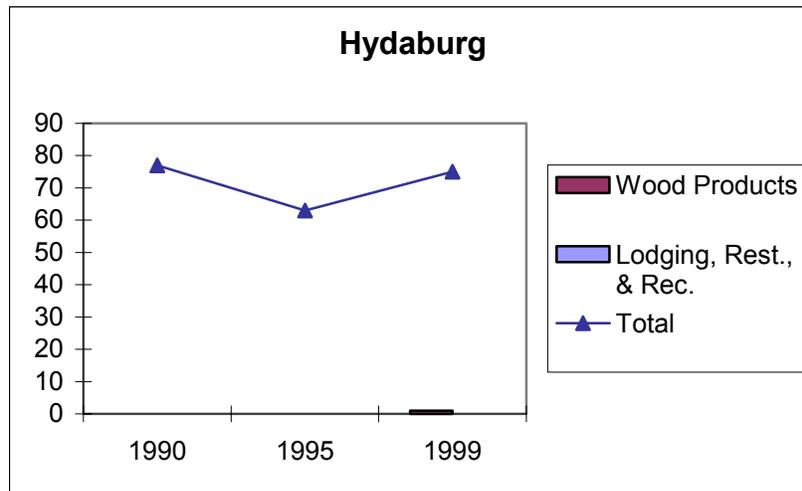
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Hyder

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	3	0	0	0	-3	-100
Construction	0	0	0	0	0	na
Manufacturing	0	0	0	0	0	na
Transportation and Public Utilities	8	0	1	2	-7	-88
Wholesale Trade	0	0	0	0	0	na
Retail Trade	4	7	2	4	-2	-50
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	14	13	4	25	0	-2
Federal Government	2	1	7	69	35	1,750
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>31</b>	<b>21</b>	<b>54</b>	<b>100</b>	<b>23</b>	<b>73</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	0	0	0	na
Logging	0	0	0	0	0	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	9	8	4	7	-6	-61
<b>Total Natural Resource-Based Employment</b>	<b>9</b>	<b>8</b>	<b>4</b>	<b>7</b>	<b>-6</b>	<b>-61</b>
Natural Resource-Based as a Percentage of Total Employment	29	38	7	na	na	na

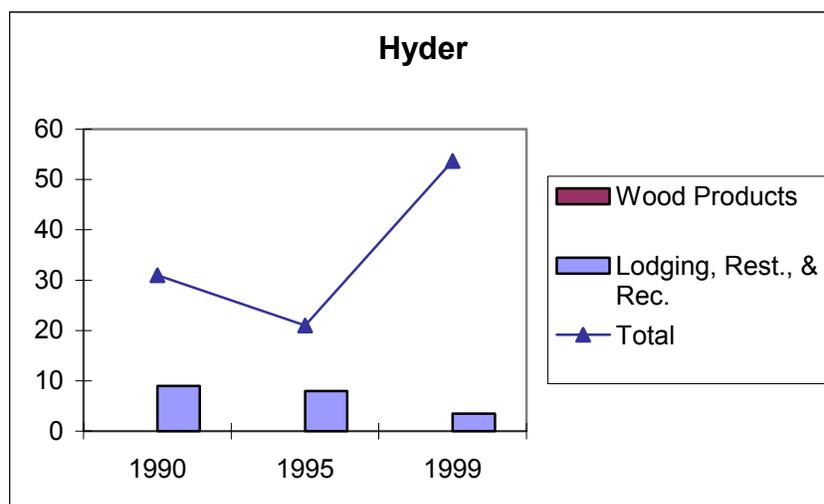
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Juneau

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	59	74	99	1	40	68
Mining	72	187	295	2	223	310
Construction	410	626	707	4	297	72
Manufacturing	145	325	357	2	212	146
Transportation and Public Utilities	910	1,072	1,110	7	220	22
Wholesale Trade	194	180	342	2	148	76
Retail Trade	2,041	2,735	2,470	15	429	21
Finance, Insurance, Real Estate	494	673	501	3	7	1
Services	2,323	3,010	3,498	21	1,175	51
Federal Government	1,406	908	865	5	-541	-38
Other Government	6,081	5,985	6,040	37	-41	-1
<b>Total Employment</b>	<b>14,135</b>	<b>15,775</b>	<b>16,284</b>	<b>100</b>	<b>2,149</b>	<b>15</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	80	55	0	55	na
Logging	0	80	55	0	55	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	25	59	69	0	44	176
Lodging, Restaurants, and Recreation Services <sup>3</sup>	1,170	1,505	1,783	11	613	52
<b>Total Natural Resource-Based Employment</b>	<b>1,195</b>	<b>1,644</b>	<b>1,907</b>	<b>12</b>	<b>712</b>	<b>60</b>
Natural Resource-Based as a Percentage of Total Employment	8	10	12	na	na	na

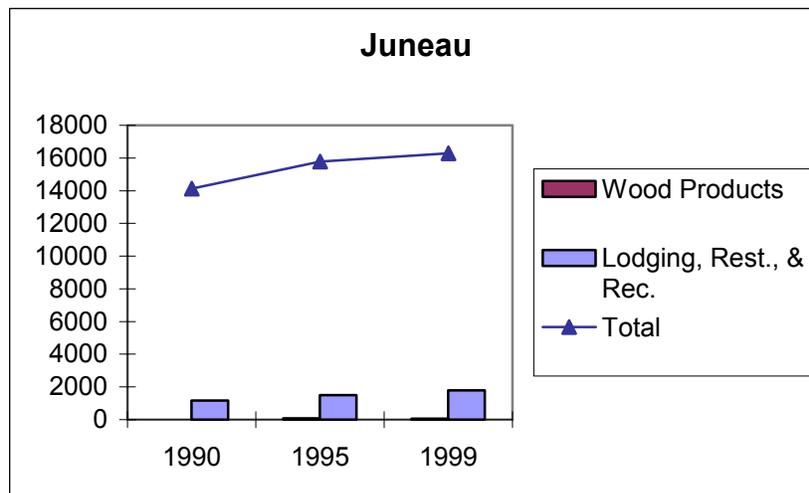
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Kake

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	20	16	13	5	-7	-35
Mining	0	0	0	0	0	na
Construction	3	0	0	0	-3	-100
Manufacturing	123	47	53	21	-70	-57
Transportation and Public Utilities	7	14	5	2	-2	-29
Wholesale Trade	2	0	0	0	-2	-29
Retail Trade	25	17	15	6	-10	-40
Finance, Insurance, Real Estate	17	85	57	22	40	235
Services	16	18	40	16	24	150
Federal Government	2	2	2	1	0	0
Other Government	69	82	72	28	3	4
<b>Total Employment</b>	<b>284</b>	<b>281</b>	<b>257</b>	<b>100</b>	<b>-27</b>	<b>-10</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	123	47	53	21	-70	-57
Logging	123	47	53	21	-70	-57
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>123</b>	<b>47</b>	<b>53</b>	<b>21</b>	<b>-70</b>	<b>-57</b>
Natural Resource-Based as a Percentage of Total Employment	43	17	21	na	na	na

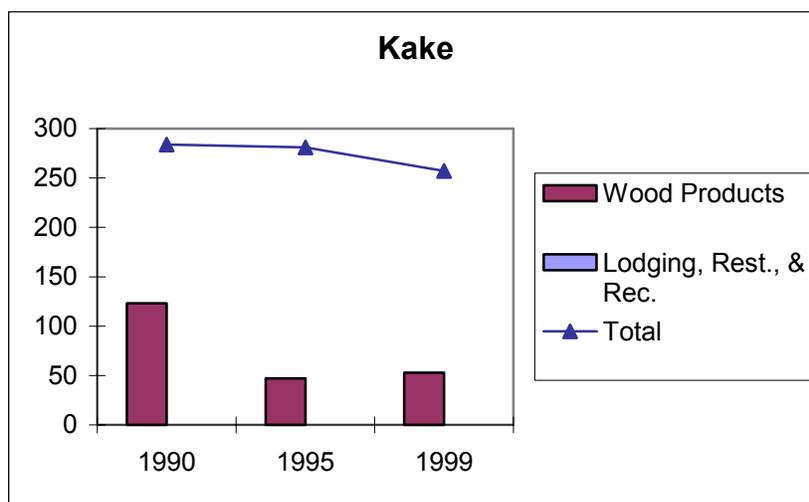
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Ketchikan

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	29	87	83	1	54	186
Mining	1	1	0	0	-1	-100
Construction	317	431	410	6	93	29
Manufacturing	1,936	1,483	1,117	16	-819	-42
Transportation and Public Utilities	638	766	492	7	-146	-23
Wholesale Trade	270	224	188	3	-82	-30
Retail Trade	1,166	1,389	1,224	17	58	5
Finance, Insurance, Real Estate	290	319	289	4	-1	0
Services	1,375	1,428	1,453	21	78	6
Federal Government	288	300	256	4	-32	-11
Other Government	1,518	1,483	1,502	21	-16	-1
<b>Total Employment</b>	<b>7,828</b>	<b>7,911</b>	<b>7,014</b>	<b>100</b>	<b>-814</b>	<b>-10</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	1,428	1,006	404	6	-1,024	-72
Logging	829	375	195	3	-634	-76
Sawmills	98	126	209	3	111	113
Pulp Mills	501	505	0	0	-501	-100
Seafood Processing <sup>2</sup>	442	405	547	8	105	24
Lodging, Restaurants, and Recreation Services <sup>3</sup>	678	647	682	10	4	1
<b>Total Natural Resource-Based Employment</b>	<b>2,548</b>	<b>2,058</b>	<b>1,633</b>	<b>23</b>	<b>-915</b>	<b>-36</b>
Natural Resource-Based as a Percentage of Total Employment	33	26	23	na	na	na

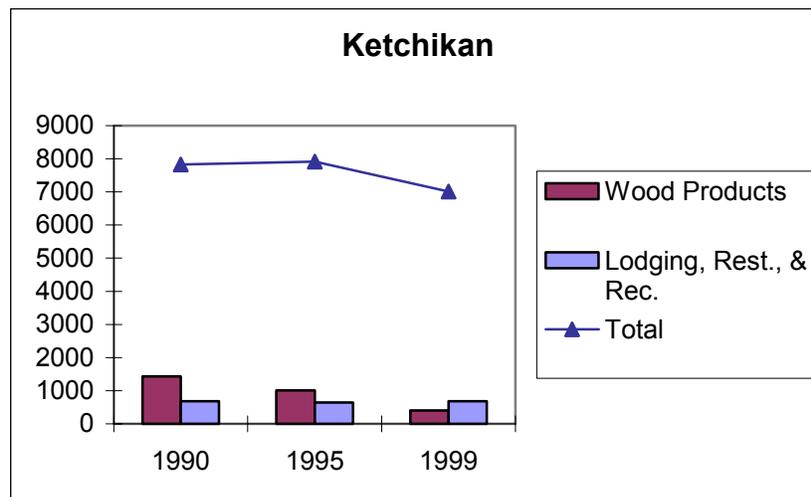
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



**Kuiu Island**

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	1	1	0	0	-1	-100
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	77	4	0	0	-77	-100
Transportation and Public Utilities	0	0	0	0	0	na
Wholesale Trade	0	0	0	1	0	na
Retail Trade	0	0	0	0	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	0	0	0	0	0	na
Federal Government	7	0	0	0	0	na
Other Government	7	4	13	99	6	86
<b>Total Employment</b>	<b>85</b>	<b>9</b>	<b>13</b>	<b>100</b>	<b>-72</b>	<b>-98</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	77	4	0	0	-77	-100
Logging	77	4	0	0	-77	-100
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>77</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>-77</b>	<b>-100</b>
Natural Resource-Based as a Percentage of Total Employment	91	44	0	na	na	na

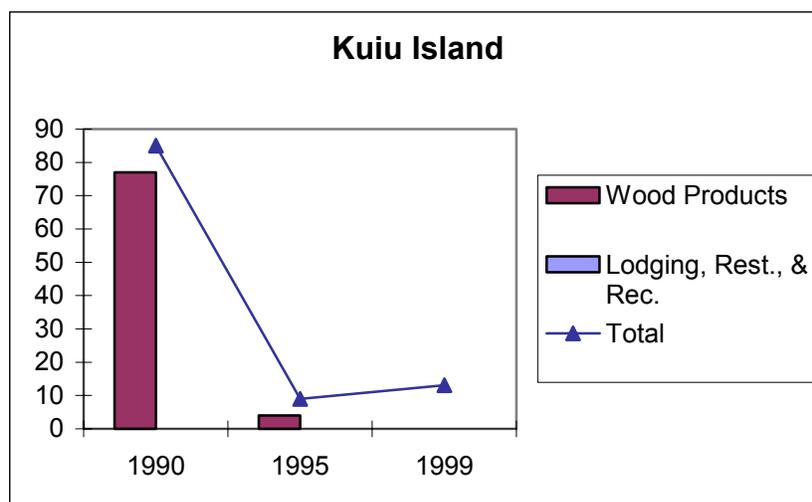
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



# Appendix E

## Metlakatla

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	8	0	1	0	-7	-88
Manufacturing	116	127	40	8	-76	-66
Transportation and Public Utilities	57	24	42	9	-15	-26
Wholesale Trade	0	0	0	0	0	na
Retail Trade	53	52	47	10	-6	-11
Finance, Insurance, Real Estate	4	5	4	1	0	0
Services	6	7	8	2	2	33
Federal Government	24	10	8	2	-16	-67
Other Government	321	326	322	68	1	0
<b>Total Employment</b>	<b>589</b>	<b>551</b>	<b>472</b>	<b>100</b>	<b>-117</b>	<b>-20</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	116	96	40	9	-76	-65
Logging	16	0	0	0	-16	-100
Sawmills	100	96	40	9	-60	-60
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	31	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	8	20	0	0	-8	-100
<b>Total Natural Resource-Based Employment</b>	<b>124</b>	<b>147</b>	<b>40</b>	<b>9</b>	<b>-84</b>	<b>-67</b>
Natural Resource-Based as a Percentage of Total Employment	21	27	9	na	na	na

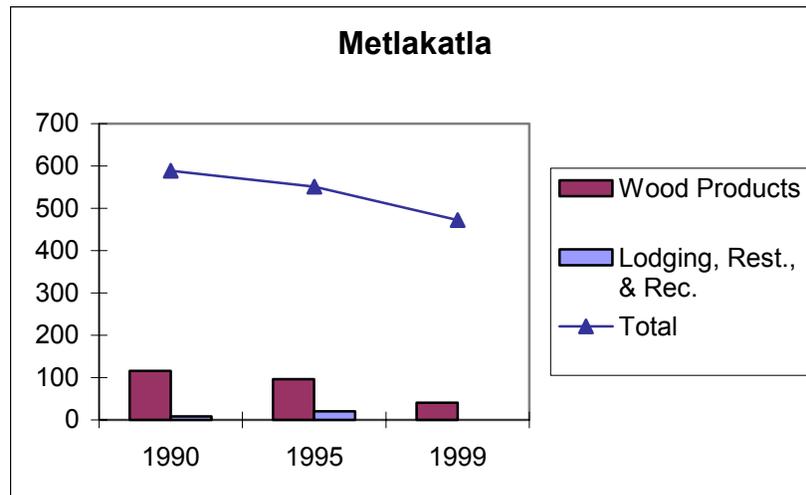
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



North Chichagof

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	2	0	1	0	-1	-50
Mining	0	0	0	0	0	na
Construction	0	0	2	0	2	na
Manufacturing	368	277	141	34	-227	-62
Transportation and Public Utilities	24	45	27	7	3	13
Wholesale Trade	4	5	1	0	-3	-83
Retail Trade	34	75	54	13	20	58
Finance, Insurance, Real Estate	23	0	4	1	-19	-83
Services	18	26	46	11	28	156
Federal Government	29	20	13	3	-16	-55
Other Government	92	117	122	30	30	33
<b>Total Employment</b>	<b>594</b>	<b>565</b>	<b>411</b>	<b>100</b>	<b>-184</b>	<b>-31</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	139	139	99	24	-49	-29
Logging	139	139	99	24	-50	-29
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	229	139	43	10	-186	-81
Lodging, Restaurants, and Recreation Services <sup>3</sup>	30	33	33	8	3	11
<b>Total Natural Resource-Based Employment</b>	<b>398</b>	<b>311</b>	<b>175</b>	<b>43</b>	<b>-223</b>	<b>-56</b>
Natural Resource-Based as a Percentage of Total Employment	67	55	43	na	na	na

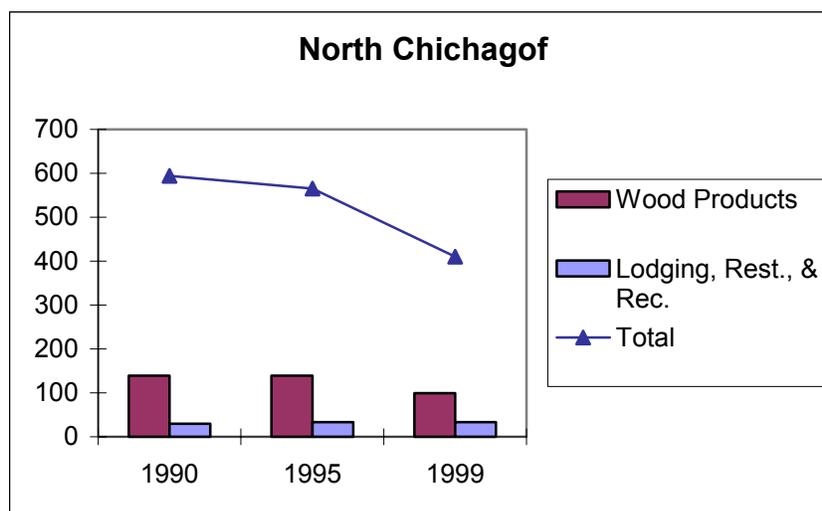
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### North Prince of Wales

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	5	12	8	2	3	60
Mining	0	0	0	0	0	na
Construction	20	15	5	1	-15	-75
Manufacturing	280	262	91	25	-189	-68
Transportation and Public Utilities	44	5	59	16	15	34
Wholesale Trade	5	0	0	0	-5	-100
Retail Trade	22	22	34	9	12	55
Finance, Insurance, Real Estate	6	1	1	0	-5	-83
Services	32	23	24	7	-8	-25
Federal Government	65	64	59	16	-6	-9
Other Government	33	42	80	22	47	142
<b>Total Employment</b>	<b>512</b>	<b>446</b>	<b>361</b>	<b>100</b>	<b>-151</b>	<b>-29</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	269	257	83	23	-186	-69
Logging	245	243	74	20	-171	-70
Sawmills	24	14	9	2	-15	-63
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	9	4	3	1	-6	-67
Lodging, Restaurants, and Recreation Services <sup>3</sup>	6	19	28	8	22	368
<b>Total Natural Resource-Based Employment</b>	<b>284</b>	<b>280</b>	<b>114</b>	<b>32</b>	<b>-170</b>	<b>-60</b>
Natural Resource-Based as a Percentage of Total Employment	55	63	32	na	na	na

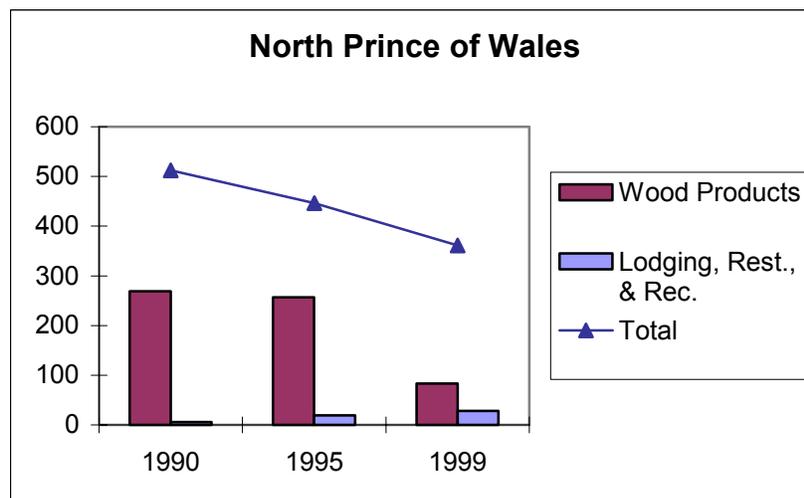
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



**Petersburg**

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	20	17	3	0	-17	-85
Mining	0	0	0	0	0	na
Construction	30	60	28	2	-2	-7
Manufacturing	351	467	361	26	10	3
Transportation and Public Utilities	60	67	68	5	8	13
Wholesale Trade	4	8	10	1	6	150
Retail Trade	231	263	276	20	45	19
Finance, Insurance, Real Estate	29	25	25	2	-4	-14
Services	192	166	144	10	-48	-25
Federal Government	147	144	132	9	-15	-10
Other Government	330	339	348	25	18	5
<b>Total Employment</b>	<b>1,394</b>	<b>1,556</b>	<b>1,395</b>	<b>100</b>	<b>1</b>	<b>0</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	70	12	5	0	-65	-93
Logging	70	12	5	0	-65	-93
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	260	430	334	24	74	29
Lodging, Restaurants, and Recreation Services <sup>3</sup>	130	100	109	8	-21	-16
<b>Total Natural Resource-Based Employment</b>	<b>460</b>	<b>542</b>	<b>448</b>	<b>32</b>	<b>-12</b>	<b>-3</b>
Natural Resource-Based as a Percentage of Total Employment	33	35	32	na	na	na

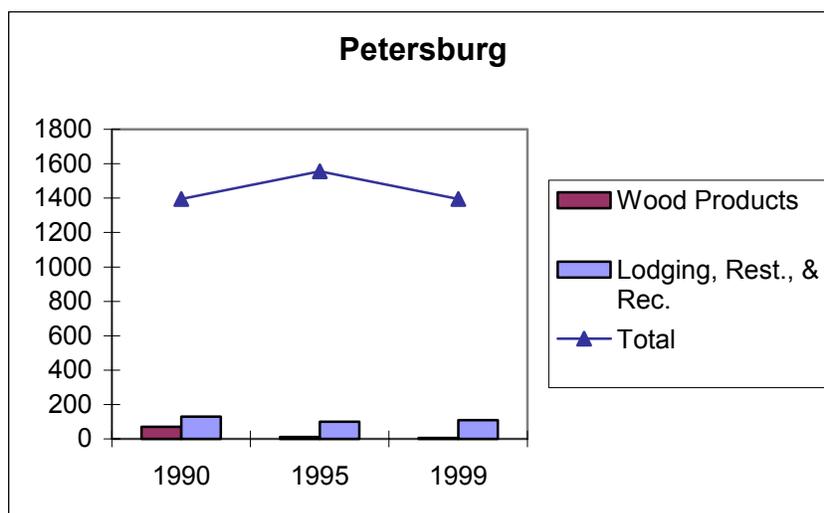
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



# Appendix E

## Revillagigedo

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	0	23	25	80	25	na
Transportation and Public Utilities	0	5	6	20	6	na
Wholesale Trade	0	0	0	0	0	na
Retail Trade	0	0	0	0	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	0	0	0	0	0	na
Federal Government	0	0	0	0	0	na
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>0</b>	<b>28</b>	<b>31</b>	<b>100</b>	<b>31</b>	<b>na</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	23	0	0	0	na
Logging	0	23	0	0	0	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	25	82	25	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>0</b>	<b>23</b>	<b>25</b>	<b>82</b>	<b>25</b>	<b>na</b>
Natural Resource-Based as a Percentage of Total Employment	na	82	82	na	na	na

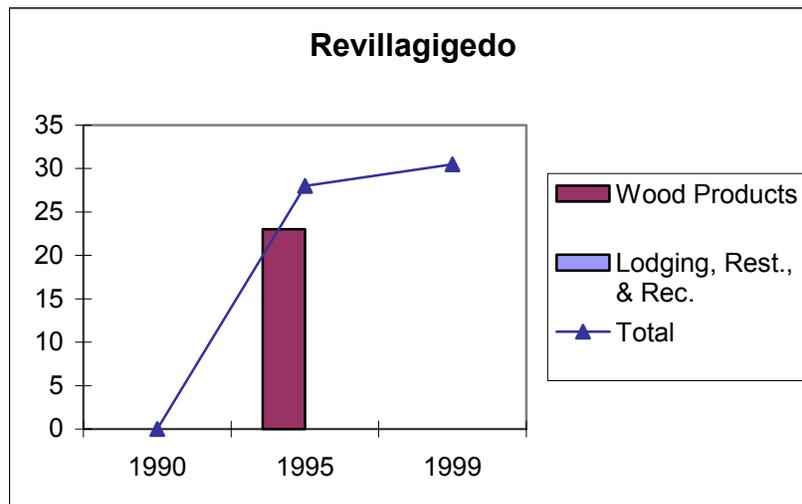
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



Sitka

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	39	32	37	1	-2	-5
Mining	0	0	1	0	1	na
Construction	236	226	236	6	0	0
Manufacturing	702	286	280	7	-422	-60
Transportation and Public Utilities	295	261	307	8	12	4
Wholesale Trade	76	57	48	1	-28	-37
Retail Trade	612	721	695	17	83	14
Finance, Insurance, Real Estate	77	79	92	2	15	19
Services	997	1,026	1,221	31	224	22
Federal Government	259	265	197	5	-62	-24
Other Government	764	813	886	22	122	16
<b>Total Employment</b>	<b>4,057</b>	<b>3,766</b>	<b>4,000</b>	<b>100</b>	<b>-57</b>	<b>-1</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	404	14	0	0	-404	-100
Logging	2	0	0	0	-2	-100
Sawmills	0	0	0	0	0	na
Pulp Mills	402	14	0	0	-402	-100
Seafood Processing <sup>2</sup>	278	227	203	5	-75	-27
Lodging, Restaurants, and Recreation Services <sup>3</sup>	360	390	415	10	55	15
<b>Total Natural Resource-Based Employment</b>	<b>1,042</b>	<b>631</b>	<b>618</b>	<b>15</b>	<b>-424</b>	<b>-41</b>
Natural Resource-Based as a Percentage of Total Employment	26	17	15	na	na	na

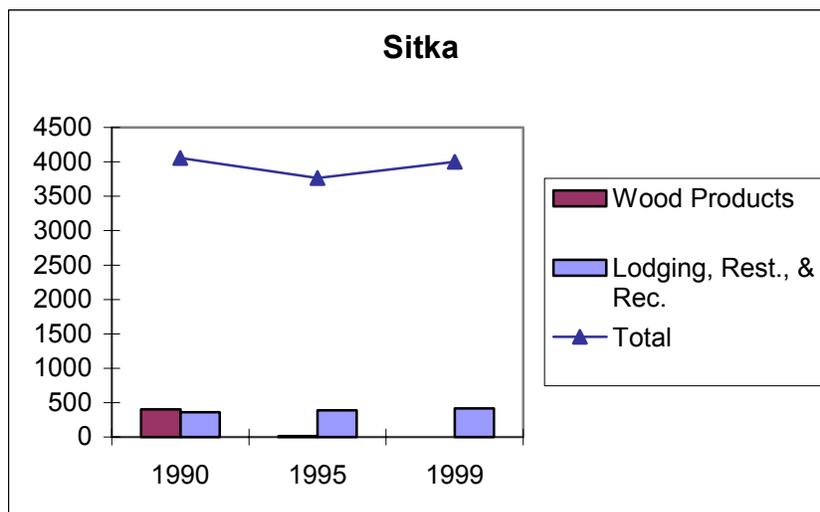
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Skagway

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	1	0	0	0	-1	-100
Mining	0	0	0	0	0	na
Construction	0	29	36	6	36	na
Manufacturing	4	14	10	2	6	150
Transportation and Public Utilities	175	62	79	14	-96	-55
Wholesale Trade	1	0	0	0	-1	-100
Retail Trade	102	173	185	32	83	81
Finance, Insurance, Real Estate	7	8	5	1	-2	-29
Services	76	168	115	20	39	51
Federal Government	35	57	50	9	15	43
Other Government	108	90	98	17	-10	-9
<b>Total Employment</b>	<b>598</b>	<b>601</b>	<b>578</b>	<b>100</b>	<b>69</b>	<b>14</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	0	0	0	na
Logging	0	0	0	0	0	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	73	211	147	25	74	101
<b>Total Natural Resource-Based Employment</b>	<b>73</b>	<b>211</b>	<b>147</b>	<b>25</b>	<b>74</b>	<b>101</b>
Natural Resource-Based as a Percentage of Total Employment	14	35	25	na	na	na

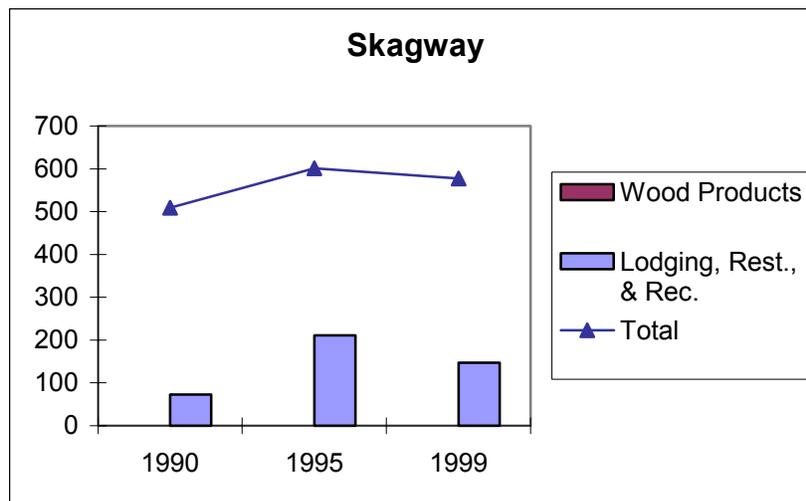
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Southeast Prince of Wales

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	0	0	0	0	0	na
Mining	0	0	0	0	0	na
Construction	0	0	0	0	0	na
Manufacturing	0	0	0	0	0	na
Transportation and Public Utilities	7	0	8	16	1	14
Wholesale Trade	1	1	0	0	-1	-100
Retail Trade	0	0	0	0	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	0	38	42	84	42	na
Federal Government	0	0	0	0	0	na
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>8</b>	<b>39</b>	<b>50</b>	<b>100</b>	<b>42</b>	<b>528</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	0	0	0	0	0	na
Logging	0	0	0	0	0	na
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	0	0	0	0	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	38	42	84	42	na
<b>Total Natural Resource-Based Employment</b>	<b>0</b>	<b>38</b>	<b>42</b>	<b>84</b>	<b>42</b>	<b>na</b>
Natural Resource-Based as a Percentage of Total Employment	0	97	84	na	na	na

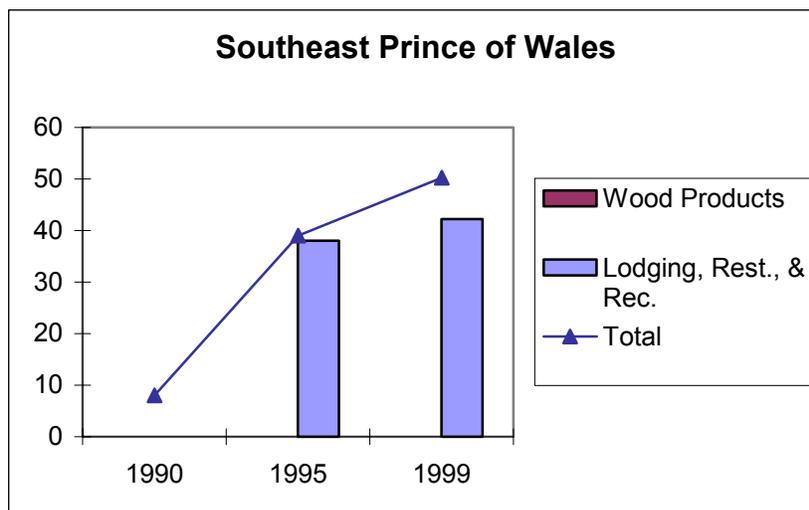
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Stephens Passage

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	4	0	0	0	-4	-100
Mining	268	0	0	0	-268	-100
Construction	0	26	10	69	10	na
Manufacturing	62	5	4	26	-58	-94
Transportation and Public Utilities	0	15	0	0	0	na
Wholesale Trade	0	0	0	0	0	na
Retail Trade	0	0	0	0	0	na
Finance, Insurance, Real Estate	0	0	0	0	0	na
Services	0	0	0	0	0	na
Federal Government	0	0	0	0	0	na
Other Government	0	0	0	0	0	na
<b>Total Employment</b>	<b>334</b>	<b>46</b>	<b>14</b>	<b>100</b>	<b>-320</b>	<b>-96</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	61	3	0	0	-61	-100
Logging	61	3	0	0	-61	-100
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	1	2	4	26	3	258
Lodging, Restaurants, and Recreation Services <sup>3</sup>	0	0	0	0	0	na
<b>Total Natural Resource-Based Employment</b>	<b>62</b>	<b>5</b>	<b>4</b>	<b>26</b>	<b>-58</b>	<b>-94</b>
Natural Resource-Based as a Percentage of Total Employment	19	11	26	na	na	na

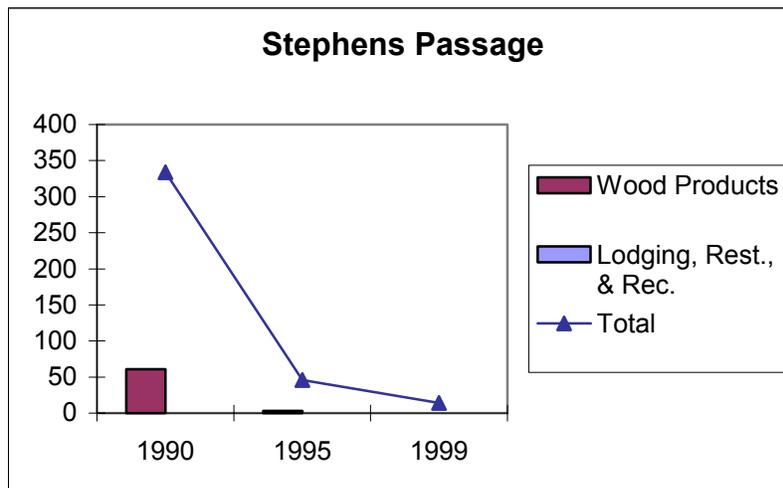
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



**Wrangell City**

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	13	19	5	1	-8	-62
Mining	0	0	0	0	0	na
Construction	17	53	79	10	62	365
Manufacturing	239	117	149	18	-90	-38
Transportation and Public Utilities	118	83	83	10	-35	-30
Wholesale Trade	6	4	9	1	3	50
Retail Trade	153	162	145	18	-8	-5
Finance, Insurance, Real Estate	18	13	18	2	0	0
Services	73	66	79	10	6	8
Federal Government	49	57	61	7	12	24
Other Government	197	239	195	24	-2	-1
<b>Total Employment</b>	<b>883</b>	<b>813</b>	<b>823</b>	<b>100</b>	<b>-60</b>	<b>-7</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	162	22	70	9	-92	-57
Logging	0	1	2	0	2	na
Sawmills	162	21	62	8	-100	-62
Pulp Mills	0	0	6	1	6	na
Seafood Processing <sup>2</sup>	60	83	67	8	7	-9
Lodging, Restaurants, and Recreation Services <sup>3</sup>	77	74	70	9	-7	-9
<b>Total Natural Resource-Based Employment</b>	<b>299</b>	<b>179</b>	<b>207</b>	<b>25</b>	<b>-92</b>	<b>-31</b>
Natural Resource-Based as a Percentage of Total Employment	34	22	25	na	na	na

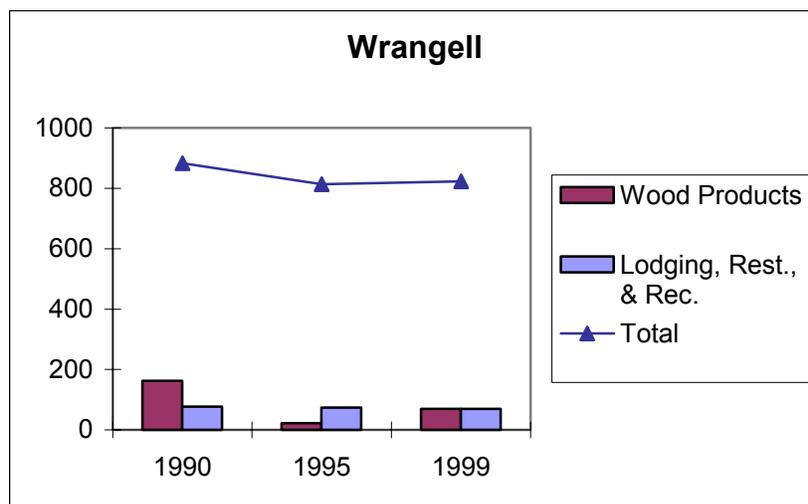
<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.



## Appendix E

### Yakutat

Economic Sector	1990	1995	1999	Percent of 1999 Total	Absolute Change 1990 to 1999	Percent Change 1990 to 1999
Agriculture, Forestry, and Fishing	1	0	0	0	-1	-100
Mining	0	0	0	0	0	na
Construction	5	14	16	4	11	220
Manufacturing	45	140	79	21	34	76
Transportation and Public Utilities	28	36	36	9	8	29
Wholesale Trade	0	1	4	1	4	na
Retail Trade	30	39	42	11	12	40
Finance, Insurance, Real Estate	8	14	9	2	1	13
Services	6	73	93	24	87	1,450
Federal Government	20	26	23	6	3	15
Other Government	55	77	79	21	24	44
<b>Total Employment</b>	<b>198</b>	<b>420</b>	<b>381</b>	<b>100</b>	<b>183</b>	<b>92</b>
Natural Resource-Based Employment <sup>1</sup>						
Wood Products <sup>2</sup>	37	68	13	3	-24	-65
Logging	37	68	13	3	-24	-65
Sawmills	0	0	0	0	0	na
Pulp Mills	0	0	0	0	0	na
Seafood Processing <sup>2</sup>	0	72	66	17	66	na
Lodging, Restaurants, and Recreation Services <sup>3</sup>	28	61	74	19	46	164
<b>Total Natural Resource-Based Employment</b>	<b>65</b>	<b>201</b>	<b>153</b>	<b>40</b>	<b>88</b>	<b>135</b>
Natural Resource-Based as a Percentage of Total Employment	33	48	40	na	na	na

<sup>1</sup> The natural resource-based employment totals are included in the standard economic sectors identified above.

<sup>2</sup> The logging, sawmill, pulp mill, and seafood sectors are included in the manufacturing sector totals.

<sup>3</sup> Hotels and other lodging places (lodging) and amusement and recreation services (recreation services) are included in the services sector totals. Eating and drinking places (restaurants) are in the retail trade sector totals.

na – not applicable

Source: Alaska DOL, 2002.

